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Grade POR 4th grade Mathematics

Required

Samsel Upper Elementary School

Full Year

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Statement of Purpose

Summary of the Course: Learning mathematics is a developing process in which work in the intermediate grades provides the building blocks for future success in math. Students will continue to build upon their prior knowledge of whole numbers and decimals, fractions, data analysis, pre-algebra, and basic geometry. The students will engage in relevant activities that will utilize their reasoning and critical thinking strategies as they apply them in problem solving both individually and working cooperatively with others. In grade four, students will master basic computation skills with whole numbers and decimals, build upon the concept of equivalencies among numbers, and understand fractions as part of a whole.

The goal of fourth grade mathematics is to engage the learner and spark an interest in mathematics that will carry through to higher grade levels. This can be achieved by using a variety of techniques including hands-on activities, projects, cooperative problem-solving and games. It is important for learners at this level to see the relevance of mathematics to everyday life and teaching strategies should make this connection as often as possible.

Students at this level are emerging as independent thinkers and problem-solvers and should be given the opportunity to express their opinions and alternate solutions through modeling. Learners should also be provided with various opportunities to investigate algebraic ideas. If students are exposed to the practicality of math in everyday life through a variety of teaching strategies, it is the hope of the educator to build a sound foundation and a propensity toward mathematics.

To demonstrate a cohesive and complete implementation plan the following general suggestions are provided:

- The use of various formative assessments are encouraged in order to provide an ongoing method of determining the current level of understanding the students have of the material presented.
- Homework, when assigned, should be relevant and reflective of the current teaching taking place in the classroom.
- Organizational strategies should be in place that allow the students the ability to take the information gained in the classroom and put it in terms that are relevant to them.
- Instruction should be differentiated to allow students the best opportunity to learn.
- Assessments should be varied and assess topics of instruction delivered in class.
- Modifications to the curriculum should reflect students' Individualized Educational Plans (IEP)

Unit 1: Generalize Place Value Understanding

Summary of the Unit:

Topic 1 focuses on generalizing place value understanding. This topic extends understanding of place value from 1,000 to 1,000,000 through the introduction of period names, along with reading and writing multi-digit whole numbers using base-ten numerals, number names, and expanded form. Relationships between the values of digits in different places are developed and used to compare and round numbers.

Enduring Understanding:

- Our number system is based on groups of ten. Whenever we get 10 in one place value, we move to the next greater place value.
- In a multi-digit whole number, a digit in one place represents ten times what it would represent in the place immediately to its right.
- Place value can be used to compare numbers.
- Rounding whole numbers is a process for finding the multiple of 10, 100, and so on closest to a given number.
- Good math thinkers use math to explain why they are right. They can talk about the math that others do, too.

Essential Questions:

- How are greater numbers written?
- How can whole numbers be compared?
- How are place values related?

Summative Assessment and/ or Summative Criteria to demonstrate mastery of the Unit.

- Topic Test-Unit
- Topic Quick Checks
- Performance Task

Resources:
Pearson SuccessNet math series
https://www.pearsonrealize.com/community/home
ST Math is a visual instructional program that builds a deep conceptual understanding of math.
https://www.stmath.com/
IXL online learning, offering unlimited algorithmically generated questions, real-time analytical reports, and dynamic scoring to encourage mastery.
https://www.ixl.com/
Discovery Education
https://google.discoveryeducation.com/
National Council of Teachers of Mathematics - This website contains activities and lessons, and virtual manipulatives organized by strand.
http://illuminations.nctm.org
The National Library of Virtual Manipulatives has tutorials and virtual manipulatives for the classroom.
http://nlvm.usu.edu/en/nav/index.html
The Teaching Channel has two hundred math videos for professional development. http://www.theteachingchannel.org
K-5 Math Teaching Resources site contains free math teaching resources, games, activities and journal tasks. http://www.k-5mathteachingresources.com
Open Middle- This website contains 36 math reasoning scenarios arranged by CCSS.
http://www.openmiddle.com/
K-5 Math Teaching Resources contains activities and resources for centers arranged by grade level and standard
https://www.k-5mathteachingresources.com/
Which One Doesn't Belong- This is a website dedicated to providing thought-provoking puzzles for math. There are no answers.
http://wodb.ca/
Estimation 180- This website contains hundreds of estimation challenges relative to real-world scenarios to assist in building strong connections with number sense and the real world.
http://www.estimation180.com/
BOOM Learning cards-This website contains interactive, gamified learning experience with data to track progress and identify learning gaps.
Boom Cards (boomlearning.com)
Splash Learn-This website contains an Engaging Way to learn Math with educational games. fun rewards,real time report, multi-device access .
SplashLearn: Fun Math & ELA Program for PreK-Grade 5
Math 180 activities and assessments

Topic/ Selection	Suggested Timeline per topic	General Objectives	Instructional Activities	Suggested Benchmarks/ Assessments	Common Core or NJCCCS Standards
Numbers Through One Million	1 Day	Read and write numbers through one million in expanded form, with numerals, and using number names.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math) **Solve and share-(whole class)** *Students connect to their previous understanding of finding the value of a collection of $100 bills, to understand how the value of a digit is related to its place value.* (Students might draw a picture or write an equation to write a problem.) **Visual Learning-(whole class)** *-Visual Learning Bridge-* *What are some ways to write numbers to one million?* *-YouTube-* *https://youtu.be/G1BLq9HWbPo*	*Quick Check 1-1 Guided Practice Independent Practice Daily 3- Teacher Technology-IXL Practice Buddy Reteach to Build Mathematical Literacy Additional Practice Adaptive Practice Convince Me/Enrichment	4.NBT.A.2, MP.2, MP.7

			Guided- Practice in whole group: *-Reteach to Build - Understanding Volume 1: 1-1* **Independen**t**/ Differentiated Instruction/Centers Teacher Lead small group:** <u>Intervention with teacher</u>: *MDIS Diagnosis and Intervention System- page F9.* *OR Review Reteach page* <u>*On Level with teacher check-in*</u>: *Hard Copy workbook:* *~Build Mathematical Literacy* ~Independent Practice Buddy Volume one:1-1 *Technology***:** ~Advanced Practice Buddy(PearsonRealize.com) ~IXL.com ~ST Math		

			Advanced: *Enrichment OR* *Convince Me* **Additional Activities:** Vertical Learning Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards ST Math Brainpop **Optional Activities:** Students use place value charts (Teaching tool 3) to represent numbers in various ways including standard form, expanded form, and word form. Or create magnetic number cards for students to create different numbers on the board.		

			Closure Lesson Quick Check/Exit Slip		
Place Value Relationships	1 Day	Recognize the relationship between adjacent digits in a multi-digit number.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math) **Solve and share- (Whole class)** *Students use place value to analyze the relationships between 1,10, and 100. (Students might discuss the relationships between each base-ten block being ten times more.)* **Visual Learning-** Visual Learning Bridge- *How are place values related to each other?* *YouTube-(18) Topic 1 LESS 2 PLACE VALUE RELATIONSHIP I ELEMENTARY - YouTube* **Guided Practice-**	*Quick Check 1-2 Guided Practice Independent Practice Daily 3- Teacher Technology-IXL Practice Buddy Reteach Build Mathematical Literacy Additional Practice Adaptive Practice Convince Me	4.NBT.A.1, MP.8, MP.2, MP.3

			-Reteach to Build - Understanding *Volume 1: 1-2* **Independent/ Differentiated Instruction/Centers** **Teacher Lead small group:** <u>Intervention with teacher</u>: *MDIS Diagnosis and Intervention System- page F9* *OR Review Reteach page.* <u>*On Level with teacher check-in*</u>: *Hard Copy workbook:* *~Build Mathematical Literacy* ~Independent Practice Buddy Volume one: 1-2 *Technology*: ~Advanced Practice Buddy(PearsonRealize.com) ~IXL.com ~ST Math		

			Advanced: *Enrichment OR Convince Me* **Additional Activities:** Vertical Learning Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math Brainpop **Optional Activities:** Students use base-ten blocks and place value charts (Teaching tool 3) to model and represent that the same digits next to each other in a multi-digit number are ten times more. Or Students can use sentence starter strips "The number in the _____ place is _____times (greater/smaller) that the number 9 in the _____ place."		

			Closure Quick Check 1-2/Exit Slip		
Compare Whole Numbers	1 Day	Use place value to compare multi-digit whole numbers.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math) **Solve and share-** *Students use their knowledge of place value to compare ocean depths to the depth of a submarine. Students should be provided with Teaching Tool 3 to assist in solving.* **Visual Learning-** Visual Learning Bridge- *How do you compare numbers?* *You Tube-(18) Comparing Numbers - BrainPOP Jr. - YouTube* **Guided Practice in whole group-**	*Quick Check 1-3 Guided Practice Independent Practice Daily 3- Teacher Technology-IXL Practice Buddy Reteach Build Mathematical Literacy Additional Practice Adaptive Practice Convince Me	4.NBT.A.2, MP.4, MP.1, MP.2, 4-ESS2-1

			-Reteach to Build - Understanding Volume 1: 1-3 **Independen**t**/ Differentiated Instruction/Centers Teacher Lead small group:** <u>Intervention with teacher</u>: *~MDIS Diagnosis and Intervention System- page F11* <u>*On Level with teacher check-in*</u>: *Hard Copy workbook:* *~Mathematical Literacy* Advanced: *Enrichment* ~Independent Practice Buddy Volume one: 1-3 *Technology***:** ~Advanced Practice Buddy(PearsonRealize.com) ~IXL.com ~ST Math <u>Advanced</u>: *Enrichment OR*		

			Convince Me **Additional Activities:** Vertical Learning Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards Brainpop and ST Math **Optional Activities:** Students use number flashcards to create inequalities. Or using a place value chart students line up the numbers and make comparisons (also use sentence starters from lesson 1-2). **Project-Based Learning:** EnVision Stem Project: Cave Depths: Students will research the depths of the five deepest caves in the world and write these numbers using		

			base-ten, expanded form and inequality statements to compare and contrast. **Closure** Quick Check/Exit Slip		
Round Whole Numbers	1 Day	Use place value to round multi-digit numbers.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math) **Solve and share-** *Students use number sense and prior knowledge of rounding to list numbers that round to 300. Teaching tool 12 may be provided.)* **Visual Learning-** Visual Learning Bridge- *How can round numbers?* *YouTube-(18) Math Antics - Rounding - YouTube*	*Quick Check 1-4 Guided Practice Independent Practice Daily 3- Teacher Technology-IXL Practice Buddy Reteach Build Mathematical Literacy Additional Practice Adaptive Practice Convince Me	4.NBT.A.3, MP.5, MP.2, MP.3

			Guided Practice in whole group- *-Reteach to Build - Understanding* *Volume 1: 1-4* **Independent/Differentiated Instruction/Centers:** **Teacher Lead small group:** Intervention with teacher: *~MDIS Diagnosis and Intervention System- page F10* *Or Review Reteach page* *On Level with teacher check-in*: *Hard Copy workbook:* *~Build Mathematical LIteracy* ~~Independent Practice Buddy Volume one:1-4 *Technology*: ~Advanced Practice Buddy(PearsonRealize.com) ~IXL.com ~ST Math Advanced:		

			Enrichment OR Convince Me **Additional Activities:** Vertical Learning Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards Brainpop and ST Math **Optional Activities:** Students use base-ten blocks and place value charts (Teaching tool 3) to model and represent that the same digits next to each other in a multi-digit number are ten times more. Or teach "estimation poem"[Find your number, look right next door, check if it is 5 or more. Five or more raise one more, four or		

			less, stay as before. Don't forget to zero out cuz that's what roundings all about." **Closure** Quick Check/Exit Card		
Problem Solving: Construct Arguments	1 Day	Use previously learned concepts and skills to construct arguments about place value.	**Problem Solving Strategy:** *Students are introduced to the strategy called "CUBES" They identify words in the problem to analyze it.* **Visual Learning-** Visual Learning Bridge-*How can you construct arguments?* *YouTube-Problem Solving with CUBES strategy for Addition and Subtraction - Bing video* **Guided Practice in whole group-** -Teach CUBES and introduce a graphic organizer for answering Word Problems with PALS (Problem, Answer,	*Quick Check 1-4 Guided Practice Independent Practice Daily 3- Teacher Technology-IXL Practice Buddy Reteach Build Mathematical Literacy Additional Practice Adaptive Practice Convince Me	4.NBT.A.1, 4.NBT.A.2, 4.NBT.A.3, MP.3, MP.1, MP.2, MP.6, RIT.4.1, RI.4.4

			Label, Sentence Explanation). *-Reteach to Build - Understanding Volume 1: 1-5* **Independent/Differentiated Instruction/Centers** **Teacher small group:** *<u>Intervention with teacher:</u>* *MDIS Diagnosis and System-pageF 9, F11* *<u>On Level with teacher check-in</u>*: *Hard Copy workbook:* *~Build Mathematical Literacy* ~Independent Practice Buddy Volume one:1-5 *Technology*: ~Advanced Practice Buddy(PearsonRealize.com) ~IXL.com ~ST Math <u>Advanced</u>: Enrichment or Convince ME		

			Additional Activities: Vertical Learning Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards Brainpop and ST Math **Optional Activities:** Create a chart of common words used to signify “adding”, “subtraction”, “multiplying”. and “dividing”. **Closure** Exit Ticket, Recall “CUBES”		
MATH.K-12.1 Make sense of problems and persevere in solving them MATH.K-12.2 Reason abstractly and quantitatively MATH.K-12.3 Construct viable arguments and critique the reasoning of others MATH.K-12.4 Model with mathematics MATH.K-12.5 Use appropriate tools strategically MATH.K-12.6 Attend to precision MATH.K-12.7 Look for and make use of structure					

MATH.4.NBT.A.1 Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right.
MATH.K-12.8 Look for and express regularity in repeated reasoning
MATH.4.NBT.A.2 Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.
MATH.4.NBT.A.3 Use place value understanding to round multi-digit whole numbers to any place.

Suggested Modifications for Special Education, English Language Learners and Gifted Students:
*Consistent with individual plans, when appropriate.

Special Education Students in general should be doing at least one of the following daily:

- Fluency review Activity
- Vocabulary Review
- Model various numbers on a hundredths grid or use base ten blocks to demonstrate whole number place value.
- To reinforce place-value meaning and understanding, have students participate in teacher made hands-on centers or whole group activities such as place value concentration. Students match the place-value name to the corresponding number.
- Write up to a 5-digit number on index cards. Provide each student with one card. Have the students read the number on their card aloud and then students should line up in order of their cards from least to greatest.
- Problem Solving using leveled concepts.

English Language Learners

- Topic Vocabulary
- Visual Learning Bridge: Reading
- Solve & Share: Speaking

Suggested Technological Innovations/ Use:

- IXL
- ST Math
- Kahoot!
- BOOM learning cards
- Tools (Envision 2020)
- Game Center (Envision 2020)
- Create/Complete a Discovery Education Board
- Prodigy
- Math 180 activities and assessments

Cross Curricular/ 21st Century Connections:

9.1 21st Century Life and Career Skills: All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.

- Pick a Project Activity
- Envision Stem Project
- Problem Solving Reading Activity
- 3 ACT MATH Activity: Page Through

Unit 2: Fluently Add and Subtract Multi-Digit Whole Numbers

Summary of the Unit:

Topic 2 focuses on fluently adding and subtracting multi-digit whole numbers. In this topic students will use mental math to find sums and differences. Students will also use rounding to estimate sums and differences and check for the reasonableness of their answers. Additionally, students will be introduced to various properties, which they will use along with the standard algorithms to find sums and differences of multi-digit numbers.

Enduring Understanding:

- The standard subtraction algorithm for multi-digit numbers is an efficient strategy that can be used to subtract any two numbers
- Subtraction calculations are done by place value starting with the ones, then the tens, and so on, regrouping as needed.
- The standard algorithm for subtraction breaks the calculation into simpler calculations using place value, starting with the ones, then the tens, and so on.
- Good math thinkers know how to think about words and numbers to solve problems.

Essential Questions:

- How can sums and differences of whole numbers be estimated?
- What are standard procedures for adding and subtracting whole numbers?

Summative Assessment and/ or Summative Criteria to demonstrate mastery of the Unit.

- Topic Test
- Performance Task

Resources:

Pearson SuccessNet math series
https://www.pearsonrealize.com/community/home

ST Math is a visual instructional program that builds a deep conceptual understanding of math through rigorous learning and creative problem solving to engage, motivate and challenge PreK-8 students toward higher achievement.
https://www.stmath.com/
IXL online learning, offering unlimited algorithmically generated questions, real-time analytical reports, and dynamic scoring to encourage mastery.
https://www.ixl.com/
Discovery Education
https://google.discoveryeducation.com/
National Council of Teachers of Mathematics - This website contains activities and lessons, and virtual manipulatives organized by strand.
http://illuminations.nctm.org
The National Library of Virtual Manipulatives has tutorials and virtual manipulatives for the classroom.
http://nlvm.usu.edu/en/nav/index.html
The Teaching Channel has two hundred math videos for professional development.
http://www.theteachingchannel.org
K-5 Math Teaching Resources site contains free math teaching resources, games, activities and journal tasks.
http://www.k-5mathteachingresources.com
Open Middle- This website contains 36 math reasoning scenarios arranged by CCSS.
http://www.openmiddle.com/
K-5 Math Teaching Resources contains activities and resources for centers arranged by grade level and standard
https://www.k-5mathteachingresources.com/
Which One Doesn't Belong- This is a website dedicated to providing thought-provoking puzzles for math teachers and students alike. There are no answers provided as there are many different, correct ways of choosing which one doesn't belong.
http://wodb.ca/
Estimation 180- This website contains hundreds of estimation challenges relative to real-world scenarios to assist in building strong connections with number sense and the real world.
http://www.estimation180.com/
BOOM Learning cards-This website contains interactive, gamified learning experience with data to track progress and identify learning gaps.
Boom Cards (boomlearning.com)

Splash Learn-This website contains an Engaging Way to learn Math with educational games. fun rewards,real time report, multi-device access .
SplashLearn: Fun Math & ELA Program for PreK-Grade 5
Math 180 activities and assessments

Topic/ Selection	Suggested Timeline per topic	General Objectives	Instructional Activities	Suggested Benchmarks/ Assessments	Common Core or NJCCCS Standards
Finding Sums and Differences with Mental Math	1 Day	Add and subtract whole numbers mentally using a variety of methods.	**Do Now**-Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math) **Solve and share-** (whole class) *Students use mental math to add three 4-digit numbers.* **Visual Learning-(whole class)** Visual Learning Bridge-*How can you use mental math to solve problems?* **YouTube:**https://www.youtube.com/watch?v=Uj8heqw2MxY	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 2-1	4.NBT.B.4, MP.3, MP.6, MP.7

			https://www.youtube.com/watch?v=xqyQ0xUo6M8 **Guided Practice-** *-Reteach to Build Understanding -Volume One 2.1* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System- pages G3, G4 and G 9.* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice buddy (PearsonRealize.com) IXL.com **Independent:** Independent Practice and Problem Solving 2.1 **Additional Activities:**		

			Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM cards and ST Math. **Optional Activities:** Students will match equations with the property that is best suited for finding the answer. Manipulative or chips may also be helpful for hands-on learning. **Closure** Lesson Quick Check/Exit Slip		
Estimates Sums and Differences	1 Day	Round greater numbers to estimate sums and differences.	**Do Now**-Start each day with Fact Fluency/Daily Review (Think About it) **Solve and share-** (whole class) *Students estimate the sum of 3 weights to determine if*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment	4.OA.A.3, 4.NBT.B.4, MP.2, MP.3

			it exceeds a maximum allowable weight. **Visual Learning** (whole class) Visual Learning Bridge-*How can you estimate sums and differences of whole numbers?* *YourTube-* *https://youtu.be/qUEaeBlB5GM* **Guided Practice:** *-Reteach to Build Understanding* *-Volume one 2.2* **Differentiated Instruction/Centers** **Teacher Lead:** Intervention:MDIS Diagnosis and Intervention system pages G 5 and G6 On Level: *Build Mathematical Literacy* Advanced: *Enrichment*	Additional Practice Quick Check 2-2	

			Technology: Practice buddy (PearsonRealize.com) **Independent:** Independent Practice Volume one-2.2 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM cards and ST Math. **Optional Activities:** Students use task cards to estimate sums and differences to grade level problems. Go to TE 44A activity using manipulative place value blocks. **Closure**		

			Lesson Quick Check/Exit Slip		
Add Whole Numbers	1 Day	Add 3-digit numbers using place-value concepts and the standards algorithm.	**Do Now**-Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math) **Problem Based Learning** (whole group): Solve and share- *Students use place value understanding to add 3-digit numbers.* **Visual Learning** (whole class) Visual Learning Bridge- *How do you add whole numbers efficiently?* *YourTube-* *https://youtu.be/cE-yrJv4TEs* **Guided Practice:** *-Reteach to Build Understanding* *-Volume one 2.3*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 2-3	4.NBT.B.4, 4.OA.A.3, MP.3, MP.5, MP.7

			Differentiated Instruction/Centers **Teacher Lead:** Intervention:MDIS Diagnosis and Intervention system page G10 On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice buddy (PearsonRealize.com) **Independent:** Independent Practice Volume one-2.3 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM cards and		

			ST Math. **Other Optional Activities:** TE 48A with Place Value Blocks or Teacher Tool 4. Some students may need to use large-boxed graph paper to line up place-value numbers.		
Adds Greater Numbers	1 Day	Add numbers to one million with and without regrouping using the standard algorithm.	**Do Now**-Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math) **Solve and share-** (whole group) *Students will connect and build on prior knowledge by adding three 4-digit numbers.* **Visual Learning** Visual Learning Bridge-*How do you add greater numbers?* *YourTube-* *https://youtu.be/ULplcm1vWco*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 2-4	4.NBT.4, 4.OA.3, MP.1, MP.3, MP.8

			Guided Practice in whole group: *-Reteach to Build Understanding* *-Volume one 2.4* **Independent/ Differentiated Instruction/Centers Teacher Lead small group:** <u>Intervention with teacher</u>: MDIS Diagnosis and Intervention system page G18 <u>*On Level with teacher check-in*</u>: *Hard Copy workbook:* *~Build Mathematical Literacy* ~Independent Practice Buddy Volume one-2.4 *Technology*: ~Advanced Practice Buddy(PearsonRealize.com)		

			~IXL.com ~ST Math <u>Advanced</u>: *Enrichment OR* *Convicne Me* **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM cards ST Math Brainpop **Other Optional Activities:** TE 52A with Place Value Blocks, Place Value Chart or Teacher Tool 4. Some students may need to use large-boxed graph paper to line up place-value numbers **Closure**		

			Lesson Quick Check/Exit Slip		
Subtract Whole Numbers	1 Day	Use place value and the standard algorithm to subtract whole numbers.	**Do Now**-Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math) **Problem Based Learning** (whole group) **Solve and share**: *Students use place-value blocks to subtract two 3-digit numbers.* **Visual Learning** Visual Learning Bridge- *How can you subtract whole numbers efficiently?* *YourTube-* *https://youtu.be/NfvSi17c20I* *https://youtu.be/nku3jVLbPBw*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 2-5	4.NBT.B.4, 4.OA.A.3, MP.1, MP.5, MP.7

			Guided Practice in whole group: *-Reteach to Build Understanding* *-Volume one 2.5* **Independent/ Differentiated Instruction/Centers** **Teacher Lead small group:** <u>Intervention with teacher</u>: ~MDIS Diagnosis and Intervention system page G11 OR Review Reteach page <u>On Level with teacher check-in</u>: *Hard Copy workbook:* *~Build Mathematical Literacy* ~Independent Practice Buddy Volume one-2.5 *Technology*: ~Advanced Practice Buddy(PearsonRealize.com) ~IXL.com		

			~ST Math <u>Advanced</u>: *Enrichment OR Convince Me* **Additional Activities:** Vertical Learning Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM cards Brainpop and ST Math. **Other Optional Activities:** TE 56A with Place Value Blocks. Some students may need to use large-boxed graph paper to line up place-value numbers **Closure** Lesson Quick Check/Exit Slip		

Subtract Greater Numbers	1 Day	Use place value and an algorithm to subtract whole numbers	**Do Now**-Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math) **Problem Based Learning** **Solve and share-** (whole group) *Students will connect and build on prior knowledge by subtracting two 6-digit numbers.* **Visual Learning** Visual Learning Bridge- *How do you subtract whole numbers efficiently?* *YouTube-* *https://youtu.be/inyH59ncRIl* *repeat from prior lesson* *https://youtu.be/nku3jVLbPBw*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 2-6	4.NBT.B.4, 4.OA.A.3, MP.2, MP.3, MP.7

			Guided Practice: *-Reteach to Build Understanding* *-Volume one 2.6* **Differentiated Instruction/Centers** **Teacher Lead:** Intervention:MDIS Diagnosis and Intervention system page G19 On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice buddy (PearsonRealize.com) **Independent:** Independent Practice Volume one-2.6 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus:		

			(PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM cards and ST Math. **Other Optional Activities:** TE 60A with Place Value Blocks. Some students may need to use large-boxed graph paper to line up place-value numbers **Closure** Lesson Quick Check/Exit Slip		
Subtract Across Zeros	1 Day	Use number sense and regrouping to subtract across zeros.	**Do Now**-Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math) **Problem Based Learning: Solve and share-** (whole group) *Students will use standard algorithm to subtract numbers across zeros.*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 2-7	4.NBT.B.4, 4.OA.A.3, MP.2, MP.3, MP.7, 4-PS3-1

			Visual Learning Visual Learning Bridge- *How do you subtract across zeros?* *YouTube-* *https://youtu.be/ML1KoW9JMwA* *https://youtu.be/UevOMb2xOZg* **Guided Practice:** *-Reteach to Build Understanding* *-Volume one 2.7* **Differentiated Instruction/Centers** **Teacher Lead:** Intervention:MDIS Diagnosis and Intervention system page G16 On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:**		

			Practice buddy (PearsonRealize.com) **Independent:** Independent Practice Volume one-2.7 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM cards and ST Math. **Other Optional Activities:** TE 64A with Teaching Tools 4 and 5 or Place Value Blocks. Some students may need to use large-boxed graph paper to line up place-value numbers **Closure**		

			Lesson Quick Check/Exit Slip		
Problem Solving: Reasoning	1 Day	Use previously learned concepts and skills to reason abstractly and make sense of quantities and their relationships in problem situations.	**Do Now**-Start each day with Fact Fluency/Daily Review (Think About it) **Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math) **Problem Based Learning:** **<u>Solve and share-</u>** (guided practice to independent) *Students use reasoning to find the solution to multi-step problems involving addition and subtraction of multi-digit numbers.* Recall/ ReteachCUBES and Problem-solving graphic organizer. encourage answering Word Problems with PALS (Problem, Answer, Label, Sentence Explanation).	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 2-8	4.OA.A.3, 4.NBT.B.4, MP.2, MP.1, MP.4, RI.4.1, RI, 4.4

			Visual Learning Visual Learning Bridge- *How can you use quantitative reasoning to solve problems?* *YouTube-* *https://youtu.be/BcXAdGvMefg* **Guided Practice:** *-Reteach to Build Understanding* *-Volume one 2.8* **Differentiated Instruction/Centers** **Teacher Lead:** Intervention:MDIS Diagnosis and Intervention system pages J9, and G18 On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice buddy (PearsonRealize.com)		

			Independent: Independent Practice Volume one-2.8 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM cards and ST Math. **Other Optional Activities:** TE 68A Use the CUBES method and /or a graphic organizer for Math problem-solving. Stick with the same format for each word problems throughout each Topic. Today should be more about identifying clue math words and discovering the question “what do I need to find out?” “What are the facts?”		

			Closure Exit Slip/share CUBES answers and discuss why students chose to do certain strategies to solve. Did anyone solve the problem differently?		

MATH.K-12.1 Make sense of problems and persevere in solving them

MATH.K-12.2 Reason abstractly and quantitatively

MATH.K-12.3 Construct viable arguments and critique the reasoning of others

MATH.4.OA.A.3 Solve multi-step word problems posed with whole numbers and having whole number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

MATH.K-12.4 Model with mathematics

MATH.K-12.5 Use appropriate tools strategically

MATH.K-12.6 Attend to precision

MATH.K-12.7 Look for and make use of structure

MATH.K-12.8 Look for and express regularity in repeated reasoning

MATH.4.NBT.B.4 With accuracy and efficiency, add and subtract multi-digit whole numbers using the standard algorithm.

Suggested Modifications for Special Education, English Language Learners and Gifted Students:
*Consistent with individual plans, when appropriate.

Special Education Students

- Fluency review Activity
- Vocabulary Review
- Use a mask to cover each place value within a problem until it is needed.
- Model various subtraction and addition problems with and without regrouping using base ten blocks to demonstrate regrouping and borrowing.
- To reinforce addition and subtraction processes, have students participate in teacher made hands-on centers or whole group activities such as a bar model puzzle game. Students use addition or subtraction with the idea of "part-part-whole" to solve the bar models to find the missing pieces.

English Language Learners

- Topic Vocabulary
- Visual Learning Bridge: Reading
- Solve & Share: Speaking

Suggested Technological Innovations/ Use:

- IXL
- ST Math
- Kahoot!
- Tools (EnVision 2020)
- Game Center (EnVision 2020)
- Create/Complete a Discovery Education Board
- BOOM learning cards
- Prodigy math games

Cross Curricular/ 21st Century Connections:

- Pick a Project Activity
- Envision Stem Project

- Problem Solving Reading Activity

Unit 3: Use Strategies and Properties to Multiply by 1-Digit Numbers

Summary of the Unit:

Topic 3 focuses on using strategies and properties to multiply 1-digit numbers. In this topic students will develop an understanding of multiplying multi-digit numbers by 1-digit numbers using strategies based on place value and properties of operations. Such strategies covered throughout this topic include using rounding to estimate, using arrays, partial products and area models to multiply, and using properties and breaking apart to multiply mentally

Enduring Understanding:

- Basic facts and place-value patterns can be used to find products when one factor is 10, 100, or 1,000.
- Rounding is one way to estimate products.
- The expanded algorithm for multiplication can be represented with arrays.
- In the expanded algorithm, numbers are broken apart using place value, and the parts are used to find partial products, which are then added together to find the product.
- Area models and properties of multiplication can be used to simplify computation.
- Properties of multiplication and place-value understanding can be used to multiply without paper and pencil.
- Students can use the Distributive Property, area models and other methods to find a product.
- Good math thinkers apply math they know to show and solve problems from everyday life.

Essential Questions:

- How can you multiply by multiples of 10, 100, and 1,000?
- How can you multiply whole numbers?

Summative Assessment and/ or Summative Criteria to demonstrate mastery of the Unit.

- Topic Test

- Performance Task

Resources:

Pearson SuccessNet math series
https://www.pearsonrealize.com/community/home

ST Math is a visual instructional program that builds a deep conceptual understanding of math through rigorous learning and creative problem solving to engage, motivate and challenge PreK-8 students toward higher achievement.
https://www.stmath.com/

IXL online learning, offering unlimited algorithmically generated questions, real-time analytical reports, and dynamic scoring to encourage mastery.
https://www.ixl.com/

Discovery Education
https://google.discoveryeducation.com/

National Council of Teachers of Mathematics - This website contains activities and lessons, and virtual manipulatives organized by strand.
http://illuminations.nctm.org

The National Library of Virtual Manipulatives has tutorials and virtual manipulatives for the classroom.
http://nlvm.usu.edu/en/nav/index.html

The Teaching Channel has two hundred math videos for professional development.
http://www.theteachingchannel.org

K-5 Math Teaching Resources site contains free math teaching resources, games, activities and journal tasks.
http://www.k-5mathteachingresources.com

Open Middle- This website contains 36 math reasoning scenarios arranged by CCSS.
http://www.openmiddle.com/

K-5 Math Teaching Resources contains activities and resources for centers arranged by grade level and standard
https://www.k-5mathteachingresources.com/

Which One Doesn't Belong- This is a website dedicated to providing thought-provoking puzzles for math teachers and students alike. There are no answers provided as there are many different, correct ways of choosing which one doesn't belong.
http://wodb.ca/

Estimation 180- This website contains hundreds of estimation challenges relative to real-world scenarios to assist in building strong connections with number sense and the real world.
http://www.estimation180.com/
Math 180 activities and assessments

Topic/ Selection	Suggested Timeline per topic	General Objectives	Instructional Activities	Suggested Benchmarks/ Assessments	Common Core or NJCCCS Standards
Multiply by Multiples of 10, 100, and 1,000	1 Day	Multiply multiples of 10, 100, and 1,000 using mental math and place-value strategies.	**Do Now**-Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math) **Problem Based Learning:** **Solve and share-** (whole group) *Students multiply 1 –digit numbers by a multiple of 10, 100, and 1,000.* (Students may use place value blocks or Teaching tools 4 and 5.) **Visual Learning** Visual Learning Bridge- *How can you multiply by multiples of 10, 100 or 1,000.*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 3-1	4.NBT.B.5, MP.1, MP.2, MP.7

			YouTube- *https://youtu.be/J39gziNhbBA* **Guided Practice:** **Differentiated Instruction/Centers Teacher Lead:** Intervention: *Reteach to Build Understanding* On Level: *Build Mathematical Literacy* Advanced: *Enrichment erstanding* *-Volume one 3.1* **Differentiated Instruction/Centers Teacher Lead:** Intervention:MDIS Diagnosis and Intervention system page G40 On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice buddy (PearsonRealize.com)		

			Independent: Independent Practice Volume one-3.1 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM cards and ST Math. **Other Optional Activities:** TE 84A have students draw an array with non-zero numbers, use a multiplication chart, or visually draw out the non-zero numbers and group them to multiply, then count the zeros by highlighting them. **Closure** Lesson Quick Check/Exit Slip		

Estimate Products	1 Day	Use rounding to estimate products and check if answers are reasonable.	**Do Now**-Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math) **Problem Based Learning:** **Solve and share-** (whole group) **-** *Students use their prior understanding of rounding to estimate the product of a 2-digit number and a 1-digit number.* **Visual Learning** Visual Learning Bridge- *How can you estimate when you multiply?* *YouTube-* *https://youtu.be/Ouz21JzKGA8* *https://youtu.be/0W5GXzgkzYI* **Guided Practice:** *-Reteach to Build Understanding* *-Volume one 3.2*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 3-2	4.OA.A.3, 4.OA.A.2, MP.2, MP.3, RI.4.1, RI. 4.4

			Differentiated Instruction/Centers **Teacher Lead:** Intervention:MDIS Diagnosis and Intervention system page G42 On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice buddy (PearsonRealize.com) **Independent:** Independent Practice Volume one-3.2 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM cards and		

			ST Math. **Other Optional Activities:** TE 88A Have students use a number line. or say the estimation poem. **Closure** Lesson Quick Check/Exit Slip		
Use Arrays and Partial Products to Multiply	1 Day	Use arrays and partial products to multiply 2- and 3-digit numbers by 1-digit numbers.	**Do Now**-Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math) **Problem Based Learning:** **Solve and share-** (whole group) *Students use previously learned mathematics to model a multiplication problem involving rows and columns.* **Visual Learning** Visual Learning Bridge-*How can you use an array and partial products to multiply?*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 3-3	4.NBT.B.5, MP.4, MP.7

			YouTube-- *https://youtu.be/WYJsQo7ZTC4* *https://youtu.be/sr45yLXUQ9E* *https://youtu.be/qiwJQxMvPMM* **Guided Practice:** *-Reteach to Build Understanding* *-Volume one 3.3* **Differentiated Instruction/Centers** **Teacher Lead:** Intervention:MDIS Diagnosis and Intervention system page G44-45 On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:**		

			Practice buddy (PearsonRealize.com) **Independent:** Independent Practice Volume one-3.3 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM cards and ST Math. **Other Optional Activities:** TE 92A Use arrays, multiplication charts, grouping drawings, and the like. Also have the students highlight the path of multiplication (even tap it out with their foot). **Closure** Lesson Quick Check/Exit Slip		

Use Area Models and Partial Products to Multiply	1 Day	Use area models and the Distributive Property to multiply larger numbers.	**Do Now**-Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math) **Problem Based Learning:** **Solve and share-** (whole group) **-** *Students analyze an area model and use the given numbers and operation symbols to show how to find the area of a given rectangle.* **Visual Learning** Visual Learning Bridge- *How can you use an area model and partial products to multiply?* *YouTube-* *https://youtu.be/qiwJQxMvPMM* **Guided Practice:** *-Reteach to Build Understanding* *-Volume one 3.4*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 3-4	4.NBT.B.5, MP.4, MP.7

			Differentiated Instruction/Centers **Teacher Lead:** Intervention:MDIS Diagnosis and Intervention system page G45 On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice buddy (PearsonRealize.com) **Independent:** Independent Practice Volume one-3.4 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM cards and		

			ST Math. **Other Optional Activities:** TE 96A Try distributive process, or partial product box method. **Closure** Lesson Quick Check/Exit Slip		
More Use Area Models and Partial Products to Multiply	1 Day	Use place value and partial products to multiply 3- and 4-digit numbers by 1-digit numbers.	**Do Now**-Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math) **Problem Based Learning:** **Solve and share-** (whole group) **-** *Students use an area model to find the value of an unknown. (Students may be provided with Teaching Tools 4 and 5.)* **Visual Learning** Visual Learning Bridge- *How do you multiply with greater numbers?*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 3-5	4.NBT.B.5, 4.OA.A.3, MP.5, MP.6, MP.7, 4-ESS2-2

			YouTube- *https://youtu.be/LReZ0xRXeWA* *https://youtu.be/_n_E_RGpoA* **Guided Practice:** *-Reteach to Build Understanding* *-Volume one 3.5* **Differentiated Instruction/Centers** **Teacher Lead:** Intervention:MDIS Diagnosis and Intervention system page G45 On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice buddy (PearsonRealize.com) **Independent:** Independent Practice Volume one-3.5		

			Additional Activities: Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM cards and ST Math. **Other Optional Activities:** TE 100A Have students use partial products or box method. **Closure** Lesson Quick Check/Exit Slip		
Mental Math Strategies for Multiplication	1 Day	Use place value and properties of operations to multiply mentally.	**Do Now**-Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math) **Problem Based Learning:** **Solve and share-** (whole group) *Students find the values of three*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 3-6	4.NBT.B.5, MP.3, MP.7

			different multiplication expressions that can be solved mentally by applying a variety of mental math strategies. **Visual Learning** Visual Learning Bridge-*How can you multiply mentally?* *YouTube-* *https://youtu.be/e57VTCp-hH0* **Guided Practice:** *-Reteach to Build Understanding* *-Volume one 3.6* **Differentiated Instruction/Centers** **Teacher Lead:** Intervention:MDIS Diagnosis and Intervention system page G45 and G76		

			On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice buddy (PearsonRealize.com) **Independent:** Independent Practice Volume one-3.6 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM cards and ST Math. **Other Optional Activities:** TE 104A **Closure** Lesson Quick Check/Exit Slip		

Choose a Strategy to Multiply	1 Day	Choose an appropriate strategy to multiply 2-, 3-, and 4-digit numbers by 1-digit numbers.	**Do Now**-Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math) **Problem Based Learning:** **Solve and share-** (whole group) **-** *Students solve a multi-step problem involving addition and multiplication.* **Visual Learning** Visual Learning Bridge- *What strategy will you use to multiply?* *YouTube-* *https://youtu.be/mhoKTabq5tM* *https://youtu.be/LReZ0xRXeWA* *https://youtu.be/_n_E_RGpoA* **Guided Practice:** *-Reteach to Build Understanding*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 3-7	4.NBT.B.5, 4.OA.A.3, MP.1, MP.2, MP.6

			-*Volume one 3.7* **Differentiated Instruction/Centers** **Teacher Lead:** Intervention:MDIS Diagnosis and Intervention system page G45 On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice buddy (PearsonRealize.com) **Independent:** Independent Practice Volume one-3.7 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice		

			Math Anytime: Daily Review BOOM cards and ST Math. **Other Optional Activities:** TE 108A. Some students may need to use large-boxed graph paper to line up place-value number **Closure** Lesson Self-Assessment: PearsonRealize.com		
Problem Solving: Model with Math	1 Day	Use previously learned concepts and skills to represent and solve problems.	**Do Now**-Start each day with Fact Fluency/Daily Review (Think About it) **Problem Based Learning:** **Solve and share-** (guided practice to independent) *Students use reasoning to find the solution to multi-step problems involving addition and subtraction of multi-digit numbers.* Recall/	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 3-8	4.OA.A.3, 4.NBT.B.5, MP.4, MP.1, RI. 4.1, RI. 4.4

			ReteachCUBES and Problem-solving graphic organizer. encourage answering Word Problems with PALS (Problem, Answer, Label, Sentence Explanation). **Visual Learning** Visual Learning Bridge- *How can you use quantitative reasoning to solve problems?* **Guided Practice:** *-Reteach to Build Understanding* *-Volume one 3.8* **Differentiated Instruction/Centers** **Teacher Lead:** Intervention:MDIS Diagnosis and Intervention system pagesG45 and J9 On Level: *Build Mathematical Literacy* Advanced: *Enrichment*		

			Technology: Practice buddy (PearsonRealize.com) **Independent:** Independent Practice Volume one-3.8 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM cards and ST Math. **Other Optional Activities:** TE 112A Use the CUBES method and /or a graphic organizer for Math problem-solving. Stick with the same format for each word problems throughout each Topic. Today should be more about identifying clue math words and discovering		

			the question “what do I need to find out?” “What are the facts?” **Closure** Exit Slip/share CUBES answers and discuss why students chose to do certain strategies to solve. Did anyone solve the problem differently?		

MATH.K-12.1 Make sense of problems and persevere in solving them

MATH.K-12.2 Reason abstractly and quantitatively

MATH.4.OA.A.2 Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.

MATH.K-12.3 Construct viable arguments and critique the reasoning of others

MATH.4.OA.A.3 Solve multi-step word problems posed with whole numbers and having whole number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

MATH.K-12.4 Model with mathematics

MATH.K-12.5 Use appropriate tools strategically

MATH.K-12.6 Attend to precision

MATH.K-12.7 Look for and make use of structure

MATH.K-12.8 Look for and express regularity in repeated reasoning

MATH.4.NBT.B.5 Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

Suggested Modifications for Special Education, English Language Learners and Gifted Students:
*Consistent with individual plans, when appropriate.

Gifted Students

- Students are given a menu from a restaurant in Sayreville. They must compute how much it would cost their entire family to go out to dinner, including the tip. They will need to use extended math facts to multiply by .10 and double it, in order to calculate a 20% tip. (For additional enrichment: Have students calculate the tax, as well.)

Special Education Students

- Fluency review Activity
- Vocabulary Review
- Use a mask to cover each place value within a problem until it is needed.
- Model various multiplication problems by having students draw arrays using small grid paper. The visual model will help students connect to multiplication as "groups of".
- To reinforce multiplying by multiples of 10, 100 and 1000, have students complete problems by first "boxing out" the basic fact then counting how many zeros are left over. Have students represent the basic fact in one color and then use counters for the zeros to visualize how to arrive at the answer.

English Language Learners

- Topic Vocabulary
- Visual Learning Bridge: Reading
- Solve & Share: Speaking

Suggested Technological Innovations/ Use:

- IXL
- ST Math
- Kahoot!
- Tools (EnVision 2020)
- Game Center (EnVision 2020)
- Create/Complete a Discovery Education Board

Cross Curricular/ 21st Century Connections:

- Pick a Project Activity
- EnVision Stem Project
- EnVision Stem Activity
- Problem Solving Reading Activity
- 3 ACT MATH: Covered Up

Unit 4: Use Strategies and Properties to Multiply by 2-Digit Numbers

Summary of the Unit:

Topic 4 focuses on developing the understanding of multiplying multi-digit numbers by 2-digit numbers using strategies based on place value and properties of operations.

Enduring Understanding:

- Basic facts and place-value patterns can be used to mentally multiply a 2-digit number by a multiple of 10.
- Place-value blocks, area models, and arrays provide ways to visualize and find products.

- Products of 2-digit by 2-digit numbers can be estimated by replacing factors with the closest multiple of 10, or other numbers that are close and easy to multiply mentally.
- The expanded algorithm for multiplying with 2-digit numbers is an extension of the expanded algorithm for multiplying with 1-digit numbers.
- The Distributive Property can be used to multiply two 2-digit numbers by breaking the computation down into four simpler products and adding the partial products together.
- The expanded algorithm for multiplication can be represented with arrays.
- In the expanded algorithm, numbers are broken apart using place value, and the parts are used to find the partial products.
- Good math thinkers make sense of problems and think of ways to solve them, even if they get stuck.

Essential Questions:

- How can you use a model to multiply?
- How can you use the Distributive Property to multiply?
- How can you use multiplication to solve problems?

Summative Assessment and/ or Summative Criteria to demonstrate mastery of the Unit.

- Topic Test
- Performance Task

Resources:

Pearson SuccessNet math series
https://www.pearsonrealize.com/community/home
ST Math is a visual instructional program that builds a deep conceptual understanding of math through rigorous learning and creative problem solving to engage, motivate and challenge PreK-8 students toward higher achievement.
https://www.stmath.com/

IXL online learning, offering unlimited algorithmically generated questions, real-time analytical reports, and dynamic scoring to encourage mastery.
https://www.ixl.com/
Discovery Education
https://google.discoveryeducation.com/
National Council of Teachers of Mathematics - This website contains activities and lessons, and virtual manipulatives organized by strand.
http://illuminations.nctm.org
The National Library of Virtual Manipulatives has tutorials and virtual manipulatives for the classroom.
http://nlvm.usu.edu/en/nav/index.html
The Teaching Channel has two hundred math videos for professional development.
http://www.theteachingchannel.org
K-5 Math Teaching Resources site contains free math teaching resources, games, activities and journal tasks.
http://www.k-5mathteachingresources.com
Open Middle- This website contains 36 math reasoning scenarios arranged by CCSS.
http://www.openmiddle.com/
K-5 Math Teaching Resources contains activities and resources for centers arranged by grade level and standard
https://www.k-5mathteachingresources.com/
Which One Doesn't Belong- This is a website dedicated to providing thought-provoking puzzles for math teachers and students alike. There are no answers provided as there are many different, correct ways of choosing which one doesn't belong.
http://wodb.ca/
Estimation 180- This website contains hundreds of estimation challenges relative to real-world scenarios to assist in building strong connections with number sense and the real world.
http://www.estimation180.com/
Math 180 activities and assessments

Topic/ Selection	Suggested Timeline per topic	General Objectives	Instructional Activities	Suggested Benchmarks/ Assessments	Common Core or NJCCCS Standards
Multiply Multiples of 10	1 Day	Use mental-math strategies to multiply 2-digit multiples of 10 by 2-digit multiples of 10.	**Do Now**-Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math) **Problem Based Learning:** **Solve and share-** (whole group) *Students use basic facts and place-value patterns to multiply multiples of 10. (Teaching Tool 10 and grid paper may be incorporated.)* **Visual Learning-** Visual Learning Bridge- *How are place values related to each other?* *You tube:* *https://youtu.be/iOsysghGhPg* **Guided Practice-**	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 4-1	4.NBT.B.5, MP.2, MP.7

			-Reteach to Build - Understanding *Volume 1: 4-1* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System- page G64* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 4-1 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice		

			Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Look for Relationships- Students will predict how many zeros will be in the answer using previous knowledge of multiplying 1-digit numbers by 10, 100 and 1,000. **Closure** Quick Check 4-1/Exit Slip		
Use Models to Multiply 2-Digit Numbers by Multiples of 10	1 Day	Use models and properties of operations to multiply 2-digit numbers by multiples of 10.	**Do Now**-Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math) **Problem Based Learning:** **Solve and share-** (whole group) *Students use previously learned strategies to multiply a 2-digit*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 4-2	4.NBT.B.5, MP.2, MP.4, MP.5

			number by a multiple of 10 using tools such as place-value blocks or grid paper. (Students may use teaching tool 10, grid paper, or teaching tools 4 and 5.) **Visual Learning** Visual Learning Bridge-*How can you use an array or an area model to multiply?* *YouTube-* *https://youtu.be/gmD_x3ugu5o* *https://youtu.be/gmD_x3ugu5o* **Guided Practice-** *-Reteach to Build - Understanding Volume 1: 4-2* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention:		

			MDIS Diagnosis and Intervention System- page G64/G67 On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 4-2 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Students will use grid paper and crayons to model the distributive		

			property for multiplying a 2-digit number by a multiple of 10. Partial products will be shaded in various colors to show smaller quantities. Convince Me! - Reasoning- Students will apply their knowledge of estimation to solve an equation. They will assess the reasonableness of the answer. **Closure** Quick Check 4-2/Exit Slip		
Estimate: Use Rounding or Compatible Numbers	1 Day	Use rounding or compatible numbers to estimate products of two 2-digit numbers.	**Do Now**-Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math) **Problem Based Learning:** **Solve and share-** (whole group) *Students estimate*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 4-3	4.OA.A.3, 4.NBT.B.5, MP.2, MP.3

			solutions to multiplication problems involving two 2-digit numbers by using any prior numbers. **Visual Learning** Visual Learning Bridge- *What strategies can I use when estimating?* **Guided Practice-** *-Reteach to Build - Understanding* *Volume 1: 4-3* *Youtube:* *https://youtu.be/1hiEoneDaOo* *https://youtu.be/mBWr8c0Lsx4* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System- page G65* On Level: *Build Mathematical Literacy* Advanced: *Enrichment*		

			Technology: Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 4-2 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Convince Me! -Reason Quantitatively- Students explain the steps involved in finding an estimate to show that the estimate to the provided equation is reasonable.		

			Closure Quick Check 4-3/Exit Slip		
Arrays and Partial Products	1 Day	Use arrays, place value, partial products, and properties of operations to multiply two 2-digit numbers.	**Do Now**-Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math) **Problem Based Learning:** **Solve and share-** (whole group) *Students use grid paper or an array to represent a problem that involves multiplying two 2-digit numbers. (Students may use teaching tool 10 or grid paper.)* **Visual Learning** Visual Learning Bridge-*How can you multiply using an array?* *YouTube:https://youtu.be/WYJsQo7ZTC4* *(see previous lessons)* **Guided Practice-**	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 4-4	4.NBT.B.5, 4.OA.A.3, MP.4, MP.7, 4-ESS3-1, 4-PS3-2

			-Reteach to Build - Understanding *Volume 1: 4-4* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System- page G66* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 4-4 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice		

			Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Students will use grid paper and crayons to create arrays demonstrating multiplication of a 2-digit number by a 2-digit number. Partial products will be shaded in various colors to show smaller quantities. <u>Convince Me!</u> -Model with Math- Students write a symbolic representation to match the given array to show breaking apart a 2-digit by 2-digit multiplication problem into simpler calculations. **Closure** Quick Check 4-4/Exit Slip		

Area Models and Partial Products	1 Day	Use the Distributive Property and an area model to multiply two 2-digit numbers.	**Do Now**-Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math) **Problem Based Learning:** **Solve and share-** (whole group) *Students connect to their previous understanding of finding the area of a rectangle divided into four smaller sections and computing the partial products to find the area of the large rectangle.* **Visual Learning** Visual Learning Bridge- *How can you use the distributive property to multiply?* *YouTube: https://youtu.be/-QywlAFv0pY* **Guided Practice-**	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 4-5	4.NBT.B.5, MP.4, MP.7

			-*Reteach to Build - Understanding Volume 1: 4-5* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System- page G66/G70* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 4-5 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice		

			Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Students will use grid paper and crayons to create arrays demonstrating multiplication of a 2-digit number by a 2-digit number. Partial products will be shaded in various colors to show smaller quantities. <u>Convince Me!</u> -Use Structure- Students will explain how breaking apart numbers by place value will create four simpler equations involving multiples of 10.		
Use Partial Products to Multiply by 2-Digit Numbers.	1 Day	Use place value and partial products to calculate products of 2-digit by 2-digit	**Do Now**-Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math)	Guided Practice Independent Practice Problem solving Practice Buddy	4.NBT.B.5, 4.OA.A.3, MP.2, MP.3, MP.7

		multiplication problems.	**Problem Based Learning:** **Solve and share-** (whole group) *Students represent and solve a problem involving multiplication of 2-digit numbers. (Grid paper may be used here.)* **Visual Learning** Visual Learning Bridge- *How can you record Multiplication?* **Guided Practice-** *-Reteach to Build - Understanding Volume 1: 4-6* *YouTube:* *https://youtu.be/LReZ0xRXeWA* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System- page G66*	Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 4-6	

			On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 4-6 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** *Convince Me!* -Reason Quantitatively- Estimation is an important tool in determining whether a		

			final result is correct or not. Estimation helps to assess reasonableness. **Closure** Quick Check 4-6/Exit Slip		
Problem Solving: Make Sense and Persevere	1 Day	Make sense of problems and persevere in solving them.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math) **Problem Based Learning** (guided practice to independent)**:** **Solve and share-** *Students extend their understanding of how to make sense and persevere in solving multi-step problems that involve multi-digit multiplication.* **Visual Learning** Visual Learning Bridge-How can you make sense of problems and	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 4-7	4.NBT.B.5, 4.MD.A.3, MP.1, MP.2, MP.4, MP.6

			persevere in solving them? **Guided Practice-** *-Reteach to Build - Understanding* *Volume 1: 4-7* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System- page G66* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 4-7 **Additional Activities:** Math Games (PearsonRealize.com)		

			Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Convince Me! -Make sense and persevere- Students will understand that there is more than one way to solve most problems. **Closure** Quick Check 4-7/Exit Slip		
MATH.K-12.1 Make sense of problems and persevere in solving them MATH.K-12.2 Reason abstractly and quantitatively					

MATH.K-12.3 Construct viable arguments and critique the reasoning of others

MATH.4.OA.A.3 Solve multi-step word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

MATH.K-12.4 Model with mathematics

MATH.K-12.5 Use appropriate tools strategically

MATH.K-12.6 Attend to precision

MATH.K-12.7 Look for and make use of structure

MATH.K-12.8 Look for and express regularity in repeated reasoning

MATH.4.NBT.B.5 Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

MATH.4.M.A.3 Apply the area and perimeter formulas for rectangles in real world and mathematical problems.

Suggested Modifications for Special Education, English Language Learners and Gifted Students:
*Consistent with individual plans, when appropriate.

Gifted Students

- Use a Venn diagram to compare/contrast the Partial-Products Algorithm and Standard Algorithm multiplication.
- Write a "How To" sheet for the Partial-Products Algorithm and the Standard Algorithm, which can be photo-copied for the kids in your class to use for reference.
- Have students create a menu for their own restaurant and include reasonable prices for each item. Then, students can use multiplication to figure out how much revenue you will make over the course of a week if 40 people eat at your restaurant each day for 7 days.

Special Education Students

- Fluency review Activity
- Vocabulary Review
- Create a multiplication reference page for notebooks/journals that describes and demonstrates the steps for multipling the Partial-products algorithm and Standard algorithm to assist students in completing each process.
- Model the process for standard algorithm multiplication by playing math hopscotch. The teacher will create 2-digt by 2-digit multiplication problems on the classroom floor. Students will start in the appropriate bx and jump out the steps: ones by your ones, ones by your tens, etc.

English Language Learners

- Topic Vocabulary
- Visual Learning Bridge: Reading
- Solve & Share: Speaking

Suggested Technological Innovations/ Use:

- IXL
- ST Math
- Kahoot!
- Tools (EnVision 2020)

- Game Center (EnVision 2020)
- Create/Complete a Discovery Education Board

Cross Curricular/ 21st Century Connections:

- Pick a Project Activity
- Envision STEM Project
- EnVision STEM Activity
- Problem Solving Reading Activity

Unit 5: Use Strategies and Properties to Divide by 1-Digit Numbers

Summary of the Unit:

Topic 5 focuses on developing understanding of finding whole-number quotients and remainders with up to four-digit dividends and 1-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division.

Enduring Understanding:

- Basic facts and place-value patterns can be used to divide multiples of 10 and 100 by 1-digit numbers.
- There is more than one way to estimate a quotient.
- Substituting compatible numbers is an efficient technique for estimating quotients.
- Using place-value patterns and compatible numbers are efficient techniques for estimating quotients.
- When dividing, the remainder must be less than the quotient.
- When solving a real-world problem, the kind of question asked determines how to interpret the remainder.
- Division with partial quotients involves breaking apart the dividend, dividing the parts, and adding the partial quotients.
- Sharing is one way to think about division.

- You can use estimation and place value to divide.
- There are many ways to perform division, including mental math, models, partial quotients, and sharing.
- Good math thinkers choose and apply math they know to show and solve problems in everyday life.

Essential Questions:

- How can mental math be used to divide?
- How can quotients be estimated?
- How can the steps for dividing be explained?

Summative Assessment and/ or Summative Criteria to demonstrate mastery of the Unit.

- **Topic Test**
- **Performance Task**

Resources:

Pearson SuccessNet math series
https://www.pearsonrealize.com/community/home
ST Math is a visual instructional program that builds a deep conceptual understanding of math through rigorous learning and creative problem solving to engage, motivate and challenge PreK-8 students toward higher achievement.
https://www.stmath.com/
IXL online learning, offering unlimited algorithmically generated questions, real-time analytical reports, and dynamic scoring to encourage mastery.
https://www.ixl.com/
Discovery Education
https://google.discoveryeducation.com/
National Council of Teachers of Mathematics - This website contains activities and lessons, and virtual manipulatives organized by strand.
http://illuminations.nctm.org

The National Library of Virtual Manipulatives has tutorials and virtual manipulatives for the classroom.
http://nlvm.usu.edu/en/nav/index.html
The Teaching Channel has two hundred math videos for professional development.
http://www.theteachingchannel.org
K-5 Math Teaching Resources site contains free math teaching resources, games, activities and journal tasks.
http://www.k-5mathteachingresources.com
Open Middle- This website contains 36 math reasoning scenarios arranged by CCSS.
http://www.openmiddle.com/
K-5 Math Teaching Resources contains activities and resources for centers arranged by grade level and standard
https://www.k-5mathteachingresources.com/
Which One Doesn't Belong- This is a website dedicated to providing thought-provoking puzzles for math teachers and students alike. There are no answers provided as there are many different, correct ways of choosing which one doesn't belong.
http://wodb.ca/
Estimation 180- This website contains hundreds of estimation challenges relative to real-world scenarios to assist in building strong connections with number sense and the real world.
http://www.estimation180.com/
Math 180 activities and assessments

Topic/ Selection	Suggested Timeline per topic	General Objectives	Instructional Activities	Suggested Benchmarks/ Assessments	Common Core or NJCCCS Standards
Mental Math: Find Quotients	1 Day	Use mental math and place-value strategies to divide multiples of 10 and 100 by 1-digit divisors.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it).(Xtra Math)	Guided Practice Independent Practice Problem solving Practice Buddy Reteach	4.NBT.B.6, MP.2, MP.4, MP.7

			Problem Based Learning (whole group) **Solve and share-** *Students use previous experience with mental math and basic facts to solve a problem that involves dividing a 3-digit number by a 1-digit number* **Visual Learning** Visual Learning Bridge- *How can you divide mentally?* *YouTube: https://youtu.be/dejocl4sYfw* **Guided Practice-** *-Reteach to Build - Understanding* *Volume 1: 5-1* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention:	Build Mathematical Literacy Enrichment Additional Practice Quick Check 5-1	

			MDIS Diagnosis and Intervention System-page G41 On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one:5-1 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Convince Me! -Use Structure- Students explain how each		

			quotient and divisor can be used to find the missing dividend. Since the dividend is missing in each equation, a basic multiplication fact and place value patterns are used to find the missing dividend. **Closure** Quick Check 5-1/Exit Slip		
Mental Math: Estimate Quotients	1 Day	Use compatible numbers to estimate quotients.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it). (Xtra Math) **Problem Based Learning** (whole group) **Solve and share-** *Students connect to their previous understanding of compatible numbers, multiplication, and division to estimate a quotient.* **Visual Learning** Visual Learning Bridge- *How can you estimate quotients to solve problems?*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 5-2	4.OA.A.3, 4.NBT.B.5, 4.NBT.B.6, MP.2, MP.3

			YouTube- *https://youtu.be/YLQBYDvVhIo* **Guided Practice-** *-Reteach to Build - Understanding* *Volume 1: 5-2* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page: G43* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one:5-2		

			Additional Activities: Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Convince Me! -Construct Arguments- Students explain why rounding is not an effective estimation technique for this division problem **Closure** Quick Check 5-2/Exit Slip		
Mental Math: Estimate Quotients for Greater Dividends	1 Day	Use place-value patterns and division facts to estimate quotients for 4-digit dividends.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it). (Xtra Math) **Problem Based Learning** (whole group) **Solve and share-**	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment	4.OA.A.3, 4.NBT.B.5, 4.NBT.B.6, MP.2, MP.3, MP.4

			Students connect to previous understanding of compatible numbers and use them to estimate the quotient. **Visual Learning** Visual Learning Bridge- *How can you estimate quotients using patterns and place value?* *You Tube-* *https://youtu.be/_LxM0pIPzzw* **Guided Practice-** *-Reteach to Build - Understanding* *Volume 1: 5-3* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page G43*	Additional Practice Quick Check 5-3	

			On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 5-3 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** EnVision STEM Activity 5-3 Convince Me! -Construct Arguments- Students explain that there are multiple ways to estimate		

			a quotient and explain which method is most reasonable. **Closure** Quick Check 5-3/Exit Slip		
Interpret Remainders	1 Day	Solve division problems and interpret remainders.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it). (Xtra Math) **Problem Based Learning** (whole group) **Solve and share-** *Students connect their understanding of finding quotients to find and interpret a remainder in order to solve a division problem.* **Visual Learning** Visual Learning Bridge-After dividing, what do you do with the remainder? YouTube- https://youtu.be/QHOai8voptA	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 5-4	4.OA.A.3, 4.NBT.B.6, MP.3, MP.4

			https://youtu.be/ciMPKBmc4m8 **Guided Practice-** *-Reteach to Build - Understanding* *Volume 1: 5-4* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page G51* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 5-4 **Additional Activities:**		

			Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Convince Me! -Critique Reasoning- Students analyze the relationship between the remainder and the divisor to find an error in the calculation. Students will recognize that the remainder should always be less than the divisor. **Closure** Quick Check 5-4/Exit Slip		
Use Partial Quotients to Divide	1 Day	Use partial quotients to divide.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it). (Xtra Math)	Guided Practice Independent Practice Problem solving Practice Buddy Reteach	4.NBT.B.6, MP.2, MP.4, MP.7

			Problem Based Learning (whole group) **Solve and share-** *Students connect to their understanding of division as repeated subtraction in order to solve a real-world division problem.* **Visual Learning** Visual Learning Bridge- *How can you divide mentally?* *YouTube- https://youtu.be/fb2XsYU0o8M* **Guided Practice-** *-Reteach to Build - Understanding Volume 1:5-5* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page G52*	Build Mathematical Literacy Enrichment Additional Practice Quick Check 5-5	

			On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one:5-5 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Build Mathematical Literacy Reading Mat: "Energy and Transportation" Convince Me! -Use Structure- Students learn how they can check their		

			work to division problems using the relationship between multiplication and division as inverse operations. **Closure** Quick Check 5-5/Exit Slip		
Use Partial Quotients to Divide: Greater Dividends	1 Day	Use partial quotients and place-value understandings to divide with greater dividends.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it). (Xtra Math) **Problem Based Learning** (whole group): **Solve and share-** *Students connect to their previous understanding of dividing 2-digit numbers by 1-digit numbers using partial quotients to dividing 3-digit numbers by 1-digit numbers using partial quotients.* **Visual Learning** Visual Learning Bridge- *How can you use partial quotients to divide greater dividends?*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 5-6	4.NBT.B.6, MP.2, MP.7, 4-PS3-2

			You Tube- *https://youtu.be/hbKsENpxhEA* **Guided Practice-** *-Reteach to Build - Understanding* *Volume 1: 5-6* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page G52* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 5-6 **Additional Activities:**		

			Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** **EnVision STEM Project:** Students will research various musical instruments as sources of energy. They will explain how each instrument uses energy to make a sound and how sounds are produced. Students will then explore the keys on a piano and how and why they can be separated into octaves using division EnVision STEM Activity 5-6 Convince Me! -Use Structure- Students use the relationship between multiplication and		

			division to check the quotient of their problem. **Closure** Quick Check 5-6/Exit Slip		
Use Sharing to Divide	1 Day	Use place value and models to divide 2- and 3-digit numbers by 1-digit numbers.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it)(Xtra Math) **Problem Based Learning**(whole group): **Solve and share-** *Students solve a division problem that goes beyond basic facts and explore division by place value.* **Visual Learning** Visual Learning Bridge- *How can place value help you divide?* *YouTube-* *https://youtu.be/hgNMV9Cb-JA* **Guided Practice-** *-Reteach to Build - Understanding*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 5-7	4.NBT.B.6, 4.OA.A.3, MP.4, MP.5

			Volume 1: 5-7 **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page G52* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 5-7 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and		

			ST Math **Optional Activities:** Convince Me! -Use Appropriate Tools Strategically- Students explain how sharing can be used to describe division using real-world scenarios in comparison to math computations. **Closure** Quick Check 5-7/Exit Slip		
Continue Sharing to Divide	1 Day	Continue to use place value and sharing to divide 2- and 3-digit numbers by 1-digit numbers.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it). (Xtra Math) **Problem Based Learning** (whole group)**:** **Solve and share-** *Students use calculations or drawings to solve a real-world problem involving division.* **Visual Learning** Visual Learning Bridge- *How can you record*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 5-8	4.NBT.B.6, 4.OA.A.3, MP.2, MP.4, MP.6, RI. 4.1, RI. 4.4

			division with a 1-digit divisor? *<u>YouTube-</u>* *https://youtu.be/nBa0wftKUJg* **Guided Practice-** *-Reteach to Build - Understanding* *Volume 1:5-8* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page G52* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 5-8		

			Additional Activities: Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Problem- Solving Leveled Reading Mats: Energy and Transportation Convince Me! -Reason Quantitatively- Students use reasoning to connect the numerical remainder to the context of the problem. **Closure** Quick Check 5-8/Exit Slip		
Choose a Strategy to Divide	1 Day	Choose a strategy to divide that follows a series of steps to break division into	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it). (Xtra Math)	Guided Practice Independent Practice Problem solving Practice Buddy	4.NBT.B.6, MP.2, MP.7

		simpler calculations.	**Problem Based Learning** (whole group): **Solve and share-** *Students use previous knowledge of division strategies to solve two real-world problems* **Visual Learning** Visual Learning Bridge- *How do you choose a strategy to divide?* *YouTube-* *https://youtu.be/LGqBQrUYua4* **Guided Practice-** *-Reteach to Build - Understanding Volume 1: 5-9* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page G52*	Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 5-9	

			On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one:5-9 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Convince Me! -Reason Quantitatively- Students explain which division strategy is the best method for different division situations.		

			Closure Quick Check 5-9/Exit Slip		
Problem Solving: Model with Math	1 Day	Use previously learned concepts and skills to model and solve problems.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math). **Problem Based Learning** guided practice to independent): **Solve and share-** *Students use the Thinking Habits" (textbook page 205) to help them model with math in order to solve a real-world problem.* **Visual Learning** Visual Learning Bridge- *How do you choose a strategy to divide?* **Guided Practice-** *-Reteach to Build - Understanding* *Volume 1: 5-10* **Differentiated Instruction/Centers:** **Teacher Lead:**	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 5-10	4.OA.A.3, 4.NBT.B.6, MP.4, MP.1, MP.2

			Intervention: *MDIS Diagnosis and Intervention System-page G64* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one:5-10 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** <u>Convince Me!</u> -Reason Quantitatively- Students		

			reason about how the quantities given in the problem are related. **Closure** Quick Check 5-10/Exit Slip		

MATH.K-12.1 Make sense of problems and persevere in solving them

MATH.K-12.2 Reason abstractly and quantitatively

MATH.K-12.3 Construct viable arguments and critique the reasoning of others

MATH.4.OA.A.3 Solve multi-step word problems posed with whole numbers and having whole number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

MATH.K-12.4 Model with mathematics

MATH.K-12.5 Use appropriate tools strategically

MATH.K-12.6 Attend to precision

MATH.K-12.7 Look for and make use of structure

MATH.K-12.8 Look for and express regularity in repeated reasoning

MATH.4.NBT.B.5 Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

MATH.4.NBT.B.6 Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area model.

Suggested Modifications for Special Education, English Language Learners and Gifted Students:

Gifted Students

- Students will find the missing numbers to division equations by using inverse operations to help them fill in the blanks.
- Create a comic strip that explains the steps of using long division or using partial quotients to divide. It must be at least 6 frames long.

Special Education Students

- Fluency review Activity
- Vocabulary Review
- Create a silly acronym or phrase for remembering the steps to long division in order. Have students turn their phrase into a poster or journal page for their notebooks.
- Model the process of dividing 49 by 3 using place value blocks. Students should place 4 tens rods and 9 unit cubes in their workspace and draw three circle for the groups. Using prompting and questioning, guide students to break the 49 into 4 groups. Using the manipulatives to help visualize and model explain and discuss the answer.

English Language Learners

- Topic Vocabulary
- Visual Learning Bridge: Reading
- Solve & Share: Speaking

Suggested Technological Innovations/ Use:

- IXL
- ST Math

- Kahoot!
- Tools (EnVision 2020)
- Game Center (EnVision 2020)
- Create/Complete a Discovery Education Board

Cross Curricular/ 21st Century Connections:

- Pick a Project Activity
- Envision STEM Project
- EnVision STEM Activity
- Problem Solving Reading Activity
- 3 ACT MATH Activity: Snack Attack

Unit 6: Use Operations with Whole Numbers to Solve Problems

Summary of the Unit:

Topic 6 focuses on solving word problems using skills developed involving multi-digit whole-number addition, subtraction, multiplication, and division. As students solve word problems, they draw on previously learned meanings of the four operations, and they come to understand how multiplication can be used for comparison.

Enduring Understanding:

- Both addition and multiplication can be used to make comparisons.
- Bar diagrams and equations can be used to show both situations and to distinguish between them.
- Bar diagrams can be used to solve problems involving multiplicative comparison.
- Bar diagrams and equations can be used to model and solve multi-step problems.
- Multi-step problems can be modeled and solved in more than one way.

- Equations can represent problems, and are helpful in answering both hidden questions and the original question in a problem.
- Good math thinkers make sense of problems and think of ways to solve them, even if they get stuck.

Essential Questions:

- How is comparing with multiplication different from comparing with addition?
- How can you use equations to solve multi-step problems?

Summative Assessment and/ or Summative Criteria to demonstrate mastery of the Unit.
Topic Test
Performance Task

Resources:
Pearson SuccessNet math series
https://www.pearsonrealize.com/community/home
ST Math is a visual instructional program that builds a deep conceptual understanding of math through rigorous learning and creative problem solving to engage, motivate and challenge PreK-8 students toward higher achievement.
https://www.stmath.com/
IXL online learning, offering unlimited algorithmically generated questions, real-time analytical reports, and dynamic scoring to encourage mastery.
https://www.ixl.com/
Discovery Education
https://google.discoveryeducation.com/
National Council of Teachers of Mathematics - This website contains activities and lessons, and virtual manipulatives organized by strand.
http://illuminations.nctm.org
The National Library of Virtual Manipulatives has tutorials and virtual manipulatives for the classroom.
http://nlvm.usu.edu/en/nav/index.html

The Teaching Channel has two hundred math videos for professional development.
http://www.theteachingchannel.org
K-5 Math Teaching Resources site contains free math teaching resources, games, activities and journal tasks.
http://www.k-5mathteachingresources.com
Open Middle- This website contains 36 math reasoning scenarios arranged by CCSS.
http://www.openmiddle.com/
K-5 Math Teaching Resources contains activities and resources for centers arranged by grade level and standard
https://www.k-5mathteachingresources.com/
Which One Doesn't Belong- This is a website dedicated to providing thought-provoking puzzles for math teachers and students alike. There are no answers provided as there are many different, correct ways of choosing which one doesn't belong.
http://wodb.ca/
Estimation 180- This website contains hundreds of estimation challenges relative to real-world scenarios to assist in building strong connections with number sense and the real world.
http://www.estimation180.com/
Math 180 activities and assessments

Topic/ Selection	Suggested Timeline per topic	General Objectives	Instructional Activities	Suggested Benchmarks/ Assessments	Common Core or NJCCCS Standards
Solve Comparison Problems	1 Day	Interpret comparisons as multiplication or addition equations.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math). **Problem Based Learning** (whole group)**:** **Solve and share-** *Students use reasoning when solving a comparison problem (textbook page 225)*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 6-1	4.OA.A.2, 4.OA.A.1, 4.NBT.B.5, MP.2, MP.3, MP.4

			involving multiplication or addition. **Visual Learning** Visual Learning Bridge- *How is comparing with multiplication different from comparing with addition?* *YouTube- https://youtu.be/cwpKsmD2Q38* **Guided Practice-** *-Reteach to Build - Understanding Volume 1:6-1* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page G22* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:**		

			Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 6-1 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** <u>Convince Me!</u> -Construct Arguments- Students will describe a scenario when they might use multiplication or addition to make a comparison. Key vocabulary should include “times as many” or “more than.” **Closure**		

			Quick Check 6-1/Exit Slip		
Continue to Solve Comparison Problems	1 Day	Use multiplication and division to compare two quantities.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math). **Problem Based Learning** (whole group)**:** **Solve and share-** *Students solve a real work problem involving a multiplicative comparison (Textbook page 229).* **Visual Learning** Visual Learning Bridge- *How can you solve a problem involving multiplication as a comparison?* *YouTube- https://youtu.be/i31rRt5m1-4* **Guided Practice-** *-Reteach to Build - Understanding* *Volume 1: 6-2*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 6-2	4.OA.A.1, 4.OA.A.2, 4.NBT.B.5, 4.NBT.B.6, MP.4, MP.7

			Differentiated Instruction/Centers: **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page G22* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one:6-2 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:**		

			Convince Me! -Use Structure- Students identify and explain key characteristics of a comparison situation that requires division to solve. **Closure** Quick Check 6-2/Exit Slip		
Model Multi-Step Problems	1 Day	Model and solve multi-step problems by finding hidden questions and using bar diagrams and equations.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math). **Problem Based Learning** (whole group)**:** **Solve and share-** *Students make sense of a real-world multi-step problem and persevere in solving it (textbook page 233).* **Visual Learning** Visual Learning Bridge- *How can you use diagrams and equations to solve multi-step problems?*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 6-3	4.OA.A.3, 4.OA.A.2, 4.NBT.B.4, 4.NBT.B.5, 4.NBT.B.6, MP.1, MP.3, MP.4, RI. 4.1, RI. 4.4

			You Tube-https://youtu.be/1pLRJMT08Tg **Guided Practice-** *-Reteach to Build - Understanding Volume 1:6-3* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page J2-J4* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 6-3 **Additional Activities:** Math Games (PearsonRealize.com)		

			Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Problem- Solving Leveled Reading Mats: The Variety of Life Convince Me! -Construct Arguments- Students will relate the steps needed in the visual learning piece to agree or disagree with a provided scenario. Explanation is required. **Closure** Quick Check 6-3/Exit Slip		
More Model Multi-Step Problems	1 Day	Model and solve multi-step problems and check that answers are reasonable.	**Do Now**-Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math). **Problem Based Learning** (whole group)**:**	Guided Practice Independent Practice Problem solving Practice Buddy Reteach	4.OA.A.3, 4.OA.A.2, 4.NBT.B.4, 4.NBT.B.5, 4.NBT.B.6, MP.1, MP.4

			Solve and share- *Students use math they have learned previously to model and solve a real-world multi-step problem. (Textbook page 237).* **Visual Learning** Visual Learning Bridge- *How can you model and solve a multi-step problem?* *You tube: https://youtu.be/gbJOfZnPI00* **Guided Practice-** *-Reteach to Build - Understanding Volume 1: 6-4* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page N/A*	Build Mathematical Literacy Enrichment Additional Practice Quick Check 6-4	

			On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 6-4 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Convince Me! -Model with Math- Students use bar diagrams to model problems in order to assist them in solving.		

			Closure Quick Check 6-4/Exit Slip		
Solve Multi-Step Problems	1 Day	Solve multi-step problems by writing and solving one or more equations.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math). **Problem Based Learning** (whole group)**:** **Solve and share-** *Students use reasoning to determine relationships in a multi-step problem and use this understanding to solve. (Textbook page 241).* **Visual Learning** Visual Learning Bridge- *How can you use equations to solve multi-step problems?* **Guided Practice-** *-Reteach to Build - Understanding* *Volume 1: 6-5* **Differentiated Instruction/Centers:**	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 6-5	4.OA.A.3, 4.OA.A.2, 4.NBT.B.4, 4.NBT.B.5, 4.NBT.B.6, MP.2, MP.3, MP.4, 4-PS3-2, 4-ESS3-1

			Teacher Lead: Intervention: *MDIS Diagnosis and Intervention System-page N/A* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 6-5 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:**		

			Envision STEM 6-5: " A Breath of Fresh Air!" Convince Me! -Construct Arguments – Students explain why the answer of 11 rows is reasonable using estimations and comparisons. **Closure** Quick Check 6-5/Exit Slip		
Problem Solving: Make Sense and Persevere	1 Day	Make sense of a multi-step problem and keep working until it is solved.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math). **Problem Based Learning** (guided practice to independent)**:** **Solve and share-** *Students use reasoning to determine relationships in a multi-step problem and use this understanding to solve. (Textbook page 241).* **Visual Learning** Visual Learning Bridge- *How can you use equations to solve multi-step problems?*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 6-6	4.OA.A.2, 4.OA.A.3, 4.NBT.B.5, 4.NBT.B.6 MP.1, MP.5, MP.6, 4-PS3-2, 4-ESS3-1

			<u>You Tube-</u> **Guided Practice-** *-Reteach to Build - Understanding* *Volume 1: 6-6* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page J3* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 6-6 **Additional Activities:**		

			Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** **Project Based Learning-EnVision STEM Project:** Students will research 3 examples of renewable energy. They will explain the sources they found. Additionally, students will describe the makeup of a solar panel. This will include the number of cells, the number of cells on numerous panels together and the difference between various groups of panels using multiplication and addition. Convince Me! -Construct Arguments – Students explain why the answer of 11 rows is reasonable		

			using estimations and comparisons. **Closure** Quick Check 6-6/Exit Slip		

MATH.K-12.1 Make sense of problems and persevere in solving them

MATH.4.OA.A.1 Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.

MATH.K-12.2 Reason abstractly and quantitatively

MATH.4.OA.A.2 Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.

MATH.K-12.3 Construct viable arguments and critique the reasoning of others

MATH.4.OA.A.3 Solve multi-step word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

MATH.K-12.4 Model with mathematics

MATH.K-12.5 Use appropriate tools strategically

MATH.K-12.6 Attend to precision

MATH.K-12.7 Look for and make use of structure

MATH.K-12.8 Look for and express regularity in repeated reasoning

MATH.4.NBT.B.4 With accuracy and efficiency, add and subtract multi-digit whole numbers using the standard algorithm.

MATH.4.NBT.B.5 Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

MATH.4.NBT.B.6 Find whole-number quotients and remainders with up to four-digit dividends and one digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area model.

Suggested Modifications for Special Education, English Language Learners and Gifted Students:

Gifted Students

- Students will write equations with variables to represent multi-step problems as well as bar diagrams with multi-step problems.
- Student will create their own multi-step problems. They can use bar diagrams to help them model, and equations with variables to check their own understanding. Once completed, they can switch problems with a friend and try to solve.

Special Education Students

- Fluency review Activity
- Vocabulary Review
- Create a "Notice/Wonder" T- Chart to help identify hidden questions and patterns in multi-step scenarios. Remind students that there are no right or wrong answers when using this strategy as you are using it to be a detective to find important information before you solve.
- Write out equations to help identify which part of the multi-step problem is missing (i.e. $n + 4 = 9$)

English Language Learners

- Topic Vocabulary
- Visual Learning Bridge: Reading
- Solve & Share: Speaking

Suggested Technological Innovations/ Use:

- IXL
- ST Math
- Kahoot!
- Tools (EnVision 2020)
- Game Center (EnVision 2020)
- Create/Complete a Discovery Education Board

Cross Curricular/ 21st Century Connections:

- Pick a Project Activity
- Envision STEM Project
- EnVision STEM Activity
- Problem Solving Reading Activity

Unit 7: Factors and Multiples

Summary of the Unit:

Topic 7 focuses on understanding the meaning of factors and multiples by building on students' understanding of multiplication. The concepts of prime and composite numbers are developed through an understanding of factors.

Enduring Understanding:

- Factors of a number can be shown by arranging counters into rows with the same number of counters in each row. The number of rows and number of counters in each row are factors of that number.
- Factors of a number can be found in pairs by thinking about multiplication.
- Good math thinkers look for things that repeat, and make generalizations.
- Prime numbers have exactly 2 factors, and composite numbers have more than 2 factors.
- The products of any nonzero whole number, and a given nonzero whole number are a multiple of both.
- Factors and multiples are closely related.

Essential Questions:

- How can you use arrays or multiplication to find the factors of a number?
- How can you identify prime and composite numbers?
- How can you find multiples of a number?

Summative Assessment and/ or Summative Criteria to demonstrate mastery of the Unit.
Topic Test
Performance Task

Resources:
Pearson SuccessNet math series
https://www.pearsonrealize.com/community/home
ST Math is a visual instructional program that builds a deep conceptual understanding of math through rigorous learning and creative problem solving to engage, motivate and challenge PreK-8 students toward higher achievement.
https://www.stmath.com/

IXL online learning, offering unlimited algorithmically generated questions, real-time analytical reports, and dynamic scoring to encourage mastery.
https://www.ixl.com/
Discovery Education
https://google.discoveryeducation.com/
National Council of Teachers of Mathematics - This website contains activities and lessons, and virtual manipulatives organized by strand.
http://illuminations.nctm.org
The National Library of Virtual Manipulatives has tutorials and virtual manipulatives for the classroom.
http://nlvm.usu.edu/en/nav/index.html
The Teaching Channel has two hundred math videos for professional development.
http://www.theteachingchannel.org
K-5 Math Teaching Resources site contains free math teaching resources, games, activities and journal tasks.
http://www.k-5mathteachingresources.com
Open Middle- This website contains 36 math reasoning scenarios arranged by CCSS.
http://www.openmiddle.com/
K-5 Math Teaching Resources contains activities and resources for centers arranged by grade level and standard
https://www.k-5mathteachingresources.com/
Which One Doesn't Belong- This is a website dedicated to providing thought-provoking puzzles for math teachers and students alike. There are no answers provided as there are many different, correct ways of choosing which one doesn't belong.
http://wodb.ca/
Estimation 180- This website contains hundreds of estimation challenges relative to real-world scenarios to assist in building strong connections with number sense and the real world.
http://www.estimation180.com/
Math 180 activities and assessments

Topic/ Selection	Suggested Timeline per topic	General Objectives	Instructional Activities	Suggested Benchmarks/ Assessments	Common Core or NJCCCS Standards

Understand Factors	1 Day	Use arrays to find the factors of a given whole number.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math). **Problem Based Learning** (whole group)**:** **Solve and share-** *Students use understanding of multiplication to find all the arrays possible for 24 carpet squares. Grid paper can be provided as a tool to visually model arrays. (Textbook page 261).* **Visual Learning** Visual Learning Bridge- *How can you use arrays to find the factors pairs of a number?* *<u>You Tube-</u>* **Guided Practice-**	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 7-1	4.OA.B.4, 4.NBT.B.5, MP.2, MP.3, MP.7, NGSS 4-LS1-1

			-*Reteach to Build - Understanding Volume 1: 7-1* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System- page G57* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one:7-1 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice		

			Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** EnVision STEM Activity 7-1 Convince Me! -Critique Reasoning – Students evaluate a statement made about factors and begin to explore properties of factors. **Closure** Quick Check 7-1/Exit Slip		

Factors	1 Day	Use Multiplication to find all the factor pairs for a whole number.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it)(Xtra Math). **Problem Based Learning** (whole group): **Solve and share-** *Students use arrays or multiplication facts to find the factor pairs for a given whole number. Grid paper can be provided as a tool to visually model arrays. (Textbook page 265).* **Visual Learning** Visual Learning Bridge- *How can you use multiplication to find the factors of a number?* *YouTube-* **Guided Practice-** *-Reteach to Build - Understanding Volume 1: 7-2* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System- page G57*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 7-2	4.OA.B.4, 4.NBT.B.5, MP.1, MP.3, MP.4, RI. 4.1, RI. 4.4

Problem Solving: Repeated Reasoning	1 Day	Use Repeated reasoning to generalize how to solve problems that are similar.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math). **Problem Based Learning** (whole group): **Solve and share-** *Students extend their understanding of how to find the factors of a number by building arrays. (Textbook page 269.)* **Visual Learning** Visual Learning Bridge- *How can you use repeated reasoning to find all the factors for a number?* *YouTube-* **Guided Practice-** *-Reteach to Build - Understanding Volume 1: 7-3*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 7-3	4.OA.B.4, 4.NBT.B.5, MP.8, MP.1, MP.2, MP.3, MP.6, NGSS 4-LS1-1

			Differentiated Instruction/Centers: **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System- page G57* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 7-3 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math		

			Optional Activities: EnVision STEM Activity 7-3. Convince Me! - Construct Arguments – Students analyze a diagram of factors pairs and use it to justify the conclusion that when factors pairs begin to repeat, all factors pairs have been determined. **Closure** Quick Check 7-3/Exit Slip		
Prime and Composite Numbers	1 Day	Use factors to determine whether a whole number greater than 1 is prime or composite.	**Do Now**-Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math). **Problem Based Learning** (whole group): **Solve and share-** *Students find all of the rectangular arrays that can be made using sets of tiles(Textbook page 273).*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 7-4	4.OA.B.4, 4.NBT.B.5, MP.2, MP.3, MP.8

			Visual Learning Visual Learning Bridge- *How can you identify prime and composite numbers?* *YouTube-* **Guided Practice-** *-Reteach to Build - Understanding Volume 1: 7-4* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System- page G57* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com		

			Independent: Independent Practice Volume one: 7-4 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Convince Me! - Generalize – Students use the definitions of prime and composite numbers to generalize that all whole numbers greater than 1 are classified as either prime or composite. **Closure** Quick Check 7-4/Exit Slip		

Multiples	1 Day	Use multiplication to find multiples of a given whole number.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math) **Problem Based Learning** (guided to independent): **Solve and share-** *Students connect to their previous understanding of factors to find multiples of a number. (Textbook page 277).* **Visual Learning** Visual Learning Bridge- *How can you find multiples of a number?* *YouTube-* **Guided Practice-** *-Reteach to Build - Understanding Volume 1:7-5* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention:	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 7-5	4.OA.B.4, 4.NBT.B.5, MP.2, MP.3

			MDIS Diagnosis and Intervention System- page G63 On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 7-5 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Convince Me! - Reasoning – Students connect to previous		

			knowledge of multiplication facts in order to determine the set number of multiples needed to solve the problem **Closure** Quick Check 7-5/Exit Slip		

MATH.K-12.1 Make sense of problems and persevere in solving them

MATH.K-12.2 Reason abstractly and quantitatively

MATH.K-12.3 Construct viable arguments and critique the reasoning of others

MATH.K-12.4 Model with mathematics

MATH.4.OA.B.4 Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.

MATH.K-12.5 Use appropriate tools strategically

MATH.K-12.6 Attend to precision

MATH.K-12.7 Look for and make use of structure

MATH.K-12.8 Look for and express regularity in repeated reasoning

MATH.4.NBT.B.5 Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

Suggested Modifications for Special Education, English Language Learners and Gifted Students:

Gifted Students

- Use a Venn diagram to compare/contrast factors and multiples.
- Students will have a factor race to find the factors of whole numbers. One player will begin by flipping a number card in the center. All students will list as many factors as they can of the number identified on the card as fast as they can. The first one the list all factors correctly earns a point. (2 or more players) Factor cards: http://yourmathwizard.weebly.com/uploads/1/3/0/7/13077390/factorracemathgame.pdf
- Using the same set of cards, students can explore what the greatest common factor is between two whole numbers. Students will have a factor race to find the greatest common factors between two numbers. One player will begin by flipping two number cards. All players will list as many factors as they can for each number. The first player to correctly identify the greatest common factor wins the round and earns a point. (Challenge: Students can flip three, four or even five number cards to search for the GCF.)

Special Education Students

- Fluency review Activity
- Vocabulary Review
- Model arrays using grid paper or counters when demonstrating factors pairs of whole numbers.
- Student can be provided with a multiplication reference sheet in their math notebooks to reference for factors and multiples. References should include the differences between “factors” and “multiple” as well as basic fact information.

English Language Learners

- Topic Vocabulary
- Visual Learning Bridge: Reading
- Solve & Share: Speaking

Suggested Technological Innovations/ Use:

- IXL
- ST Math

- Kahoot!
- Tools (EnVision 2020)
- Game Center (EnVision 2020)
- Create/Complete a Discovery Education Board

Cross Curricular/ 21st Century Connections:

- Pick a Project Activity
- Envision STEM Project
- EnVision STEM Activity
- Problem Solving Reading Activity
- 3 ACT MATH Activity: Can- Do Attitude

Unit 8: Use Extend Understanding of Fraction Equivalence and Ordering

Summary of the Unit:

Topic 8 focuses on recognizing and generating equivalent fractions and on comparing fractions with different numerators and different denominators.

Enduring Understanding:

- Two fractions that represent the same part of the same whole are equivalent.
- Two equivalent fractions are different names for the same number.
- The same fractional amount can be represented by an infinite set of different but equivalent fractions.
- When the numerator and the denominator of a fraction are multiplied by the same whole number greater than 1, it is the same as multiplying the fraction by 1, as multiplying by 1 does not change the value of a number.

- When the numerator and denominator of a fraction are divided by a common factor greater than 1, the result is an equivalent fraction.
- One way to compare two fractions that are parts of the same whole is by comparing each to a benchmark fraction such as ½.
- When two fractions have the same denominator, the fraction with the greater numerator is greater.
- When two fractions have the same numerator, the fraction with the lesser denominator is greater.
- Good math thinkers use math to explain why they are right, and also discuss the math that others do, too.

Essential Questions:

- What are some ways to name the same part of a whole?
- How can you compare fractions with unlike numerators and denominators?

Summative Assessment and/ or Summative Criteria to demonstrate mastery of the Unit.
Topic Test
Performance Task

Resources:
Pearson SuccessNet math series
https://www.pearsonrealize.com/community/home
ST Math is a visual instructional program that builds a deep conceptual understanding of math through rigorous learning and creative problem solving to engage, motivate and challenge PreK-8 students toward higher achievement.
https://www.stmath.com/
IXL online learning, offering unlimited algorithmically generated questions, real-time analytical reports, and dynamic scoring to encourage mastery.
https://www.ixl.com/
Discovery Education
https://google.discoveryeducation.com/
National Council of Teachers of Mathematics - This website contains activities and lessons, and virtual manipulatives organized by strand.

http://illuminations.nctm.org
The National Library of Virtual Manipulatives has tutorials and virtual manipulatives for the classroom.
http://nlvm.usu.edu/en/nav/index.html
The Teaching Channel has two hundred math videos for professional development.
http://www.theteachingchannel.org
K-5 Math Teaching Resources site contains free math teaching resources, games, activities and journal tasks.
http://www.k-5mathteachingresources.com
Open Middle- This website contains 36 math reasoning scenarios arranged by CCSS.
http://www.openmiddle.com/
K-5 Math Teaching Resources contains activities and resources for centers arranged by grade level and standard
https://www.k-5mathteachingresources.com/
Which One Doesn't Belong- This is a website dedicated to providing thought-provoking puzzles for math teachers and students alike. There are no answers provided as there are many different, correct ways of choosing which one doesn't belong.
http://wodb.ca/
Estimation 180- This website contains hundreds of estimation challenges relative to real-world scenarios to assist in building strong connections with number sense and the real world.
http://www.estimation180.com/
Math 180 activities and assessments

Topic/ Selection	Suggested Timeline per topic	General Objectives	Instructional Activities	Suggested Benchmarks/ Assessments	Common Core or NJCCCS Standards
Equivalent Fractions: Area Models	1 Day	Use area models to recognize and generate equivalent fractions.	**Do Now**-Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math). **Problem Based Learning (whole group):**	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 8-1	4.NF.A.1, MP.1, MP.2, MP.5

			Solve and share- *Students find an equivalent fraction for ¼ using a method of their choosing. They might draw a picture or model using fraction tiles. (Textbook page 293).* **Visual Learning** Visual Learning Bridge- What are some ways to name the same parts of a whole? <u>YouTube-</u> **Guided Practice-** *-Reteach to Build - Understanding Volume 1: 8-1* **Differentiated Instruction/Centers: Teacher Lead:** Intervention:		

			MDIS Diagnosis and Intervention System-page H16 On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 8-1 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:**		

			Convince Me! - Reason Abstractly- Students reason that ¼ and 2/8 may or may not be equivalent, depending on the size of the whole **Closure** Quick Check 8-1/Exit Slip		
Equivalent Fractions: Number Lines	1 Day	Use a number line to locate and identify equivalent fractions.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math) . **Problem Based Learning (whole group):** **Solve and share-** *Students connect to their previous understanding of finding equivalent fractions to find equivalent fractions using a ruler. Number lines or teaching tool*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 8-2	4.NF.A.1, MP.1, MP.4, MP.5

			12 may be provided. (Textbook page 297). **Visual Learning** Visual Learning Bridge- How can you use a number line to explain why fractions are equivalent? <u>YouTube-</u> **Guided Practice-** *-Reteach to Build - Understanding Volume 1: 8-2* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System- page H16* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:**		

			Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one:8-2 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Convince Me! - Students make connections to reason abstractly. In this specific case, they use reasoning to explain how number lines can show equivalent fractions. **Closure**		

			Quick Check 8-2/Exit Slip		
Generate Equivalent Fractions: Multiplication	1 Day	Use multiplication to find equivalent fractions.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math). **Problem Based Learning (whole group):** **Solve and share-** *Students write equivalent fractions to 4/6. (Textbook page 301).* **Visual Learning** Visual Learning Bridge- How can you use multiplication to find equivalent fractions? YouTube- **Guided Practice-** *-Reteach to Build - Understanding Volume 1:8-3*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 8-3	4.NF.A.1, 4.NBT.B.5, MP.2, MP.3, MP.4

			Differentiated Instruction/Centers: **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page H16* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 8-3 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review		

			BOOM math cards and ST Math **Optional Activities:** <u>Convince Me!</u> - Critique Reasoning- Students get a chance to explain the relationship between using multiplication to find equivalent fractions and the Identity Property of Multiplication. **Closure** Quick Check 8-3/Exit Slip		
Generate Equivalent Fractions: Division	1 Day	Use division to find equivalent fractions.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math). **Problem Based Learning (whole group):** **Solve and share-** *Students extend their*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 8-4	4.NF.A.1, 4.OA.B.4, MP.4, MP.6, MP.7, RI. 4.1, RI. 4.4

			understanding of equivalent fractions as they find fractions equivalent to a given fraction. Fraction strips or teaching tool 13 may be provided. (Textbook page 305). **Visual Learning** Visual Learning Bridge- How can you use division to find equivalent fractions? <u>YouTube-</u> **Guided Practice-** *-Reteach to Build - Understanding Volume 1:8-4* **Differentiated Instruction/Centers: Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System- page J37*		

			On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one:8-4 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Problem- Solving Leveled Reading Mats: What a gem!		

			Convince Me! -Model with Math- Students use a number line to model the problem and show that the fractions found are equivalent. **Closure** Quick Check 8-4/Exit Slip		

Use Benchmarks to Compare Fractions	1 Day	Use benchmarks, area models, and number lines to compare fractions.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math). **Problem Based Learning (whole group):** **Solve and share-** *Students use number sense and experience with fractions such as ¼, ½, and ¾ to make an estimate. (Textbook page 309).* **Visual Learning** Visual Learning Bridge- How can you use benchmarks to compare fractions? <u>YouTube-</u> **Guided Practice-** *-Reteach to Build - Understanding Volume 1: 8-5* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System- page H11/H21*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 8-5	4.NF.A.2, MP.2, MP.3, MP.8, NGSS E-LS1-2

Compare Fractions	1 Day	Use models or rename fractions to compare.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it). **Problem Based Learning (whole group):** **Solve and share-** *Students compare fractions with unlike denominators using tools such as drawings, number lines, or fraction strips. Tools such as fraction strips or teaching tool 13 may be provided. (Textbook page 313).* **Visual Learning** Visual Learning Bridge- How can you compare fractions with unlike denominators? <u>YouTube-</u> **Guided Practice-**	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 8-6	4.NF.A.2, 4.NBT.B.5, 4.NF.A.1, MP.3, MP.5, NGSS E-LS1-2

			-*Reteach to Build - Understanding Volume 1: 8-6* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System- page H11/H21* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 8-6 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com)		

			Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** **EnVision STEM Project:** Students will research how animals use special senses. Their research will include information about where the animal lives and how the sense is used. Additionally, students will research how spiders have eight eyes. They will model a spider with eight eyes by drawing a picture and writing a fraction and equivalent fractions demonstrating a spider's eyes. EnVision STEM Activity 8-6		

			Convince Me! - Critique Reasoning- Students explain a possible reason for Kelly's thinking to help deepen their understanding of how to compare fractions with unlike denominators. It should also be discussed that when two fractions have the same numerator, the one with the lesser denominator is always greater. **Closure** Quick Check 8-6/Exit Slip		
Problem Solving: Construct Arguments	1 Day	Construct arguments about fractions.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math). **Problem Based Learning (guided to independent):** **Solve and share-** *Students construct a mathematical*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 8-7	4.NF.A.1, 4.NF.A.2, MP.3, MP.1, MP.2, MP.5

			argument to compare fractions. (Textbook page 317). **Visual Learning** Visual Learning Bridge- How can you construct arguments? <u>YouTube-</u> **Guided Practice-** *-Reteach to Build - Understanding Volume 1:8-7* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System- page J37* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:**		

			Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one:8-7 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Convince Me! - Critique Reasoning- Students find the mistake in Erin's thinking and explain why it is a mistake. Teachers might prompt students to correct this mistake. **Closure**		

			Quick Check 8-7/Exit Slip		

MATH.K-12.1 Make sense of problems and persevere in solving them

MATH.K-12.2 Reason abstractly and quantitatively

MATH.K-12.3 Construct viable arguments and critique the reasoning of others

MATH.K-12.4 Model with mathematics

MATH.K-12.5 Use appropriate tools strategically

MATH.K-12.6 Attend to precision

MATH.K-12.7 Look for and make use of structure

MATH.K-12.8 Look for and express regularity in repeated reasoning

MATH.4.NBT.B.5 Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

MATH.4.NF.A.1 Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.

MATH.4.NF.A.2 Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

Suggested Modifications for Special Education, English Language Learners and Gifted Students:

Gifted Students

- Students will complete an equivalent fraction jigsaw. They must try to put the pieces together without rotating any of them (all numbers should be right side up.) Two pieces may only be next to each other if the edges that touch have fractions that are equivalent. Find the puzzle here: https://nrich.maths.org/5467

Special Education Students

- Fluency review Activity
- Vocabulary Review
- Model equivalent fractions using fraction strips and drawings.
- Provide students with a reference sheet for math notebook that includes that steps for multiplying and dividng to find equivalent fractions. Emphasis should be placed on the rule "what you do to the top, you do to the bottom and vice versa.

English Language Learners

- Topic Vocabulary
- Visual Learning Bridge: Reading
- Solve & Share: Speaking

Suggested Technological Innovations/ Use:

- IXL
- ST Math
- Kahoot!
- Tools (EnVision 2020)
- Game Center (EnVision 2020)
- Create/Complete a Discovery Education Board

Cross Curricular/ 21st Century Connections:

- Pick a Project Activity
- Envision STEM Project
- EnVision STEM Activity
- Problem Solving Reading Activity

Unit 9: Understand Addition and Subtraction of Fractions

Summary of the Unit:

Topic 9 focuses on the understanding of adding and subtracting fractions and mixed numbers with like denominators

Enduring Understanding:

- Tools can be used to show addition of fraction as joining parts of the same whole.
- A fraction that has a numerator greater than 1, can be decomposed into the sum of two or more unit or non-unit fractions in one or more ways where the sum of the fractions is equal to the original fraction.
- Two fractions can be joined or added to find the total.
- There is a general method for adding fractions with like denominators.
- Tools can be used to show subtraction of fractions as separating a part from the same whole.
- The difference between two fractions with like denominators can be found by separating one fractional amount from the other.
- There is a general method for subtracting fractions with like denominators.
- Fraction addition and subtraction can be thought about as joining and separating segments on the number line.
- Fraction addition and subtraction can be thought about as counting forward or backwards on the number line.
- Adding and subtracting mixed numbers is an extension of the ideas and procedures for adding and subtracting fractions.

- Two procedures for adding mixed numbers both involve changing the calculation into a simpler equivalent calculation.
- Good math thinkers choose and apply math they know to show and solve problems from everyday life.

Essential Questions:

- How do you add and subtract fractions and mixed numbers with like denominators?
- How can fractions be added and subtracted on a number line?

Summative Assessment and/ or Summative Criteria to demonstrate mastery of the Unit.

- Topic Test
- Performance Task

Resources:

Pearson SuccessNet math series
https://www.pearsonrealize.com/community/home
ST Math is a visual instructional program that builds a deep conceptual understanding of math through rigorous learning and creative problem solving to engage, motivate and challenge PreK-8 students toward higher achievement.
https://www.stmath.com/
IXL online learning, offering unlimited algorithmically generated questions, real-time analytical reports, and dynamic scoring to encourage mastery.
https://www.ixl.com/
Discovery Education
https://google.discoveryeducation.com/
National Council of Teachers of Mathematics - This website contains activities and lessons, and virtual manipulatives organized by strand.
http://illuminations.nctm.org
The National Library of Virtual Manipulatives has tutorials and virtual manipulatives for the classroom.
http://nlvm.usu.edu/en/nav/index.html
The Teaching Channel has two hundred math videos for professional development.
http://www.theteachingchannel.org

K-5 Math Teaching Resources site contains free math teaching resources, games, activities and journal tasks.
http://www.k-5mathteachingresources.com
Open Middle- This website contains 36 math reasoning scenarios arranged by CCSS.
http://www.openmiddle.com/
K-5 Math Teaching Resources contains activities and resources for centers arranged by grade level and standard
https://www.k-5mathteachingresources.com/
Which One Doesn't Belong- This is a website dedicated to providing thought-provoking puzzles for math teachers and students alike. There are no answers provided as there are many different, correct ways of choosing which one doesn't belong.
http://wodb.ca/
Estimation 180- This website contains hundreds of estimation challenges relative to real-world scenarios to assist in building strong connections with number sense and the real world.
http://www.estimation180.com/
Math 180 activities and assessments

Topic/ Selection	Suggested Timeline per topic	General Objectives	Instructional Activities	Suggested Benchmarks/ Assessments	Common Core or NJCCCS Standards
Model Addition of Fractions	1 day	Use fraction strips and number lines to add fractions	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math). **Problem Based Learning (whole group):** **Solve and share-** *Students connect to their previous understanding of addition of whole numbers and the meaning of a fraction a/b as a number of unit fractions 1/b in order to*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 9-1	4.NF.B.3a, 4.NF.B.3d, MP.1, MP.5

			add fractions with like denominators. Fraction strips or teaching tool 13 may be provided (Textbook page 333). **Visual Learning** Visual Learning Bridge- How can you use tools to add fractions? <u>YouTube-</u> **Guided Practice-** *-Reteach to Build - Understanding Volume 1: 9-1* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page H38* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:**		

			Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one:9-1 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Convince Me! -Make Sense and Persevere- To solve the canoe problem, students should connect two representations for fractions, fraction strips and a number line to show the sum of two fractions can be found by adding the numerators		

			and keeping the denominators the same. **Closure** Quick Check 9-1/Exit Slip		
Decompose Fractions	1 day	Decompose a fraction or mixed number into a sum of fractions in more than one way	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it). **Problem Based Learning (whole group):** **Solve and share-** *Students connect to their previous understanding of decomposing a fraction a/b into the sum of a unit fraction 1/b in order to decompose an improper fraction into a sum of unit and non-unit fractions. Fraction strips or teaching tool 13 may be provided. (Textbook page 337).* **Visual Learning** Visual Learning Bridge- How can you represent a fraction in a variety of ways? <u>YouTube-</u>	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 9-2	4.NF.B.3b, MP.4, MP.5, NGSS 4 PS4-3

			Guided Practice- *-Reteach to Build - Understanding* *Volume 1: 9-2* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page H38* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 9-2 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice		

			Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** LEnVision STEM Activity 9-2 Convince Me! -Use appropriate tools strategically- Fraction strips provide a useful tool for decomposing fractions into sums. When the fraction is greater than one, the process is the same. **Closure** Quick Check 9-2/Exit Slip		
Add Fractions with Like Denominators	1 day	Solve problems involving joining parts of the same whole by adding fractions with like denominators	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math). **Problem Based Learning (whole group):** **Solve and share-** *Students solve a problem by adding fractions with like denominators. Fraction strips or teaching tool 13 may be*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 9-3	4.NF.B.3a, 4.NF.B.3d, MP.3, MP.4, MP.7

			provided. (Textbook page 341). **Visual Learning** Visual Learning Bridge- How can you add fractions with like denominators? <u>YouTube-</u> **Guided Practice-** *-Reteach to Build - Understanding* *Volume 1: 9-3* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page H38/H20/H41* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com		

			Independent: Independent Practice Volume one: 9-3 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Convince Me! -Critique Reasoning- Students will analyze a problem to find and explain the error. **Closure** Quick Check 3/Exit Slip		
Model Subtraction of Fractions	1 day	Use tools such as fraction strips, area models and number lines to subtract fractions	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math). **Problem Based Learning (whole group):** **Solve and share-** *Students connect their*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy	4.NF.B.3a, 4.NF.B.3d, MP.4, MP.5, MP.6

			previous understanding of subtracting whole numbers and decomposing of a fraction a/b into unit fractions 1/b, in order to subtract fractions with like denominators. Fraction strips or teaching tool 13 may be provided. (Textbook page 345). **Visual Learning** Visual Learning Bridge- How can you use tools to subtract fractions? YouTube- **Guided Practice-** *-Reteach to Build - Understanding* *Volume 1: 9-4* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page H39*	Enrichment Additional Practice Quick Check 9-4	

			On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 9-4 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Convince Me! -Use Appropriate Tools Strategically- Students model problems using fraction strips.		

			Closure Quick Check 9.4/Exit Slip		
Subtract Fractions with Like Denominators	1 day	Solve problems involving separating parts of the same whole by subtracting fractions	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math). **Problem Based Learning (whole group):** **Solve and share-** *Students solve a problem by subtracting two fractions with the same denominator. Fraction strips or teaching tool 13 may be provided. (Textbook page 349).* **Visual Learning** Visual Learning Bridge- How can you subtract fractions with like denominators? YouTube- **Guided Practice-** *-Reteach to Build - Understanding Volume 1: 9-5*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 9-5	4.NF.B.3a, 4.NF.B.3d, MP.2, MP.4, NGSS 4 PS4-3

			Differentiated Instruction/Centers: **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page H39* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 9-5 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math		

			Optional Activities: Convince Me! -Reason Quantitatively- Students use reasoning to determine another way a problem can be solved **Closure** Quick Check 9-5/Exit Slip		
Add and Subtract Fractions with Like Denominators	1 day	Count forward or backward on a number line to add or subtract	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math). **Problem Based Learning (whole group):** **Solve and share-** *Students represent and solve a problem involving addition and subtraction of fractions with like denominators. (Textbook page 353).* **Visual Learning** Visual Learning Bridge- How do you add and subtract fractions on a number line? YouTube- **Guided Practice-**	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 9-6	4.NF.B.3a, 4.NF.B.3d, MP. 4, MP. 5, RI.4.1, RI.4.4

			-*Reteach to Build - Understanding* *Volume 1 :9-6* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page H40/H41* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 9-6 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice		

			Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Problem-Solving Leveled Reading Mats: Tactics Convince Me! -Use Appropriate Tools Strategically- Students demonstrate how a number line can be used to show addition and subtraction of fractions. **Closure** Quick Check 9-6/Exit Slip		
Model Addition and Subtraction of Mixed Numbers	1 day	Use models and equivalent fractions to add and subtract mixed numbers	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math). **Problem Based Learning (whole group):** **Solve and share-** *Students use tools to add two mixed numbers with like denominators. Number lines (teaching tool 12) or fraction strips (teaching tool 13) may be*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 9-7	4.NF.B.3c, 4.NF.B.3d, MP. 2, MP. 5, NGSS 4 PS4-3

			provided. (Textbook page 357). **Visual Learning** Visual Learning Bridge- How can you add or subtract mixed numbers? YouTube **Guided Practice-** *-Reteach to Build - Understanding* *Volume 1: 9-7* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page H45/H46* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com		

			Independent: Independent Practice Volume one: 9-7 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** EnVision STEM Activity 9-7 Convince Me! -Use Appropriate Tools Strategically- Students use fraction strips or number lines to model addition and subtraction properties with mixed num **Closure** Quick Check 9-7/Exit Slip		
Add Mixed Numbers	1 day	Use equivalent fractions and properties of	**Do Now-**Start each day with Fact Fluency/Daily	Guided Practice Independent Practice	4.NF.B.3c, 4.NF.B.3d, MP. 2, MP. 8

		operations to add mixed numbers with like denominators	Review (Think About it). (Xtra Math) **Problem Based Learning (whole group):** **Solve and share-** *Students solve a problem by generalizing what they know about adding fractions or adding two mixed numbers. (Textbook page 361).* **Visual Learning** Visual Learning Bridge- How can you add mixed numbers? YouTube- **Guided Practice-** *-Reteach to Build - Understanding Volume 1:9-8* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page H45/H46*	Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 9-8	

			On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 9-8 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Convince Me! -Reason Quantitatively- After students use the Commutative and Associative Properties to rearrange the addends,		

			the computation involves adding fractions and adding whole numbers **Closure** Quick Check 9-8/Exit Slip		

Subtract Mixed Numbers	1 day	Use equivalent fractions, properties of operations, and the relationship between addition and subtraction to subtract mixed numbers with like denominators	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math). **Problem Based Learning (whole group):** **Solve and share-** *Students subtract mixed numbers with like denominators. (Textbook page 365).* **Visual Learning** Visual Learning Bridge-How can you subtract mixed numbers? YouTube- **Guided Practice-** *-Reteach to Build - Understanding Volume 1:9-9* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page H45/H46*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 9-9	4.NF.B.3c, 4.NF.B.3d, MP. 1, MP. 2, MP. 8

			On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one:9-9 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Convince Me! -Reason Quantitatively- Students recognize that when the fraction of the larger mixed number is less than the fraction of the		

			smaller mixed number or fraction (I.e. 4 ¼ - ¾) the larger fraction must be renamed. Fraction strips can be used to demonstrate this concept. . **Closure** Quick Check 9-9/Exit Slip		

Problem Solving: Model with Math	1 day	Use previously learned concepts and skills to represent and solve problems	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math). **Problem Based Learning (guided to independent): Solve and share-** *Students extend their understanding of solving problems involving addition and subtraction of whole numbers to solving problems with fractions and mixed numbers. (Textbook page 369).* **Visual Learning** Visual Learning Bridge- How can you use math to model problems? YouTube- **Guided Practice-** *-Reteach to Build - Understanding Volume 1:9-10* **Differentiated Instruction/Centers: Teacher Lead:**	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 9-10	MP.4, MP.1, MP.2, 4.NF.B.3d, 4.NF.B.3a, 4.NF.B.3c

			Intervention: *MDIS Diagnosis and Intervention System-page H40/J11* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 9-10 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Convince Me! -Model with Math- Modeling		

			with math involves translating a situation into mathematics such as an equation. Students use bar diagrams to decide which of their answers make sense. **Closure** Quick Check 9-10/Exit Slip		

MATH.K-12.1 Make sense of problems and persevere in solving them

MATH.K-12.2 Reason abstractly and quantitatively

MATH.K-12.3 Construct viable arguments and critique the reasoning of others

MATH.K-12.4 Model with mathematics

MATH.K-12.5 Use appropriate tools strategically

MATH.K-12.6 Attend to precision

MATH.K-12.7 Look for and make use of structure

MATH.K-12.8 Look for and express regularity in repeated reasoning

MATH.4.NF.B.3.a Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.

MATH.4.NF.B.3.b Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model.

MATH.4.NF.B.3.c Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.

MATH.4.NF.B.3.d Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.

Suggested Modifications for Special Education, English Language Learners and Gifted Students:

Gifted Students

- Students will research recipes on the internet or in other resources in preparation for a party. They will combine, double or triple the real-world recipes by adding fractions and mixed numbers.

Special Education Students

- Fluency review Activity
- Vocabulary Review
- Students can be provided with a four-square for adding mixed numbers and another for subtracting mixed numbers. These four squares can be laminated for reuse. Each square contains a step for completing the computation. Students are able to follow the steps accordingly while showing their work below.

English Language Learners

- Topic Vocabulary
- Visual Learning Bridge: Reading
- Solve & Share: Speaking

Suggested Technological Innovations/ Use:

- IXL
- ST Math
- Kahoot!
- Tools (EnVision 2020)
- Game Center (EnVision 2020)
- Create/Complete a Discovery Education Board

Cross Curricular/ 21st Century Connections:

- Pick a Project Activity
- Envision STEM Project
- EnVision STEM Activity
- Problem Solving Reading Activity
- 3 ACT MATH Activity: Just Add Water

Unit 10: Extend Multiplication Concepts to Fractions

Summary of the Unit:

Topic 10 focuses on the understanding of multiplying fractions by whole numbers. It also focuses on using the four operations to solve time problems.

Enduring Understanding:

- Any fraction *a/b* can be written as *a* times the unit fraction *1/b*.
- Models and equations can be used to represent problems and compute problems of whole numbers and fractions.
- The standard algorithms for adding, and subtracting, as well as various strategies for multiplying and dividing, can be used to solve time problems.

- Good math thinkers choose and apply math they know, to show and solve problems from everyday life.

Essential Questions:

- How can you describe a fraction using a unit fraction?
- How can you multiply a fraction by a whole number?

Summative Assessment and/ or Summative Criteria to demonstrate mastery of the Unit.

- Topic Test
- Performance Task

Resources:

Pearson SuccessNet math series
https://www.pearsonrealize.com/community/home
ST Math is a visual instructional program that builds a deep conceptual understanding of math through rigorous learning and creative problem solving to engage, motivate and challenge PreK-8 students toward higher achievement.
https://www.stmath.com/
IXL online learning, offering unlimited algorithmically generated questions, real-time analytical reports, and dynamic scoring to encourage mastery.
https://www.ixl.com/
Discovery Education
https://google.discoveryeducation.com/
National Council of Teachers of Mathematics - This website contains activities and lessons, and virtual manipulatives organized by strand.
http://illuminations.nctm.org
The National Library of Virtual Manipulatives has tutorials and virtual manipulatives for the classroom.
http://nlvm.usu.edu/en/nav/index.html
The Teaching Channel has two hundred math videos for professional development.
http://www.theteachingchannel.org

K-5 Math Teaching Resources site contains free math teaching resources, games, activities and journal tasks.
http://www.k-5mathteachingresources.com
Open Middle- This website contains 36 math reasoning scenarios arranged by CCSS.
http://www.openmiddle.com/
K-5 Math Teaching Resources contains activities and resources for centers arranged by grade level and standard
https://www.k-5mathteachingresources.com/
Which One Doesn't Belong- This is a website dedicated to providing thought-provoking puzzles for math teachers and students alike. There are no answers provided as there are many different, correct ways of choosing which one doesn't belong.
http://wodb.ca/
Estimation 180- This website contains hundreds of estimation challenges relative to real-world scenarios to assist in building strong connections with number sense and the real world.
http://www.estimation180.com/
Math 180 activities and assessments

Topic/ Selection	Suggested Timeline per topic	General Objectives	Instructional Activities	Suggested Benchmarks/ Assessments	Common Core or NJCCCS Standards
Fractions as Multiples of Unit Fractions	1 Day	Use a model, repeated addition, and multiplication to understand a fraction as a multiple of a unit fraction.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math). **Problem Based Learning (whole group):** **Solve and share-** *Students use reasoning to determine that a fraction can be written as both a sum of unit fractions and as a multiple of a unit fraction. Fraction strips or teaching tool 13 may be*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 10-1	4.NF.B.4a, MP.2, MP.4, RI.4.1, RI.4.4

			provided (Textbook page 385). **Visual Learning** Visual Learning Bridge-How can you describe a fraction using a unit fraction?YouTube- **Guided Practice-** *-Reteach to Build - Understanding Volume 1:10-1* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page H47* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com		

			Independent: Independent Practice Volume one: 10-1 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Problem- Solving Leveled Reading Mats: The Daily Planet Convince Me! - Reason Quantitatively- Students reason about what it means for a fraction to be a multiple of a unit fraction. **Closure** Quick Check 10-1/Exit Slip		
Multiply a Fraction by a Whole Number: Use Models	1 Day	Use models to multiply fractions by whole numbers.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math).	Guided Practice Independent Practice Problem solving	4.NF.B.4b, 4.NF.B.4a, 4.NF.B.4c, MP.4, MP.7, MP.8, NGSS 4-PS4-2

			Problem Based Learning (whole group): **Solve and share-** *Students solve a problem that involves finding multiple groups of two different fractions. Fraction strips or teaching tool 13 may be provided. (Textbook page 389).* **Visual Learning** Visual Learning Bridge- How do you multiply a fraction by a whole number? <u>YouTube-</u> **Guided Practice-** *-Reteach to Build - Understanding Volume 1:10-2* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page H47*	Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 10-2	

			On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one:10-2 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** **Project- Based Learning:** EnVision Stem Project: Together, discuss and explore the colors in the spectrum visible to the human eye. Using the internet or other		

			resources, students will research words related to the transfer of light. They will then apply these terms to real-world examples. Using their findings, students will solve math problems involving fractions and multiplication of fractions. EnVision STEM Activity 10-2 <u>Convince Me!</u> - Generalize- Students use the definition of multiplication as repeated addition to generalize about multiplying a unit fraction by a whole number. **Closure** Quick Check 10-2/Exit Slip		
Multiply a Fraction by a Whole Number: Use Symbols	1 Day	Use symbols and equations to multiply a fraction by a whole number.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math). **Problem Based Learning (whole group):** **Solve and share-** *Students solve a problem by multiplying a fraction by a*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment	4.NF.B.4b, 4.NF.B.4a, 4.NF.B.4c, MP.4, MP.6, MP.7

			whole number. (Textbook page 393). **Visual Learning** Visual Learning Bridge- How can you use symbols to multiply a fraction by a whole number? YouTube- **Guided Practice-** *-Reteach to Build - Understanding Volume 1:10-3* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page H47* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com	Additional Practice Quick Check 10-3	

			Independent: Independent Practice Volume one:10-3 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Convince Me! - Look for and Make Use of Structure- Students use the Associative Property of Multiplication to multiply a fraction by a whole number. **Closure** Quick Check 10-3/Exit Slip		
Solve Time Problems	1 Day	Use the four operations to solve problems involving time.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math).	Guided Practice Independent Practice Problem solving Practice Buddy Reteach	4.MD.A.2, 4.NF.B.3d, 4.NF.B.4c, 4.MD.A.1, MP1, MP.3, MP.5, RI. 4.1, RI. 4.4

			Problem Based Learning (whole group): **Solve and share-** *Students find the difference between two times, given in hours and in minutes. A clock face or teaching tool 21 may be provided. (Textbook page 397).* **Visual Learning** Visual Learning Bridge- How can you solve problems involving time? YouTube- **Guided Practice-** *-Reteach to Build - Understanding Volume 1:10-4* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page H47/I30/I31*	Build Mathematical Literacy Enrichment Additional Practice Quick Check 10-4	

			On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 10-4 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Problem- Solving Leveled Reading Mats: The Daily Planet Convince Me! - Construct Arguments- Students use their understanding of		

			multiplication and their prior knowledge of the number of minutes in an hour to construct a mathematical argument that explains why the number of hours in multiplies by 60 to find the number of minutes. **Closure** Quick Check 10-4/Exit Slip		
Problem Solving: Model with Math	1 Day	Use previously learned concepts and skills to represent and solve problems.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math). **Problem Based Learning (guided to independent):** **Solve and share-** *Students connect to their previous understanding of using mathematical modeling to solve a problem involving multiplication of fractions by whole numbers. (Textbook page 401).* **Visual Learning** Visual Learning Bridge-How can you represent a situation with a math model?	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 10-5	4.NF.B.4c, 4.NF.B.3d, 4.MD.A.2, MP.4, MP.2

			YouTube- **Guided Practice-** *-Reteach to Build - Understanding* *Volume 1: 10-5* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page I30/I31* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 10-5 **Additional Activities:** Math Games (PearsonRealize.com)		

			Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** EnVision STEM Activity 10-5 <u>Convince Me!</u> - Reason Quantitatively- Students use reasoning to determine another approach to the computations provided in order to recognize that the two amounts are equivalent. **Closure** Quick Check 10-5/Exit Slip		
MATH.K-12.1 Make sense of problems and persevere in solving them MATH.K-12.2 Reason abstractly and quantitatively MATH.K-12.3 Construct viable arguments and critique the reasoning of others MATH.K-12.4 Model with mathematics MATH.K-12.5 Use appropriate tools strategically					

MATH.K-12.6 Attend to precision

MATH.K-12.7 Look for and make use of structure

MATH.K-12.8 Look for and express regularity in repeated reasoning

MATH.4.NF.B.3.d Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.

MATH.4.NF.B.4.a Understand a fraction a/b as a multiple of $1/b$.

MATH.4.NF.B.4.b Understand a multiple of a/b as a multiple of $1/b$, and use this understanding to multiply a fraction by a whole number.

MATH.4.NF.B.4.c Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem.

MATH.4.M.A.1 Know relative sizes of measurement units within one system of units including km, m, cm, mm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table.

MATH.4.M.A.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale

Suggested Modifications for Special Education, English Language Learners and Gifted Students:

Gifted Students

- How would our world be different if time was no longer based on a sixty second minute? Sixty-minute hour? Etc.
- Find the area of a room to the nearest foot. Design a tile pattern to fit within the area. Describe the fraction of tiles being used (i.e. 5/6 are green, 19/30 are white**).**

Special Education Students

- Fluency review Activity

- Vocabulary Review
- Highlight to emphasize the two numbers being multiplied when multiplying a fraction by a whole number.
- Color code clock or clock templates to demonstrate elapsed time between numbers.
- Use number lines or t-charts to determine elapsed time between start and stop times.

English Language Learners

- Topic Vocabulary
- Visual Learning Bridge: Reading
- Solve & Share: Speaking

Suggested Technological Innovations/ Use:

- IXL
- ST Math
- Kahoot!
- Tools (EnVision 2020)
- Game Center (EnVision 2020)
- Create/Complete a Discovery Education Board

Cross Curricular/ 21st Century Connections:

- Pick a Project Activity
- Envision STEM Project
- EnVision STEM Activity
- Problem Solving Reading Activity

Unit 11: Represent and Interpret Data on Line Plots

Commented [1]: John,
Please check the Oncourse version for the following:

Topics 6-7 I added a few things in green and pink to be consistent with earlier work. (Stem ws pages optional activity)

Topic 9 was missing lessons, it should be complete now

Additionally, in topics 6-10 we dont have our own optional activities in. We only have ones from the series. On the flip side while working on instructional activities for these units, these lessons are becoming much "fuller" compared to earlier ones in the series. Should we put one or two in each unit like we did for earlier ones? I was just pulling center like activities from the internet or what we have previously used that worked well.

- M

Summary of the Unit:

Topic 11 focuses on how to read, make, and interpret line plots that represent measurements given in halves, fourths, and eights of a unit.

Enduring Understanding:

- A line plot organizes data on a number line and is useful for showing how data are distributed.
- A line plot organizes data on a number line and is useful for showing how data are distributed.
- Data from line plots can be used to solve problems.
- Good math thinkers use math to explain why they are right, and also discuss the math that others do, too.

Essential Questions:

- How can you solve problems using data on a line plot?
- How can you make a line plot?

Summative Assessment and/ or Summative Criteria to demonstrate mastery of the Unit.

- Topic Test
- Performance Task

Resources:

Pearson SuccessNet math series
https://www.pearsonrealize.com/community/home
ST Math is a visual instructional program that builds a deep conceptual understanding of math through rigorous learning and creative problem solving to engage, motivate and challenge PreK-8 students toward higher achievement.
https://www.stmath.com/
IXL online learning, offering unlimited algorithmically generated questions, real-time analytical reports, and dynamic scoring to encourage mastery.
https://www.ixl.com/
Discovery Education

https://google.discoveryeducation.com/
National Council of Teachers of Mathematics - This website contains activities and lessons, and virtual manipulatives organized by strand.
http://illuminations.nctm.org
The National Library of Virtual Manipulatives has tutorials and virtual manipulatives for the classroom.
http://nlvm.usu.edu/en/nav/index.html
The Teaching Channel has two hundred math videos for professional development.
http://www.theteachingchannel.org
K-5 Math Teaching Resources site contains free math teaching resources, games, activities and journal tasks.
http://www.k-5mathteachingresources.com
Open Middle- This website contains 36 math reasoning scenarios arranged by CCSS.
http://www.openmiddle.com/
K-5 Math Teaching Resources contains activities and resources for centers arranged by grade level and standard
https://www.k-5mathteachingresources.com/
Which One Doesn't Belong- This is a website dedicated to providing thought-provoking puzzles for math teachers and students alike. There are no answers provided as there are many different, correct ways of choosing which one doesn't belong.
http://wodb.ca/
Estimation 180- This website contains hundreds of estimation challenges relative to real-world scenarios to assist in building strong connections with number sense and the real world.
http://www.estimation180.com/
Math 180 activities and assessments

Topic/ Selection	Suggested Timeline per topic	General Objectives	Instructional Activities	Suggested Benchmarks/ Assessments	Common Core or NJCCCS Standards
Introduction to Data Literacy	(1-2 Days)	Define data literacy as the ability to explore, understand, and communicate with data in a meaningful way.	**Do Now:** Students will complete survey poll questions on Kahoot about a topic of their choice. At the end of each question, the class will analyze the bar	Google Sheets or Kahoot assignment • Google Sheets - Upon submissions, assess whether	4.DL.A.1 4.DL.A.2 4.DL.A.3 4.DL.A.4

			graphs showing how many voted for each option. As a whole group, discuss how easy it is to observe the results from the bar graphs. **Direct Instruction**: What is data? What is data literacy? https://youtu.be/X5boB46yUKc?si=ksPMhMexgToKWfdt Watch video and review the following key idea: **Effective data collection provides the information that's needed to answer questions, predict future outcomes, and make smarter decisions.** All businesses need and collect data. For example, Dunkin Donuts might collect data about which type of latte is the most popular among its customers. With this information, they can make smarter decisions	the students organized their results from greatest to least using the "sort column" feature. Assess whether students' digital graph accurately depicts the information in the columns. • Kahoot - Assess whether the students accurately answered questions about the automatically-generated bar graphs after each poll question	

			about how much of each flavor sweetener to purchase. Alternatively, teachers can collect and organize student test scores and determine whether to reteach a lesson or question or move on to the next skill. What are graphs and why are they useful? Graphs make data presentable and easy to understand. They help in summarizing and comparing data. There are many types of graphs, including bar graphs, pie charts, line plots, and line graphs. Discuss data collection & analysis process: (1) Choose a topic to study and create poll or survey questions about it using either Google Forms or Kahoot Creator (Questions in "poll format"). Make final		

			revisions to questions based on predictions for results or previous outcomes. (2) Once a Google form is completed by everyone, organize data digitally (Google Sheets/ Excel) (3) Create a graph (4) Analyze visual trends and subset categories. **Student Application** Students will work on creating and analyzing line plots in the future lessons. In this lesson, they will learn how to organize data in Google Sheets. Students will learn how to "sort" results from greatest to least by selecting a column and "Sort Data." If time allows, students can try to select the columns in their Google		

			Sheets document and create a graph. Extension: Students can create a Kahoot or Google form with survey questions about their own topic of choice, collect the data, then organize the data digitally and create a graph. **Closure** What did you learn today about graphs and data? How are graphs and data useful?		
Read Line Plots	1 Day	Read and interpret data using line plots.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math). **Problem Based Learning (whole group):** **Solve and share-** *Students identify the smallest and greatest value on a line plot. (Textbook page 417).* **Visual Learning**	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 11-1	4.DL.A.3 , 4.DL.A.4 , 4.DL.B.5 , 4.NF.B.3 d MP.K12.2, MP.K12.4, MP.K-12.6

			Visual Learning Bridge- How can you read data in a line plot? <u>YouTube-</u> **Guided Practice-** *-Reteach to Build - Understanding* *Volume 1: 11-1* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page I60/I69* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 11-1 **Additional Activities:**		

			Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** **EnVision STEM Project:** Discuss how earth processes change the shape of Earth. Using the internet or other sources, students will research what causes an earthquake and how the power of an earthquake is measured. They will also explore earthquake safety. In a report, students will explain how the Richter scale is used. Additionally, they will research the magnitudes of at least 6 earthquakes that have occurred in their lifetime. Students will gather their data in a		

			table consisting on the location, data and magnitude. Using data gathered, students will plot the magnitudes on a line plot. EnViSion STEM Activity 11-1 Convince Me! - Model with Math- Students model the data from the line plot using an equation that is used to find the total distance walked. **Closure** Quick Check 11-1/Exit Slip		
Make Line Plots	1 Day	Represent data using line plots and interpret data in line plots to solve problems.	**Do Now**-Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math). **Problem Based Learning (whole group):** **Solve and share-** *Students apply their knowledge of making line plots with whole-number data to data with fractional measures. Number lines (teaching tool 12) may*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 11-2	4.DL.A.1 , 4.DL.A.2 , 4.DL.B.5 , 4.NF.A.1 , 4.NF.A.2 , 4.NF.B.3 d, MP.K12.1, MP.K12.4, MP.K12.8

			be provided. (Textbook page 421). **Visual Learning** Visual Learning Bridge-How can you make line plots? <u>YouTube-</u> **Guided Practice-** *-Reteach to Build - Understanding Volume 1:11-2* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System- page G64* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com		

			Independent: Independent Practice Volume one: 11-2 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Problem-Solving Leveled Literacy Mats: Coral Reef Convince Me! - Model with Math- Students can use the line plot to find the two shortest pencil lengths, 4 1/8 in., and 4 4/8 in. Then they write and solve an equation to find the difference between these lengths. **Closure** Quick Check 11-2 Exit Slip		

Use Line Plots to Solve Problems	1 Day	Solve problems involving line plots and fractions.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math). **Problem Based Learning (whole group):** **Solve and share-** *Students are given data to make a line plot and then use the line plot to solve a subtraction problem with a fraction subtracted from a mixed number. Fraction strips (teaching tool 13) or number lines (teaching tool 12) may be provided. (Textbook page 425).* **Visual Learning** Visual Learning Bridge- How can you use line plots to solve problems involving fractions? YouTube- **Guided Practice-** *-Reteach to Build - Understanding*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 11-3	4.DL.A.3 , 4.DL.A.4 , 4.DL.B.5 , 4.NF.B.3 d, MP.K12.1, MP.K12.5

			Volume 1:11-3 **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page I60/I69* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 11-3 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and		

			ST Math **Optional Activities:** Make sense and Persevere- Students use each line plot to find the heaviest and lightest balloon, and then use those weights to find the difference between the heaviest and lightest water balloon Alma and Ben each filled. **Closure** Quick Check 11-3/Exit Slip		
Problem Solving: Critique Reasoning	1 Day	Critique the reasoning of others using an understanding of line plots.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it) (Xtra Math). **Problem Based Learning (guided to independent):** **Solve and share-** *Students use what they know about solving problems involving data in a line plot to decide whether a student's statement makes sense. (Textbook page 429).*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 11-4	4.DL.A.3 , 4.DL.A.4 , 4.DL.B.5 , 4.NF.B.3 c, 4.NF.B.3 d, MP.K12.2, MP.K12.3, MP.K12.4

			Visual Learning Visual Learning Bridge- How can you critique the reasoning of others? **<u>YouTube-</u>** **Guided Practice-** *-Reteach to Build - Understanding Volume 1:11-4* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System- page I32* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 11-4		

			Additional Activities: Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Convince Me! - Critique Reasoning- Students critique another argument about the data shown in the line plots. They can refer to the example in the visual learning bridge for assistance. **Closure** Quick Check 11-4/Exit Slip		
MATH.K-12.1 Make sense of problems and persevere in solving them MATH.K-12.2 Reason abstractly and quantitatively MATH.K-12.3 Construct viable arguments and critique the reasoning of others MATH.K-12.4 Model with mathematics					

MATH.K-12.5 Use appropriate tools strategically

MATH.K-12.6 Attend to precision

MATH.K-12.7 Look for and make use of structure

MATH.K-12.8 Look for and express regularity in repeated reasoning

MATH.4.NF.A.1 Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.

MATH.4.NF.A.2 Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

MATH.4.NF.B.3.c Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.

MATH.4.NF.B.3.d Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.

MATH.4.DL.A.1 Create data-based questions, generate ideas based on the questions, and then refine the questions.

MATH.4.DL.A.2 Develop strategies to collect various types of data and organize data digitally.

MATH.4.DL.A.3 Understand that subsets of data can be selected and analyzed for a particular purpose.

MATH.4.DL.A.4 Analyze visualizations of a single data set, share explanations and draw conclusions that the data supports.

MATH.4.DL.B.5 Make a line plot to display a data set of measurements in fractions of a unit (½, ¼, ⅛). Solve problems involving addition and subtraction of fractions by using information presented in line plots.

Suggested Modifications for Special Education, English Language Learners and Gifted Students:

Gifted Students

- Survey classmates to collect numerical data on a subject such as measurement of index finger in inches, the length of one's foot in inches or the length of one's pencil in inches. Gather data and create a table. Create a line plot. Develop questions to ask your peers about your line plot such as "what is the difference between the shortest and greatest lengths?" Students will switch line plots with a peer and answer each other's questions.

Special Education Students

- Fluency review Activity
- Vocabulary Review
- Work together to develop an anchor chart identifying and labeling the components of a line plot and their purpose (i.e. one "x" or dot represents one value). Provide students with a copy for their reference in their math notebooks.
- Create a line plot together using data gathered from students. When interpreting data, emphasize the location of the numbers on the number line in reference to where zero might be to assist students with the concepts of greater than and less than when analyzing amounts.

English Language Learners

- Topic Vocabulary
- Visual Learning Bridge: Reading
- Solve & Share: Speaking
- Work together to develop an anchor chart identifying and labeling the components of a line plot and their purpose (i.e. one "x" or dot represents one value). Provide students with a copy for their reference in their math notebooks.

Suggested Technological Innovations/ Use:

- IXL
- ST Math
- Kahoot!
- Tools (EnVision 2020)
- Game Center (EnVision 2020)
- Create/Complete a Discovery Education Board

Cross Curricular/ 21st Century Connections:

- Pick a Project Activity
- Envision STEM Project
- EnVision STEM Activity
- Problem Solving Reading Activity
- 3 ACT MATH: It's a Fine Line

Unit 12: Understand and Compare Decimals

Summary of the Unit:

Topic 12 focuses on developing an understanding of decimals and decimal notation through hundredths by connecting fractions and decimals. Students compare decimals by reasoning about their size. Students also use their understanding of equivalent fractions to add a fraction with a denominator of 10 and a fraction with a denominator of 100.

Enduring Understanding:

- A decimal is another way to represent a fraction.
- Points on a number line can represent fractions and decimals.
- A fraction and a decimal tell the distance a point is from 0 on the number line.
- Place value can be used to compare decimals.
- Fractions with denominators of 10 can be written as equivalent fractions with denominators of 100.
- Fractions with like denominators can be added.
- Fractions and decimals can be used to represent amounts of money. Pictorial models and equations can represent problems involving money.

- Good math thinkers look for relationships in math to help solve problems.

Essential Questions:

- How can you write a fraction as a decimal?
- How can you locate points on a number line?
- How do you compare decimals?

Summative Assessment and/ or Summative Criteria to demonstrate mastery of the Unit.

- Topic Test
- Performance Task

Resources:

Pearson SuccessNet math series
https://www.pearsonrealize.com/community/home
ST Math is a visual instructional program that builds a deep conceptual understanding of math through rigorous learning and creative problem solving to engage, motivate and challenge PreK-8 students toward higher achievement.
https://www.stmath.com/
IXL online learning, offering unlimited algorithmically generated questions, real-time analytical reports, and dynamic scoring to encourage mastery.
https://www.ixl.com/
Discovery Education
https://google.discoveryeducation.com/
National Council of Teachers of Mathematics - This website contains activities and lessons, and virtual manipulatives organized by strand.
http://illuminations.nctm.org
The National Library of Virtual Manipulatives has tutorials and virtual manipulatives for the classroom.
http://nlvm.usu.edu/en/nav/index.html
The Teaching Channel has two hundred math videos for professional development.
http://www.theteachingchannel.org

K-5 Math Teaching Resources site contains free math teaching resources, games, activities and journal tasks.
http://www.k-5mathteachingresources.com
Open Middle- This website contains 36 math reasoning scenarios arranged by CCSS.
http://www.openmiddle.com/
K-5 Math Teaching Resources contains activities and resources for centers arranged by grade level and standard
https://www.k-5mathteachingresources.com/
Which One Doesn't Belong- This is a website dedicated to providing thought-provoking puzzles for math teachers and students alike. There are no answers provided as there are many different, correct ways of choosing which one doesn't belong.
http://wodb.ca/
Estimation 180- This website contains hundreds of estimation challenges relative to real-world scenarios to assist in building strong connections with number sense and the real world.
http://www.estimation180.com/
Math 180 activities and assessments

Topic/ Selection	Suggested Timeline per topic	General Objectives	Instructional Activities	Suggested Benchmarks/ Assessments	Common Core or NJCCCS Standards
Fractions and Decimals	1 Day	Relate fractions and decimals with denominators of 10 and 100.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it). **Problem Based Learning (whole group):** **Solve and share-** *Students use a drawing to represent the relationship for the result of 7 out of 10 in a survey. Decimal models (teaching tool 7) and two-color counters (teaching*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment	4.NF.C.6, MP.2, MP.3, MP.4

			tool 15) may be provided. (Textbook page 445). **Visual Learning** Visual Learning Bridge- How can you write a fraction as a decimal? <u>YouTube-</u> **Guided Practice-** *-Reteach to Build - Understanding* *Volume 1:12-1* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page H12* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 12-1 **Additional Activities:**	Additional Practice Quick Check 12-1	

			Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Convince Me! - Reason Quantitatively- Students write a decimal and shade a model to represent a fractional situation. **Closure** Quick Check 12-1/Exit Slip		
Fractions and Decimals on the Number Line	1 Day	Locate and describe fractions and decimals on number lines.	**Do Now**-tart each day with Fact Fluency/Daily Review (Think About it). **Problem Based Learning (whole group):** **Solve and share-** *Students give fraction and decimal names for points on a number line. (Textbook page 449).* **Visual Learning** Visual Learning Bridge- How can you locate points on a number line? YouTube- **Guided Practice-**	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 12-2	4.NF.C.6, 4.MD.A.2, MP.1, MP.6, MP.7, RI. 4.1, RI.4.4

			-*Reteach to Build - Understanding* *Volume 1: 12-2* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page H25* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 12-2-1 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:**		

			Problem- Solving Leveled Reading Mat: Winner Takes All Convince Me! - Attend to Precision- Students need to have a sense of how the value of a decimal relates to the nearest whole number. They should have a general sense of where a given decimal is approximately located on the number line, even when the number line is not marked with tenths and hundredths. Just as with fractions, a decimal's location on a number line tells how far that point is from 0. **Closure** Quick Check 12-2/Exit Slip		
Compare Decimals	1 Day	Compare decimals by reasoning about their size.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it). **Problem Based Learning (whole group):** **Solve and share-** *Students use what they know about decimals to compare two decimals. Decimals grids and/or place value charts (teaching tool 6) may be provided. (Textbook page 453).*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice	4.NF.C.7, 4.MD.A.2, MP.2, MP.3, MP.5, NGSS 4-PS3-3

			Visual Learning Visual Learning Bridge- How do you compare decimals? <u>YouTube-</u> **Guided Practice-** *-Reteach to Build - Understanding* *Volume 1: 12-3* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page H30* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 12-3 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus:	Quick Check 12-3	

			(PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** EnVision STEM activity 12-3 Convince Me! - Reason Quantitatively- Students may shade a hundredths grid for each number to show that the numbers are not equal. Point out that the place farthest to the left (after the decimal) in all four numbers is the tenths place. **Closure** Quick Check 12-3/Exit Slip		
Add Fractions with Denominators of 10 and 100	1 Day	Add fractions with denominators of 10 and 100 by using equivalent fractions.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it). **Problem Based Learning (whole group):** **Solve and share-** *Students add fractions with denominators of 10 and 100. Hundredths grids (teaching tool 8) may be provided. (Textbook page 457).* **Visual Learning**	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment	4.NF.C.5, MP.1, MP.3, MP.5, NGSS 4-PS3-3

			Visual Learning Bridge- How can you add fractions with denominators of 10 or 100? <u>YouTube-</u> **Guided Practice-** *-Reteach to Build - Understanding* *Volume 1: 12-4* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page H32/H34* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one:12-4 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com)	Additional Practice Quick Check 12-4	

			Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** EnVision STEM Project: Discuss various games where energy is transferred through collision. Emphasize how energy changes the speed of the objects as they collide. Students will research various sports or games where players transfer energy to cause collisions in order to score points and win. Specifically, they will examine the "ends" of curling. Suppose a team wins 6 out of 10 ends of curling. Students will represent 6 out of 10 rounds of curling as a fraction with a denominator of ten, an equivalent fraction with a denominator of 100 and an equivalent decimal for each fraction. EnVision STEM activity 12-4 Convince Me! - Construct Arguments- Students explain why the rule for adding fractions includes keeping the same denominator and not adding denominators. **Closure**		

			Quick Check 12-4/Exit Slip		
Solve Word Problems Involving Money	1 Day	Use fractions or decimals to solve word problems involving money.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it). **Problem Based Learning (whole group):** **Solve and share-** *Students use what they know about computing with whole numbers to solve a problem involving money with whole-number dollar amounts. Money (teaching tool 19) may be provided. (Textbook page 461).* **Visual Learning** Visual Learning Bridge- How can you solve word problems involving money? YouTube- **Guided Practice-** *-Reteach to Build - Understanding* *Volume 1:12-5* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention:	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 12-5	4.MD.A.2, MP.1, MP.7, MP.8

			MDIS Diagnosis and Intervention System-page H13/H14 On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 12-5 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Convince Me! - Use Structure- Students analyze the relationships among place values to help add and subtract money. Students should relate their knowledge of fractions and decimals to money. **Closure** Quick Check 12-5/Exit Slip		

Problem Solving: Look for and Use Structure	1 Day	Use the structure of the place-value system for decimals to solve problems.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it). **Problem Based Learning (guided to independent):** **Solve and share-** *Students use structure to locate the 1-mile mark on three number lines with different scales. (Textbook page 465).* **Visual Learning** Visual Learning Bridge- How can you look for and make use of structure to solve problems? <u>YouTube-</u> **Guided Practice-** *-Reteach to Build - Understanding* *Volume 1:12-6* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page H25* On Level: *Build Mathematical Literacy* Advanced: *Enrichment*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 12-6	4.NF.C.7, 4.MD.A.2, MP.7, MP.1, MP.2, MP.4, MP.6

			Technology: Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 12-6 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Convince Me! - Look for and Make Use of Structure- Students use knowledge of decimal meanings to locate a point on a number line beyond the points given instead of between given points. **Closure** Quick Check 12-6/Exit Slip		
MATH.K-12.1 Make sense of problems and persevere in solving them MATH.K-12.2 Reason abstractly and quantitatively MATH.K-12.3 Construct viable arguments and critique the reasoning of others					

MATH.K-12.4 Model with mathematics

MATH.K-12.5 Use appropriate tools strategically

MATH.K-12.6 Attend to precision

MATH.K-12.7 Look for and make use of structure

MATH.K-12.8 Look for and express regularity in repeated reasoning

MATH.4.NF.C.5 Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.

MATH.4.NF.C.6 Use decimal notation for fractions with denominators 10 or 100.

MATH.4.NF.C.7 Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model.

MATH.4.M.A.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

Suggested Modifications for Special Education, English Language Learners and Gifted Students:

Gifted Students

- Students will plan their future birthday party. They will decide on the number of invitees, theme, entertainment and food. They must stay within a $300 budget without going over! Students must research the cost of food invitations, paper goods, entertainment, favors, and decorations. They also must organize games to play, photography, and a playlist of their favorite music. Using sites such as www.orientaltrading.com, exploring ShopRite's website for food costs, and www.tinyprints.com for designing and ordering invitations are just some websites available as resources. The following Party Planning Sheets can be used: Party Planning Activity Sheets .

- Write a paragraph about whether fractions or decimals are more accurate and be sure to include your reasoning.

Special Education Students

- Fluency review Activity
- Vocabulary Review
- Specifically teach vocabulary words related to decimal place value (tenths, hundredths, thousandths) using models to aid in bridge understanding of fraction and decimal relationships.
- Use place value charts and tenths and hundredths grids to model amounts.

English Language Learners

- Topic Vocabulary
- Visual Learning Bridge: Reading
- Solve & Share: Speaking
- Specifically teach vocabulary words related to decimal place value (tenths, hundredths, thousandths) using models to aid in bridge understanding of fraction and decimal relationships.
- Use place value charts and tenths and hundredths grids to model amounts.

Suggested Technological Innovations/ Use:

- IXL
- ST Math
- Kahoot!
- Tools (EnVision 2020)
- Game Center (EnVision 2020)
- Create/Complete a Discovery Education Board

Cross Curricular/ 21st Century Connections:

- Pick a Project Activity
- Envision STEM Project
- EnVision STEM Activity

- Problem Solving Reading Activity

Unit 13: Measurement: Find Equivalence in Units of Measure

Summary of the Unit:

Topic 13 focuses on converting measurements from larger to smaller units within one system of measurement, customary or metric. It also focuses on solving real-world problems involving distance or area and perimeter.

Enduring Understanding:

- To convert from a larger unit of length to a smaller unit of length, multiply the number of larger units by the conversion factor, that is, the number of smaller units in each larger unit.
- To convert from a larger unit of capacity or mass to a smaller unit, multiply the number of larger units by the conversion factor, that is, the number of smaller units in each larger unit.
- To convert from a larger unit of weight to a smaller unit of weight, multiply the number of larger units by the conversion factor, that is, the number of smaller units in each larger unit.
- To convert from a larger unit of length to a smaller unit of length, multiply the number of larger units by the conversion factor, that is, the number of smaller units in each larger unit.
- Some problems can be solved by applying the formula for the perimeter of a rectangle, or by applying the formula for the area of a rectangle.
- Good math thinkers are careful about what they write and say, so their ideas about math are clear.

Essential Questions:

- How can you convert from one unit to another?
- How can you be precise when solving math problems?

Summative Assessment and/ or Summative Criteria to demonstrate mastery of the Unit.

- Topic Test
- Performance Task

Resources:

Pearson SuccessNet math series
https://www.pearsonrealize.com/community/home
ST Math is a visual instructional program that builds a deep conceptual understanding of math through rigorous learning and creative problem solving to engage, motivate and challenge PreK-8 students toward higher achievement.
https://www.stmath.com/
IXL online learning, offering unlimited algorithmically generated questions, real-time analytical reports, and dynamic scoring to encourage mastery.
https://www.ixl.com/
Discovery Education
https://google.discoveryeducation.com/
National Council of Teachers of Mathematics - This website contains activities and lessons, and virtual manipulatives organized by strand.
http://illuminations.nctm.org
The National Library of Virtual Manipulatives has tutorials and virtual manipulatives for the classroom.
http://nlvm.usu.edu/en/nav/index.html
The Teaching Channel has two hundred math videos for professional development.
http://www.theteachingchannel.org
K-5 Math Teaching Resources site contains free math teaching resources, games, activities and journal tasks.
http://www.k-5mathteachingresources.com
Open Middle- This website contains 36 math reasoning scenarios arranged by CCSS.
http://www.openmiddle.com/
K-5 Math Teaching Resources contains activities and resources for centers arranged by grade level and standard
https://www.k-5mathteachingresources.com/

Which One Doesn't Belong- This is a website dedicated to providing thought-provoking puzzles for math teachers and students alike. There are no answers provided as there are many different, correct ways of choosing which one doesn't belong.
http://wodb.ca/
Estimation 180- This website contains hundreds of estimation challenges relative to real-world scenarios to assist in building strong connections with number sense and the real world.
http://www.estimation180.com/
Math 180 activities and assessments

Topic/ Selection	Suggested Timeline per topic	General Objectives	Instructional Activities	Suggested Benchmarks/ Assessments	Common Core or NJCCCS Standards
Equivalence with Customary Units of Length	1 Day	Recognize the relative size of customary units of length and convert from a larger unit to a smaller unit.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it). **Problem Based Learning (whole group):** **Solve and share-** *Students convert a measurement given from yards to feet. Teachers may want to provide students with a reference sheet for customary units of length. (Textbook page 481).* **Visual Learning** Visual Learning Bridge- How can you convert from one unit of length to another? YouTube- **Guided Practice-**	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 13-1	4.M.A.1, 4.M.A.2, 4.OA.A.3, 4.NF.B.3d, 4.NF.B.4c, MP.K-12.6, MP.K-12.7, MP.K-12.8

			-Reteach to Build - Understanding Volume2: 13-1 **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page I32* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume two:13-1 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math		

			Optional Activities: Convince Me! - Generalize- Students generalize about multiplying to get a greater number of units when converting from a larger unit to a smaller unit. It is important to point out that it takes more inches than feet to make a yard because inches are a smaller unit than feet. **Closure** Quick Check 13-1/Exit Slip		
Equivalence with Customary Units of Capacity	1 Day	Recognize the relative size of customary units of capacity and convert from a larger unit to a smaller unit.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it). **Problem Based Learning (whole group):** **Solve and share-** *Students convert a half-gallon measurement to pints. Teachers may want to provide students with a reference sheet for customary units of capacity. (Textbook page 485).* **Visual Learning**	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 13-2	4.M.A.1, 4.M.A.2, 4.OA.A.3, 4.NF.B.3d, 4.NF.B.4c, MP.K-12.1, MP.K-12.2, MP.K-12.8

			Visual Learning Bridge- How can you convert from one unit of capacity to another? <u>YouTube-</u> **Guided Practice-** *-Reteach to Build - Understanding* *Volume 2: 13-2* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page I33* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one:13-2 **Additional Activities:** Math Games (PearsonRealize.com)		

			Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** EnVision STEM Activity 13-2 <u>Convince Me!</u> - Reason Quantitatively- Students use the conversion chart in Box A to fill in the blanks to relate gallons to quarts, pints, and cups. **Closure** Quick Check 13-2/Exit Slip		
Equivalence with Customary Units of Weight	1 Day	Recognize the relative size of customary units of weight and convert from a larger unit to a smaller unit.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it). **Problem Based Learning (whole group):** **Solve and share-** *Students connect to previous understanding of converting customary units of length and capacity to convert customary units of weight. Teachers may want to provide students with a reference sheet for*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 13-3	4.M.A.1, 4.M.A.2, 4.OA.A.3, 4.NF.B.3d, 4.NF.B.4c, MP.K-12.6, MP.K-12.8

			customary units of weight. (Textbook page 489). **Visual Learning** Visual Learning Bridge- How can you convert from one unit of weight to another? YouTube- **Guided Practice-** *-Reteach to Build - Understanding* *Volume 2: 13-3* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page I34* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 13-3		

			Additional Activities: Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Problem Solving Leveled Reading Activity: The Metric System Convince Me! - Generalize- Students generalize that you multiply when converting a larger unit of weight to a smaller unit of weight as you do for length and capacity. **Closure** Quick Check 13-3/Exit Slip		
Equivalence with Metric Units of Length	1 Day	Recognize the relative size of metric units of length and convert from a larger unit to a smaller unit.	**Do Now**-Start each day with Fact Fluency/Daily Review (Think About it). **Problem Based Learning (whole group):** **Solve and share-** *Students use what they know about measuring with a ruler to*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach	4.M.A.1, 4.M.A.2, 4.OA.A.3, 4.NF.C.7, MP.K-12.3, MP.K-12.5, MP.K-12.6

			describe the relationship between centimeters and millimeters. Teachers may want to provide students with centimeter rulers or metrics (teaching tool 17). Teachers may also want to provide students with a reference sheet for metric units. (Textbook page 493). **Visual Learning** Visual Learning Bridge- How can you convert from one unit of metric length to another? <u>YouTube-</u> **Guided Practice-** *-Reteach to Build - Understanding Volume 2: 13-4* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page G64*	Build Mathematical Literacy Enrichment Additional Practice Quick Check 13-4	

			On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 13-4 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Convince Me! - Critique Reasoning- Students critique the reasoning of a student who used the incorrect conversion unit of 100 to convert kilometers to meters. **Closure**		

			Quick Check 13-4/Exit Slip		
Equivalence with Metric Units of Capacity and Mass	1 Day	Recognize the relative size of metric units of capacity and mass and convert from a larger unit to a smaller unit.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it). **Problem Based Learning (whole group):** **Solve and share-** *Students convert 3 liters to milliliters and 3 kilograms to grams. Teachers may want to provide students with a reference sheet for metric units. (Textbook page 497).* **Visual Learning** Visual Learning Bridge- How can you convert from one unit of metric capacity or mass to another? <u>YouTube-</u> **Guided Practice:** *-Reteach to Build - Understanding Volume 2: 13-5* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention:	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 13-5	4.M.A.1, 4.M.A.2, 4.OA.A.3,MP.K-12.2, MP.K-12.6, MP.K-12.8

			MDIS Diagnosis and Intervention System-page I25 I27/ I35 On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 13-5 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** EnVision STEM Project: As a whole class, develop a list of earth formations that were created by erosion. Explain that erosion can be caused by natural forces such as wind,		

			water, volcanic eruptions, glaciers, or even human forces such as mining or farming. Students will research the Colorado River, and which states it travels through as it has played a large part in shaping North America. Included in their report should be definitions for the terms "geology" and "geometry" and how the words are related. Lastly, they will engage in a scenario-based math question where they must convert the miles of a Grand Canyon tour to feet. EnVision STEM Activity 13-5 **Closure** Quick Check 13-5/Exit Slip		
Solve Perimeter and Area Problems	1 Day	Find the unknown length or width of a rectangle using the known area or perimeter.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it). **Problem Based Learning (whole group):** **Solve and share-** *Students find the width and the perimeter of a wall given the area and the height. (Textbook page 501).*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 13-6	4.M.A.2, 4.M.A.3, 4.OA.A.3, 4.NF.B.4c, MP.K-12.1, MP.K-12.2, MP.K-12.3

			Visual Learning Visual Learning Bridge- How can you use perimeter and area to solve problems? <u>YouTube-</u> **Guided Practice-** *-Reteach to Build - Understanding* *Volume 2: 13-6* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page I44/ I45/ I47* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one:13-6 **Additional Activities:**		

			Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Convince Me! - Make Sense and Persevere- Students use the formulas for the area and perimeter of a rectangle to solve a problem to show that they understand how to apply the formulas in real-world situations. **Closure** Quick Check 13-6/Exit Slip		
Problem Solving: Precision	1 Day	Be precise when solving measurement problems.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it). **Problem Based Learning (guided to independent):** **Solve and share-** *Students use math symbols to explain how to solve a problem involving measurement and area. (Textbook page 505).*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice	4.M.A.2, 4.M.A.3, 4.OA.A.3, 4.NF.B.4c, MP.K-12.2, MP.K-12.4, MP.K-12.6

			Visual Learning Visual Learning Bridge- How can you be precise when solving math problems? <u>YouTube-</u> **Guided Practice-** *-Reteach to Build - Understanding* *Volume 2: 13-7* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page I44/I45* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 13-7	Quick Check 13-7	

			Additional Activities: Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Convince Me! - Attend to Precision- Students describe how math words and symbols made their explanation precise. **Closure** Quick Check 4-1/Exit Slip		
MATH.K-12.1 Make sense of problems and persevere in solving them MATH.K-12.2 Reason abstractly and quantitatively MATH.K-12.3 Construct viable arguments and critique the reasoning of others MATH.4.OA.A.3 Solve multi-step word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. MATH.K-12.4 Model with mathematics MATH.K-12.5 Use appropriate tools strategically					

MATH.K-12.6 Attend to precision

MATH.K-12.7 Look for and make use of structure

MATH.K-12.8 Look for and express regularity in repeated reasoning

MATH.4.NF.B.3.d Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.

MATH.4.NF.B.4.c Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem.

MATH.4.NF.C.7 Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model.

MATH.4.M.A.1 Know relative sizes of measurement units within one system of units including km, m, cm, mm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table.

MATH.4.M.A.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

MATH.4.M.A.3 Apply the area and perimeter formulas for rectangles in real world and mathematical problems.

Suggested Modifications for Special Education, English Language Learners and Gifted Students:

Gifted Students

- Create a new unit to add to the metric system. Explain how to make conversions using the new unit.

Special Education Students

- Fluency review Activity
- Vocabulary Review

- Using centimeter grid paper (teaching tool 9), ask students to outline or draw a rectangle that covers 18 squares. Now ask students to find the length and the width of the rectangle they drew. (Answers will vary based on drawings.) Proceed with asking students to find the perimeter by counting first and then applying the formulas for area and perimeter to check. Repeat using 24 squares. Drawings may vary. In doing this activity, students are able to visually model area and perimeter of rectangles while applying and connecting the appropriate formulas for each.
- Emphasize that Metric system conversions are multiplying or dividing by 10.
- Provide students with a metric system staircase chart for their notebook to assist with conversions.
- Provide students with customary system reference sheets for math notebooks.

English Language Learners

- Topic Vocabulary
- Visual Learning Bridge: Reading
- Solve & Share: Speaking
- Provide students with a metric system staircase chart for their notebook to assist with conversions.
- Provide students with customary system reference sheets for math notebooks. Consider including abbreviations on this reference sheet.

Suggested Technological Innovations/ Use:

- IXL
- ST Math
- Kahoot!
- Tools (EnVision 2020)
- Game Center (EnVision 2020)
- Create/Complete a Discovery Education Board

Cross Curricular/ 21st Century Connections:

- Pick a Project Activity
- Envision STEM Project
- EnVision STEM Activity

- Problem Solving Reading Activity
- 3 ACT MATH: A Pint's a Pound

Unit 14: Algebra: Generate and Analyze Patterns

Summary of the Unit:

Topic 14 focuses on generating and analyzing number and shape patterns

Enduring Understanding:

- Rules can be used to create or extend number sequences that form a pattern, which sometimes may have features not described by the rule.
- Rules can be used to create or extend patterns in tables.
- Patterns sometimes have features not described by the rule.
- It is possible to predict a shape in a repeating pattern of shapes.
- Good math thinkers look for relationships in math to help solve problems.

Essential Questions:

- How can you use a rule to continue a pattern?
- How can you use a table to extend a pattern?
- How can you use a repeating pattern to predict a shape?

Summative Assessment and/ or Summative Criteria to demonstrate mastery of the Unit.

- Topic Test
- Performance Task

Resources:

Pearson SuccessNet math series
https://www.pearsonrealize.com/community/home
ST Math is a visual instructional program that builds a deep conceptual understanding of math through rigorous learning and creative problem solving to engage, motivate and challenge PreK-8 students toward higher achievement.
https://www.stmath.com/
IXL online learning, offering unlimited algorithmically generated questions, real-time analytical reports, and dynamic scoring to encourage mastery.
https://www.ixl.com/
Discovery Education
https://google.discoveryeducation.com/
National Council of Teachers of Mathematics - This website contains activities and lessons, and virtual manipulatives organized by strand.
http://illuminations.nctm.org
The National Library of Virtual Manipulatives has tutorials and virtual manipulatives for the classroom.
http://nlvm.usu.edu/en/nav/index.html
The Teaching Channel has two hundred math videos for professional development.
http://www.theteachingchannel.org
K-5 Math Teaching Resources site contains free math teaching resources, games, activities and journal tasks.
http://www.k-5mathteachingresources.com
Open Middle- This website contains 36 math reasoning scenarios arranged by CCSS.
http://www.openmiddle.com/
K-5 Math Teaching Resources contains activities and resources for centers arranged by grade level and standard
https://www.k-5mathteachingresources.com/
Which One Doesn't Belong- This is a website dedicated to providing thought-provoking puzzles for math teachers and students alike. There are no answers provided as there are many different, correct ways of choosing which one doesn't belong.
http://wodb.ca/
Estimation 180- This website contains hundreds of estimation challenges relative to real-world scenarios to assist in building strong connections with number sense and the real world.
http://www.estimation180.com/
Math 180 activities and assessments

Topic/ Selection	Suggested Timeline per topic	General Objectives	Instructional Activities	Suggested Benchmarks/ Assessments	Common Core or NJCCCS Standards
Number Sequences	1 Day	Create or extend a number sequence based on a rule. Identify features of the pattern in the sequence that is not described by the rule.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it). **Problem Based Learning (whole group):** **Solve and share-** *Students use repeated addition or subtraction to generate the next 6 numbers in three patterns. (Textbook page 521).* **Visual Learning** Visual Learning Bridge- How can you use a rule to continue a pattern? YouTube- **Guided Practice-** *-Reteach to Build - Understanding* *Volume 2: 14-1* **Differentiated Instruction/Centers:** **Teacher Lead:**	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 14-1	4.OA.C.5, 4.NBT.B.4, 4.OA.B.4, MP.2, MP.7, MP.8, RI. 4.1, RI. 4.4

			Intervention: *MDIS Diagnosis and Intervention System- page F25* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 14-1 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:**		

			Problem-Solving Leveled Reading Mat: Square and Triangular Numbers Using sentence strips, students can create their own numerical patterns for peers to complete and determine the rule. Students may also wish to use shapes or drawing to find which shape would appear later in the sequence with their peers. <u>Convince Me!</u> - Generalize- Students generalize that if they start with an odd number and use the rule "add 4" the pattern will have all odd numbers. **Closure** Quick Check 14-1/Exit Slip		
Patterns: Number Rules	1 Day	Use a rule to extend a number pattern and solve a problem. Identify features of the pattern.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it). **Problem Based Learning (whole group):** **Solve and share-** *Students connect to their previous understanding*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment	4.OA.C.5, 4.OA.B.4, 4.NBT.B.5, 4.NBT.B.6, MP.2, MP.4, RI. 4.1, RI. 4.4

			of finding a pattern for a given rule to generate a table of values. (Textbook page 525). **Visual Learning** Visual Learning Bridge- What is the pattern? <u>YouTube-</u> **Guided Practice-** *-Reteach to Build - Understanding Volume2: 14-2* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System- page F26* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com)	Additional Practice Quick Check 14-2	

			IXL.com **Independent:** Independent Practice Volume one: 14-2 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Problem-Solving Leveled Reading Mat: Square and Triangular Numbers Convince Me! - Model with Math- Students write expressions to represent the number of cloverleaves and the number of leaflets. **Closure** Quick Check 14-2/Exit Slip		
Patterns Repeating Shapes	1 Day	Generate a shape pattern that	**Do Now-**Start each day with Fact Fluency/Daily	Guided Practice Independent Practice	4.OA.C.5, 4.OA.A.3, 4.NBT.B.6, MP.3,

		follows a given rule and predict a shape in the pattern.	Review (Think About it). **Problem Based Learning (whole group):** **Solve and share-** *Students extend a repeating shape pattern and predict the 37th shape. Teachers may provide students with pattern blocks or teaching tool 20. (Textbook page 529).* **Visual Learning** Visual Learning Bridge- How can you use a repeating pattern to predict a shape? YouTube- **Guided Practice-** *-Reteach to Build - Understanding* *Volume 2: 14-3* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention:	Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 14-3	MP.6, MP.7, NGSS 4-PS4-1

			MDIS Diagnosis and Intervention System- page F24 On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 14-3 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** EnVision STEM Project: As a whole class, discuss when it might be		

			important to study sound waves. Some examples include in medicine, in communication or when performing maintenance on equipment. Explain to students that to see sound waves, vibrations are converted to voltages and then displayed on an oscilloscope. Students will research two industries with oscilloscopes that can be used. They will name the industry and what can be observed using the oscilloscope. Included in their report should be the answer to the scenario-based question on textbook page 517 about a sound pattern. Convince Me! - Attend to Precision- Students give precise description of how to find the 26th shape in a pattern that consists of 4 shapes repeating.		

			EnVision STEM Activity 14-3 **Closure** Quick Check 14-3/Exit Slip		

Problem Solving: Look For and Use Structure	1 Day	Solve problems by using patterns.	**Do Now**-Start each day with Fact Fluency/Daily Review (Think About it). **Problem Based Learning (guided to independent):** **Solve and share-** *Students use structure and patterns to find the number of blocks in the 6th stack of a pattern, given the number of blocks in the first three stacks and a rule. Teachers may provide students with centimeter grid paper (teaching tool 9). (Textbook page 533).* **Visual Learning** Visual Learning Bridge-How can I look for and Make use of structure? YouTube- **Guided Practice-** *-Reteach to Build - Understanding Volume2: 14-4*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 14-4	4.OA.C.5, MP.7, MP.1, MP.2

			Differentiated Instruction/Centers: **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System- page F27* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume one: 14-4 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math		

			Optional Activities: Convince Me! - Look for Relationships- Students describe a feature of the pattern that is not explicit in the rule. When students use patterns to solve problems, they are looking for and making use of structure. **Closure** Quick Check 14-4/Exit Slip		

MATH.K-12.1 Make sense of problems and persevere in solving them

MATH.K-12.2 Reason abstractly and quantitatively

MATH.4.OA.A.3 Solve multi-step word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

MATH.K-12.3 Construct viable arguments and critique the reasoning of others

MATH.K-12.4 Model with mathematics

MATH.4.OA.B.4 Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.

MATH.4.OA.C.5 Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself.

MATH.K-12.5 Use appropriate tools strategically

MATH.K-12.6 Attend to precision

MATH.K-12.7 Look for and make use of structure

MATH.K-12.8 Look for and express regularity in repeated reasoning

MATH.4.NBT.B.5 Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

MATH.4.NBT.B.6 Find whole-number quotients and remainders with up to four-digit dividends and one digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area model.

Suggested Modifications for Special Education, English Language Learners and Gifted Students:

Gifted Students

- Students explore the equations to the pattern images provided. http://www.visualpatterns.org/

Special Education Students

- Fluency review Activity
- Vocabulary Review
- Emphasize the importance of identifying the pattern or rule first before continuing. You might consider having students circle or highlight a visual pattern to isolate it from the sequence.
- When working with a rule, writing it into the table can assist students when computing.

English Language Learners

- Topic Vocabulary
- Visual Learning Bridge: Reading
- Solve & Share: Speaking

Suggested Technological Innovations/ Use:

- IXL
- ST Math
- Kahoot!
- Tools (EnVision 2020)
- Game Center (EnVision 2020)
- Create/Complete a Discovery Education Board

Cross Curricular/ 21st Century Connections:

- Pick a Project Activity
- Envision STEM Project
- EnVision STEM Activity
- Problem Solving Reading Activity

Unit 15: Geometric Measurement: Understand Concepts of Angles and Angle Measurement

Summary of the Unit:

Topic 15 focuses on developing understanding of angle concepts including angle measurement.

Enduring Understanding:

- Line segments and rays are sets of points that describe parts of lines and angles.
- Angles are classified by their measure.
- The measure of an angle depends upon the fraction of a circle that the angle turns through.
- The unit for measuring angles is 1 degree, the unit angle.
- A protractor can be used to measure angles.
- Angle measures can be added and subtracted.
- Good math thinkers know how to pick the right tools to solve math problems.

Essential Questions:

- What are some common geometric terms?
- How can you measure angles?

Summative Assessment and/ or Summative Criteria to demonstrate mastery of the Unit.

- Topic Test
- Performance Task

Resources:

Pearson SuccessNet math series
https://www.pearsonrealize.com/community/home

ST Math is a visual instructional program that builds a deep conceptual understanding of math through rigorous learning and creative problem solving to engage, motivate and challenge PreK-8 students toward higher achievement.
https://www.stmath.com/
IXL online learning, offering unlimited algorithmically generated questions, real-time analytical reports, and dynamic scoring to encourage mastery.
https://www.ixl.com/
Discovery Education
https://google.discoveryeducation.com/
National Council of Teachers of Mathematics - This website contains activities and lessons, and virtual manipulatives organized by strand.
http://illuminations.nctm.org
The National Library of Virtual Manipulatives has tutorials and virtual manipulatives for the classroom.
http://nlvm.usu.edu/en/nav/index.html
The Teaching Channel has two hundred math videos for professional development.
http://www.theteachingchannel.org
K-5 Math Teaching Resources site contains free math teaching resources, games, activities and journal tasks.
http://www.k-5mathteachingresources.com
Open Middle- This website contains 36 math reasoning scenarios arranged by CCSS.
http://www.openmiddle.com/
K-5 Math Teaching Resources contains activities and resources for centers arranged by grade level and standard
https://www.k-5mathteachingresources.com/
Which One Doesn't Belong- This is a website dedicated to providing thought-provoking puzzles for math teachers and students alike. There are no answers provided as there are many different, correct ways of choosing which one doesn't belong.
http://wodb.ca/
Estimation 180- This website contains hundreds of estimation challenges relative to real-world scenarios to assist in building strong connections with number sense and the real world.
http://www.estimation180.com/
Math 180 activities and assessments

Topic/ Selection	Suggested Timeline per topic	General Objectives	Instructional Activities	Suggested Benchmarks/ Assessments		Common Core or NJCCCS Standards
Understand Angles and Unit Angles	1 Day	Find the Measure of an angle that turns through a fraction of a circle.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it). **Problem Based Learning (whole group):** **Solve and share-** *Students use what they know about telling time and about right angles to describe the smaller angle formed by the hands of a clock at 3:00. Clock faces may be provided (Teaching tool 21). (Textbook page 553).* **Visual Learning** Visual Learning Bridge-What is the unit used to measure angles? YouTube-	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 15-2		4.M.B.4a, 4.NF.A.1, 4.NF.B.3b, MP.1, MP.3

			Guided Practice- *-Reteach to Build - Understanding Volume 2: 15-2* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System- page I18* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume two:15-2 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus:			

			(PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Convince Me! - Critique Reasoning- Students Construct an argument that shows why the measure of the angles is the same even though the sizes of the circles are different. **Closure** Quick Check 15-2/Exit Slip			
Measure with Unit Angles	1 Day	Use known angle measures to measure unknown angles.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it). **Problem Based Learning (whole group):**	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy		4.M.B.4b, 4.M.B.4a, MP.5, MP.1, MP.8, RI. 4.1, RI. 4.4

			Solve and share- *Students use the understanding of angle measures to find the measure of an angle using a pattern block. Pattern blocks may be provided (Teaching tool 20). (Textbook page 557).* **Visual Learning** Visual Learning Bridge-How can you measure angles? YouTube- **Guided Practice-** *-Reteach to Build - Understanding Volume 2: 15-3* **Differentiated Instruction/Centers: Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page I18*	Enrichment Additional Practice Quick Check 15-3		

			On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume two:15-3 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Problem-Solving Leveled Reading Mat:			

			Early and Unusual Strings Convince Me! - Generalize- Students generalize that the measure of an angle is equal to the number of 1-degree angles that it turns through. **Closure** Quick Check 15-3/Exit Slip			
Measure and Draw Angles	2 Days	Use a protractor to measure and draw angles.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it). **Problem Based Learning (whole group):** **Solve and share-** *Students connect to their previous understanding of a unit angle and measuring angles using pattern blocks to measure an angle using a protractor. Protractors should be provided (Teaching*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 15-4		4.M.B.5, 4.M.B.4b, MP.5, MP.3, MP.6, NGSS 4-PS3-3

			tool 22). (Textbook page 561). **Visual Learning** Visual Learning Bridge-How do you use a protractor? <u>YouTube-</u> **Guided Practice-** *-Reteach to Build - Understanding Volume2: 15-4* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System- page I18* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com)			

			IXL.com **Independent:** Independent Practice Volume two:15-4 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** EnVision STEM Activity 15-4 With a partner, students can practice measuring and drawing angles with a protractor. Each student will draw an angle using a protractor and write the measurement of the angle on the back of their paper. Students will switch			

			paper and measure each other's drawn angles. They will check their work for accuracy and discuss findings. Convince Me! - Attend to Precision- Students explain how they know that 60-degrees is a reasonable measure for the angle shown. Teachers should point out that when measuring an acute or obtuse angle with a protractor, one scale will give an acute measure and the other scale an obtuse measure. Remind students to analyze the type of angle first before deciding which scale is the most reasonable **Closure** Quick Check 15-4/Exit Slip			

Add and Subtract Angle Measures	1 Day	Use addition and subtraction to solve problems with unknown angle measures.	**Do Now**-Start each day with Fact Fluency/Daily Review (Think About it). **Problem Based Learning (whole group):** **Solve and share-** *Students draw a ray to divide an angle into two angles and draw a conclusion about the measures of the angles formed. Protractors or rulers may be provided (Teaching tool 22). (Textbook page 561).* **Visual Learning** Visual Learning Bridge-How can you add or subtract to find unknown angle measures? YouTube- **Guided Practice-** *-Reteach to Build - Understanding*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 15-5		4.M.B.7, 4.NBT.B.4, MP.7, MP.1, MP.4, NGSS 4-PS3-3

			Volume 2: 15-5 **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page I19* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume two: 15-5 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice			

			Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** EnVision STEM Project: Begin by having students model how collisions can cause toy cars to transfer energy by changing direction, starting or stopping motion. Discuss how energy can be transferred from place to place by light, heat, sound or even electricity. Students will research the area of the world's largest bumper car floor. They will find where it is located and when it was built. In their report they will include a diagram of a bumper car collision using an angle to show how			

			the car might change directions after it collides with something. They will measure, label and describe the angle they drew. EnVision STEM Activity 15-5 Convince Me! - Make Sense and Persevere- Students should find the measure of angle ABE without using a protractor, and then explain how they got their answer. **Closure** Quick Check 15-5/Exit Slip			
Problem Solving: Use Appropriate Tools	1 Day	Use appropriate tools, such as protractor, and rule, to solve problems.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it). **Problem Based Learning (guided to independent):** **Solve and share-** *Students use a tool to measure angles and describe relationships*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice		4.M.B.5, 4.OA.A.3, 4.M.B.4, 4.M.B.7, MP.5, MP.1, MP.2, MP.4

			between them. Provide a variety of tools for students: centimeter grid paper, fraction strips, centimeter rulers, metric sticks, inch rulers, yard sticks, pattern blocks, protractors, etc. (Teaching tools 9, 13, 17, 18, 20 and 22.) (Textbook page 569). **Visual Learning** Visual Learning Bridge- How can you select the appropriate tools to solve problems? <u>YouTube-</u> **Guided Practice-** *-Reteach to Build - Understanding Volume 2: 15-6* **Differentiated Instruction/Centers: Teacher Lead:**	Quick Check 15-6		

			Intervention: *MDIS Diagnosis and Intervention System- page I18* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume two: 15-6 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math			

			Optional Activities: Convince Me! - Use Appropriate Tools Strategically- Students name other tools that could be used to solve the problem and explain why the protractor and meterstick are more appropriate than other tools. **Closure** Quick Check 15-6/Exit Slip			

MATH.K-12.1 Make sense of problems and persevere in solving them

MATH.K-12.2 Reason abstractly and quantitatively

MATH.K-12.3 Construct viable arguments and critique the reasoning of others

MATH.4.OA.A.3 Solve multi-step word problems posed with whole numbers and having whole number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

MATH.K-12.4 Model with mathematics MATH.K-12.5 Use appropriate tools strategically

MATH.K-12.6 Attend to precision

MATH.K-12.7 Look for and make use of structure

MATH.K-12.8 Look for and express regularity in repeated reasoning

MATH.4.NBT.B.4 With accuracy and efficiency, add and subtract multi-digit whole numbers using the standard algorithm.

MATH.4.NF.A.1 Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.

MATH.4.NF.B.3.b Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model.

MATH.4.M.B.4.a An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360th of a circle is called a "one-degree angle," and can be used to measure angles.

MATH.4.M.B.4.b An angle that turns through n one-degree angles is said to have an angle measure of n degrees.

MATH.4.M.B.5 Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.

MATH.4.M.B.6 Recognize angle measure as additive. When an angle is decomposed into nonoverlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.

MATH.4.G.A.1 Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures

Suggested Modifications for Special Education, English Language Learners and Gifted Students:

Gifted Students

- Using centimeter grid paper, instruct students to use a ruler to write their name in pencil on the grid paper, without any curved edges. Next, students trace over their name with a pen or thin marker, then find the measure of each of the angles in their name. If their first name is short, they may use their last name.

Special Education Students

- Fluency review Activity
- Vocabulary Review
- Have students use their arms to model the type of line or angle named. Fists can represent end points and straight palms can represent arrows. This can be turned into a Simon says game or charades.
- Develop the steps for measuring an angle together. Create an anchor chart for students to follow as they practice. Provide them with a copy for their math notebook.
- Develop the steps for drawing an angle together. Create an anchor chart for students to follow as they practice. Provide them with a copy for their math notebook.

English Language Learners

- Topic Vocabulary
- Visual Learning Bridge: Reading
- Solve & Share: Speaking
- Have students use their arms to model the type of line or angle named. Fists can represent end points and straight palms can represent arrows. This can be turned into a Simon says game or charades.

Suggested Technological Innovations/ Use:

- IXL
- ST Math
- Kahoot!
- Tools (EnVision 2020)
- Game Center (EnVision 2020)
- Create/Complete a Discovery Education Board

Cross Curricular/ 21st Century Connections:

- Pick a Project Activity
- Envision STEM Project
- EnVision STEM Activity
- Problem Solving Reading Activity
- 3 ACT MATH: Game of Angles

Unit 16: Lines, Angles, and Shapes

Summary of the Unit:

Topic 16 focuses on understanding how shapes can be analyzed, described, and classified, with attention to properties of sides, angles, and lines of symmetry.

Enduring Understanding:

- Lines can be classified as parallel, intersecting, or perpendicular.
- Triangles are classified by their sides and by their angles.
- Quadrilaterals are classified by their sides and by their angles.
- A shape that can fold along a line into matching parts is line symmetric.
- Good math thinkers use math to explain why they are right, and can talk about the math that others do, too.

Essential Questions:

- How can you classify triangles and quadrilaterals?
- What is line symmetry?

Summative Assessment and/ or Summative Criteria to demonstrate mastery of the Unit.

- Topic Test
- Performance Task

Resources:
Pearson SuccessNet math series
https://www.pearsonrealize.com/community/home
ST Math is a visual instructional program that builds a deep conceptual understanding of math through rigorous learning and creative problem solving to engage, motivate and challenge PreK-8 students toward higher achievement.
https://www.stmath.com/
IXL online learning, offering unlimited algorithmically generated questions, real-time analytical reports, and dynamic scoring to encourage mastery.
https://www.ixl.com/
Discovery Education
https://google.discoveryeducation.com/
National Council of Teachers of Mathematics - This website contains activities and lessons, and virtual manipulatives organized by strand.
http://illuminations.nctm.org
The National Library of Virtual Manipulatives has tutorials and virtual manipulatives for the classroom.
http://nlvm.usu.edu/en/nav/index.html
The Teaching Channel has two hundred math videos for professional development.
http://www.theteachingchannel.org
K-5 Math Teaching Resources site contains free math teaching resources, games, activities and journal tasks.
http://www.k-5mathteachingresources.com
Open Middle- This website contains 36 math reasoning scenarios arranged by CCSS.
http://www.openmiddle.com/
K-5 Math Teaching Resources contains activities and resources for centers arranged by grade level and standard
https://www.k-5mathteachingresources.com/
Which One Doesn't Belong- This is a website dedicated to providing thought-provoking puzzles for math teachers and students alike. There are no answers provided as there are many different, correct ways of choosing which one doesn't belong.
http://wodb.ca/

Estimation 180- This website contains hundreds of estimation challenges relative to real-world scenarios to assist in building strong connections with number sense and the real world.
http://www.estimation180.com/
Math 180 activities and assessments

Topic/ Selection	Suggested Timeline per topic	General Objectives	Instructional Activities	Suggested Benchmarks/ Assessments	Common Core or NJCCCS Standards
Lines	1 Day	Draw and identify perpendicular, parallel, and intersecting lines.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it). **Problem Based Learning (whole group):** **Solve and share-** *Students draw pairs of lines that have specific attributes. (Textbook page 585).* **Visual Learning** Visual Learning Bridge- How can you describe pairs of lines? YouTube- **Guided Practice-** *-Reteach to Build -Understanding Volume 2:16-1* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page I2*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 16-1	4.G.A.1, MP.6, MP.3,

			On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume two: 16-1 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Look for Relationships- Students will predict how many zeros will be in the answer using previous knowledge of multiplying 1-digit numbers by 10, 100 and 1,000. **Closure** Quick Check 16-1/Exit Slip Convince Me! - Attend to Precision- Students connect their understanding of three different types of lines to real-world objects. **Guided Practice**		

			Differentiated Instruction/Centers **Teacher Lead:** Intervention: *Reteach to Build Understanding* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice buddy (PearsonRealize.com) **Independent:** Independent Practice and Problem Solving		
Classify Triangles	1 Day	Classify triangles by line segments and angles.	**Do Now**-Start each day with Fact Fluency/Daily Review (Think About it). **Problem Based Learning (whole group):** **Solve and share-** *Students sort triangles into groups using any attributes of their choosing. Crayons or markers may be provided. (Textbook page 589).* **Visual Learning** Visual Learning Bridge- How can you classify triangles? <u>YouTube-</u> **Guided Practice-** *-Reteach to Build -Understanding* *Volume 2: 16-2* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page I5*	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 16-2	4.G.A.2, 4.OA.C.5, 4.M.B.4, 4.G.A.1, MP.8, MP.2, MP.6

			On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume Two: 16-2 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Convince Me! - Attend to Precision- Students may want to draw pictures to help them understand the problem and justify their answer. Students may not know that the total angle measure of a triangle is 180-degrees. Since an obtuse angle measure is greater than 90-degrees, there can only be one obtuse angle in a triangle, and thus the other two angle measures will be less than 90-degrees. **Closure** Quick Check 16-2/Exit Slip		
Classify Quadrilaterals	1 Day	Classify quadrilaterals by	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it). **Problem Based Learning (whole group):**	Guided Practice Independent Practice	4.G.A.2, 4.G.A.1, MP.7, MP.3, MP.8, RI.4.1, RI. 4.4

		lines and angles.	**Solve and share-** *Students draw three different four-sided shapes with opposite sides that are parallel. (Textbook page 593).* **Visual Learning** Visual Learning Bridge- How can you classify quadrilaterals? <u>YouTube-</u> **Guided Practice-** *-Reteach to Build -Understanding Volume 2: 16-3* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page I6* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume two:16-3 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice	Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 16-3	

			Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Problem-Solving Leveled Reading Mat: Shapes Convince Me! - Look for and Make Use of Structure- Students use their knowledge of the attributes of a rectangle and parallelogram to explain how the shapes are related. Remind students that quadrilaterals such as parallelograms and rectangles can be described and classified by their angles and sides. **Closure** Quick Check 16-3/Exit Slip		
Line Symmetry	1 Day	Recognize and draw lines of symmetry. Identify line symmetric figures.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it). **Problem Based Learning (whole group):** **Solve and share-** *Students use what they know about attributes of a square and a letter to find lines of symmetry. (Textbook page 597).* **Visual Learning** Visual Learning Bridge- What is line symmetry? YouTube- **Guided Practice-** *-Reteach to Build -Understanding Volume 2: 16-4* **Differentiated Instruction/Centers:**	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 16-4	4.G.A.3, MP.3, MP.1, MP.4, NGSS 4-LS1-2

			Teacher Lead: Intervention: *MDIS Diagnosis and Intervention System-page I10* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume two: 16-4 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** EnVision STEM Activity 16-4 Convince Me! - Look for Relationships- Students find capital letters with a certain number of lines of symmetry. Point out that some letters will have multiple lines of symmetry while others will have no lines of symmetry. **Closure** Quick Check 16-4/Exit Slip		

Draw Shapes with Line Symmetry	1 Day	Draw Figures that have line symmetry.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it). **Problem Based Learning (whole group):** **Solve and share-** *Students use what they know about line symmetry to analyze two kite designs and to design kites with two and three lines of symmetry. (Textbook page 601).* **Visual Learning** Visual Learning Bridge- How can you draw figures with line symmetry? YouTube- **Guided Practice-** *-Reteach to Build -Understanding Volume2: 16-5* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page I10* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume Two: 16-5 **Additional Activities:** Math Games (PearsonRealize.com) Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:**	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 16-5	4.G.A.3, MP.3, MP.1, MP.4, NGSS 4-LS1-2

Problem Solving: Critique Reasoning	1 Day	Use understanding of two-dimensional shapes to critique the reasoning of others.	**Do Now-**Start each day with Fact Fluency/Daily Review (Think About it). **Problem Based Learning (guided to independent):** **Solve and share-** *Students use what they know about analyzing two-dimensional shapes to critique a student's statement about right triangles. (Textbook page 605).* **Visual Learning** Visual Learning Bridge- How can you critique the reasoning of others? <u>YouTube-</u> **Guided Practice-** *-Reteach to Build -Understanding* *Volume 2:16-6* **Differentiated Instruction/Centers:** **Teacher Lead:** Intervention: *MDIS Diagnosis and Intervention System-page I5/I6* On Level: *Build Mathematical Literacy* Advanced: *Enrichment* **Technology:** Practice Buddy(PearsonRealize.com) IXL.com **Independent:** Independent Practice Volume two: 16-6 **Additional Activities:** Math Games (PearsonRealize.com)	Guided Practice Independent Practice Problem solving Practice Buddy Reteach Build Mathematical Literacy Enrichment Additional Practice Quick Check 16-6	4.G.A.2, 4.MD.A.3, 4.G.A.1, MP.3, MP.2, MP.6, RI. 4.1, RI.4.4

			Visual Learning Animation Plus: (PearsonRealize.com) Additional Practice Math Anytime: Daily Review BOOM math cards and ST Math **Optional Activities:** Problem-Solving Leveled Reading Mat: Shapes Convince Me! -Attend to Precision- Students examine two statements with precision and interpret the difference between using the words “some” and “every” when making a statement. **Closure** Quick Check 16-6/Exit Slip		

MATH.K-12.1 Make sense of problems and persevere in solving them

MATH.K-12.2 Reason abstractly and quantitatively

MATH.K-12.3 Construct viable arguments and critique the reasoning of others

MATH.K-12.4 Model with mathematics

MATH.K-12.5 Use appropriate tools strategically

MATH.4.OA.C.5 Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. MATH.K-12.6 Attend to precision

MATH.K-12.7 Look for and make use of structure

MATH.K-12.8 Look for and express regularity in repeated reasoning

MATH.4.M.A.3 Apply the area and perimeter formulas for rectangles in real world and mathematical problems.

MATH.4.M.B.4.a An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360th of a circle is called a “one degree angle,” and can be used to measure angles.

MATH.4.M.B.4.b An angle that turns through n one-degree angles is said to have an angle measure of n degrees.

MATH.4.G.A.1 Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.

MATH.4.G.A.2 Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category and identify right triangles.

MATH.4.G.A.3 Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry

Suggested Modifications for Special Education, English Language Learners and Gifted Students:

Gifted Students

- Wilson A. Bentley, nick-named "Snowflake Bentley," spent his life taking photographs of snowflakes. Have students examine the symmetry of snowflakes by viewing photographs. A collection of his snowflake photos can be found online at http://www.bentley.sciencebuff.org/collection.asp or https://snowflakebentley.com/WBsnowflakes.htm Also view photo galleries on www.SnowCrystals.com at: http://www.its.caltech.edu/~atomic/snowcrystals/photos/photos.htm. The students should be able to figure out that, most snowflakes symmetry but, they do not all have the same number of lines of symmetry. Also, snowflakes sometimes have reflection symmetry (only 1 line of symmetry).
- Bentley's photographs include information about the weather conditions for each snowflake. Have the students study the weather conditions for various snowflakes to determine if weather conditions affect the number of lines of symmetry of snowflakes. Some answers can be found online at "A Guide to Snowflakes": http://www.its.caltech.edu/~atomic/snowcrystals/class/class.htm

Special Education Students

- Fluency review Activity
- Vocabulary Review
- Have students use their arms to model the type of line or angle named. Fists can represent end points and straight palms can represent arrows. This can be turned into a Simon says game or charades.
- Use various markers or highlighters to place an emphasis on multiple lines in context.
- Have students use their arms to act out parallel lines, perpendicular and intersecting lines to kinesthetically and visually internalize the differences and similarities.
- Have students cut out pattern blocks and fold them to see how many lines of symmetry each block has.

English Language Learners

- Topic Vocabulary
- Visual Learning Bridge: Reading
- Solve & Share: Speaking
- Have students use their arms to act out parallel lines, perpendicular and intersecting lines to kinesthetically and visually internalize the differences and similarities.

- Have students cut out pattern blocks and fold them to see how many lines of symmetry each block has.

Suggested Technological Innovations/ Use:

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- Problem Solving Reading Activity