First Grade Curriculum

Mathematics

Francis Howell School District

HOME SCHOOL COMMUNITY

LEARNING TOGETHER

Board Approved:

04/03/2014

Francis Howell School District
First Grade Curriculum – Mathematics

Mission

Francis Howell School District is dedicated to preparing students today for success tomorrow.

Vision

Every student will graduate with college and career readiness skills.

Values

Francis Howell School District is committed to:

- Provide a consistent and comprehensive education that fosters high levels of academic achievement
- Operate a safe learning environment for all students
- Recruit and retain a high quality staff
- Promote parent, community, student, and business involvement in support of the school district
- Ensure fiscal responsibility
- Develop responsible citizens
- Operate as a professional learning community
- Make appropriate use of technology

Francis Howell School District Graduate Goals

Upon completion of their academic study in the Francis Howell School District, students will be able to:

- gather, analyze and apply information and ideas
- communicate effectively within and beyond the classroom
- recognize and solve problems
- make decisions and act as responsible members of society

Rationale for Elementary Mathematics

Using the Missouri Learning Standards as a base, the Francis Howell K-5 mathematics curriculum emphasizes conceptual understanding, procedural skill and fluency and application of concepts in real-world, problem-solving situations to address rigor as defined in the Missouri Learning Standards. Teachers will emphasize the use of the 8 mathematical practices outlined in the Standards to bring students to a deeper understanding of the focal points for each grade level. These eight mathematical practices, which should be embedded into math daily and are applicable for Grades K-12, are:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Course Description for First Grade Math

In Grade 1, instructional time should focus on four critical areas: (1) developing understanding of addition, subtraction, and strategies for addition and subtraction within 20; (2) developing understanding of whole number relationships and place value, including grouping in tens and ones; (3) developing understanding of linear measurement and measuring lengths as iterating length units; and (4) reasoning about attributes of, and composing and decomposing geometric shapes.

1) Students develop strategies for adding and subtracting whole numbers based on their prior work with small numbers. They use a variety of models, including discrete objects and length-based models (e.g., cubes connected to form lengths), to model add-to, take-from, put-together, take-apart, and compare situations to develop meaning for the operations of addition and subtraction, and to develop strategies to solve arithmetic problems with these operations. Students understand connections between counting and addition and subtraction (e.g., adding two is the same as counting on two). They use properties of addition to add whole numbers and to create and use increasingly sophisticated strategies based on these properties (e.g., "making tens") to solve addition and subtraction problems within 20. By comparing a variety of solution strategies, children build their understanding of the relationship between addition and subtraction.
2) Students develop, discuss, and use efficient, accurate, and generalizable methods to add within 100 and subtract multiples of 10. They compare whole numbers (at least to 100) to develop understanding of and solve problems involving their relative sizes. They think of whole numbers between 10 and 100 in terms of tens and ones (especially recognizing the numbers 11 to 19 as composed of a ten and some ones). Through activities that build number sense, they understand the order of the counting numbers and their relative magnitudes.
3) Students develop an understanding of the meaning and processes of measurement, including underlying concepts such as iterating (the mental activity of building up the length of an object with equal-sized units) and the transitivity principle for indirect measurement.
4) Students compose and decompose plane or solid figures (e.g., put two triangles together to make a quadrilateral) and build understanding of part-whole relationships as well as the properties of the original and composite shapes. As they combine shapes, they recognize them from different perspectives and orientations, describe their geometric attributes, and determine how they are alike and different, to develop the background for measurement and for initial understandings of properties such as congruence and symmetry.

Elementary Math Curriculum Contributors (positions 2013-2014)

Susan Bayne, first grade teacher	Harvest Ridge Elementary
Christine Brawley, kindergarten teacher	Henderson Elementary
Nancy Coacher, first grade teacher	Warren Elementary
Tricia Cooper, fifth grade teacher	John Weldon Elementary
Stacy Garner, kindergarten teacher	Fairmount Elementary
Mary Grosch, third grade teacher	Castlio Elementary
Lisa Haffer, kindergarten teacher	Castlio Elementary
Dr. Tracey McAllister, fourth grade teacher	Harvest Ridge Elementary
Kelsey Mueller, fifth grade teacher	Fairmount Elementary
Jacque Murphy, second grade teacher	John Weldon Elementary
Karen Ruzicka, third grade teacher	Warren Elementary
Jennifer Smith, teacher of ELLs	Becky-David Elementary
Lauren Stephens, resource teacher	Warren Elementary
Joanne Tirpak, fifth grade teacher	Becky-David Elementary
Corrine Thomsen, fifth grade teacher	Independence Elementary
Vicki Wagner, fifth grade teacher	Warren Elementary

Dr. Pam Sloan	**Superintendent**
Dr. Mary Hendricks-Harris	**Chief Academic Officer**
Dr. Chris Greiner	**Director of Student Learning**
Dr. Sherri Lorton	**Elementary Content Leader**

Scope and Sequence for First Grade Mathematics

Qtr	Lessons	Maximum Days	Topic/Description	Domain
1	8	13 days	Topic 1: Understanding Addition	Operations and Algebraic Thinking
1	11	16 days	Topic 2: Understanding Subtraction	
1	5	11 days	Topic 3: Five and Ten Relationships	
2	10	15 days	Topic 4: Addition and Subtraction Facts to 12	
2	9	14 days	Topic 5: Addition Facts to 20	
2	7	12 days	Topic 6: Subtraction Facts to 20	
3	6	8 days	Topic 7: Counting and Number Patterns to 120	Numbers and Operations in Base 10
3	6	8 days	Topic 8: Tens and Ones	
3	5	8 days	Topic 9: Comparing Numbers to 100	
3	6	9 days	Topic 10: Adding with Tens and Ones	
3	5	9 days	Topic 11: Subtracting with Tens and Ones	
4	6	9 days	Topic 12: Length (suggested to start before Spring Break)	Measurement and Data
4	4	6 days	Topic 13: Time	
4	7	9 days	Topic 14: Using Data to Answer Questions	
4	10	11 days	Topic 15: Geometry	Geometry
4	4	6 days	Topic 16: Fractions of Shapes	
	109	**163 days**		
if time	10	13 days	Step-Up: Step-Up to Grade 2 Lessons	combination

To ensure all grade level standards are met, all topics must be completed. While teachers and PLCs should take into account student progress and make decisions based on their individual classes, the expectation is that all students will be taught all material in the standards/topics. If teams/teachers are struggling with pacing, they should work with their administration and content leader to develop a plan to ensure students are taught all content in their grade level.

Content Area: Math	**Course: Grade 1**	**UNIT: Operations and Algebraic Thinking**
Unit Description: The part-part-whole model shows both addition and subtraction. When you add the parts, you get the whole. When you subtract one part from the whole, you get the other part. Related facts have the same whole and the same parts. 'Think addition' is a powerful way to think about subtraction facts. If the relationship between parts and wholes is understood, subtraction facts will be much easier to master. In order for 'think addition' to be an effective strategy, the basic facts of addition must be mastered first. There are several kinds of situations that relate to addition. They are join (combine two groups), join (add on to a group), part-part-whole, and compare. The join and part-part whole situations are introduced at this grade. However, when children are asked to make up and tell addition stories, any addition situations might be used. A subtraction sentence has many possible interpretations. They are a missing part, taking away from a whole, or comparing quantities. The easiest application for children to understand is separating from a whole. A traditional term for subtract that children still sometimes use is take away. This term does signal the separating from a whole interpretation of subtraction but limits children's thinking about other possible applications of subtraction. Because the other two applications of subtraction, missing part and comparing quantities, are very important in children's future use of mathematics, it is important to develop these concepts thoroughly in the early grades. Understanding number relationships is the basis for understanding ideas about numbers and operations. The relationship of numbers to five and ten are particularly useful in thinking about various combinations of numbers. Thinking about 7, for example, as "5 and 2 more" and as "3 away from 10" can help answer 5 + 2, 7 – 5, 7 – 2, and 7 + 3. In later years, similar relationships can be used to mentally compute with greater numbers. Number relationships play an important role in fact mastery. Although some early cultures used numeration systems in other bases, the base-ten numeration system endured to become the system used in modern times. People can visualize numbers up to 10 by picturing fingers on one hand for numbers through five and then use the second hand to represent numbers from six through ten. It is crucial that children understand the concept of ten because the ability to work with place value, regrouping, and many other concepts depends on that understanding. Ten-frames are an excellent way to help children recognize numbers without having to stop their thought processes and resort to counting. By using the ten-frame model to develop 5 and 10 as benchmarks in number relationships, children are building a foundation for written and mental computation strategies for adding and subtracting. Fact strategies are mental techniques for figuring out facts. Children who can quickly commit facts to memory without using fact strategies should not be required to use these strategies. Children who are working on committing basic facts to memory, but have not yet done so, should learn to use effective strategies. The goal is for children to eventually stop using fact strategies as they develop fast and accurate recall of basic facts. Practice over time helps children move to mastery. Fluency with addition facts means that children can perform basic computations easily and this helps children reason numerically. Number relationships provide the foundation for fact strategies. Along with memorization of facts comes the need to learn new verbal and symbolic mathematical language. Children may need to review terms they learned earlier such as addition, addend, sum, part, and whole. They may need to practice until they are at ease with using these words and symbols.		**Unit Timeline:** 62 – 70 days (one day for each lesson (50), one review day for each topic (6), and one testing day (6)

DESIRED RESULTS

Transfer Goals: - ***Students will be able to independently use their learning to…***

- Draw a set of objects, identify the parts that make the whole, and then write two addition sentences about the picture.
- Write a subtraction sentence to solve a comparing problem and write a related addition sentence for that subtraction sentence.
- Recognize and represent numbers on a ten-frame, as well as determine parts of 10.
- Draw pictures and write number sentences to solve problems which involve subtraction facts through 12.
- Solve two-question problems by using the answer from the first question to solve the second question.
- Draw a picture for a word problem. Then write a fact family and identify a number sentence in that family to use to solve a problem.
- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.
- Use appropriate tools strategically.
- Attend to precision.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

Understandings

Students will understand that…

1. Numbers can represent quantity, position, location, & relationships.
2. Place value is based on groups of ten.
3. Computation involves taking apart and combining numbers using a variety of approaches.
4. Flexible methods of computation involve grouping numbers in strategic ways.
5. Proficiency with basic facts aids estimation and computation of larger and smaller numbers.
6. A problem solver understands what has been done, knows why the process was appropriate, and can support it with reasons and evidence.
7. There can be different strategies to solve a problem, but some are more effective and efficient than others are.

Essential Questions:

Students will keep considering…

- How is math relevant to me?
- What do numbers convey?
- How can numbers be expressed, ordered, and compared?
- How does the position of a digit in a number affect its value?
- In what ways can numbers be composed and decomposed? –
- How are place value patterns repeated in numbers?

- How can place value properties aid computation?
- What are different models of and models for addition and subtraction?
- What are efficient methods for finding sums and differences?
- What computation tools are best suited to which circumstances?
- How does explaining my process help me to understand a problem's solution better?
- How do I decide what strategy will work best in a given problem situation?
- How do I know when a result is reasonable?

Students Will Know…	Students Will Be Able to …	Standard
● Part: a piece of a whole ● Whole: you combine parts to find the whole ● Addend: the numbers you add together to find a total ● Join: put together ● Doubles: a whole that has two equal parts ● Addends: the numbers you add together to find the whole ● Missing part: that part that is not known ● Subtract: you can subtract a part from the whole to find the missing part ● Difference: the difference is the amount that is left after you subtract ● Compare: find the difference ● Subtraction sentence: a subtraction sentence is a way to show a subtraction problem ● Near double: an addition fact that has an addend that is one more than the other addend ● 1 less than: 1 less than 8 is 7 ● Doubes plus 1: a doubles plus 1 more with addends that are 1 apart ● Doubles plus 2: a doubles plus 2 more with addends that are 2 apart ● Related fact: addition facts and subtraction facts that have the same numbers ● Fact family: a group of related addition and subtraction facts.	1. Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.	1.OA.1
	2. Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.	1.OA.2
	3. Apply properties of operations as strategies to add and subtract.[2] *Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.)*	1.OA.3
	4. Understand subtraction as an unknown-addend problem. *For example, subtract 10 – 8 by finding the number that makes 10 when added to 8.*	1.OA.4
	5. Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).	1.OA.5
	6. Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).	1.OA.6
	7. Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2. **Understand that = does not mean "the answer is."**	1.OA.7
	8. Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = _ – 3, 6 + 6 = _.*	1.OA. 8

EVIDENCE of LEARNING			
Understandings	Standards	**Unit Performance Assessment**:	**R/R Quadrant**
3, 6, 7	1.OA.1	**Formative #1: Quick Check 1-6, #3** ○ **Scoring Guide:** see 3-point scoring rubric on page 26a of Envisions TE	B
3, 6, 7	1.OA.1, 1.OA.4	**Formative #2: Quick Check 2-5, #3** ○ **Scoring Guide: :** see 3-point scoring rubric on page 60a of Envisions TE	A
2, 3	1.OA.5, 1.OA.6	**Summative: Topic 3 Performance Task**	B
3, 4	1.OA.4, 1.OA.8, 1.OA.6	**Formative #4: Quick Check 4-8, #3** ○ **Scoring Guide:** see 3-point scoring rubric on page 148a of Envisions TE	A
1, 2	1.OA.6, 1.OA.8, 1.OA.4	**Formative #5: Quick Check 5-6, #3** ○ **Scoring Guide:** see 3-point scoring rubric on page 186a of Envisions TE	A
4, 5, 7	1.OA.1, 1.OA.4, 1.OA.6	**Summative: Topic 6 Performance Task** ○ Scoring Guide: see 3-point scoring rubric on page 88, 114, 160, and 236 of Envisions TE	B

SAMPLE LEARNING PLAN				
Pre-assessment: Use "Review What you Know" to diagnose students' readiness by assessing prerequisite content.				
Understanding	**Standards**	**Major Learning Activities:**	**Instructional Strategy:**	**R/R Quadrant**
1, ,2	1.OA.1	**Spatial Patterns for Numbers to 10** 1. Set the purpose: You have counted objects in different arrangements. Today you will learn how using two patterns can help you find a number. 2. Connect: Do you remember some of the dot patterns you have seen before. How did you make 5?	Setting Objectives and Providing Feedback Nonlinguistic Representations	A

		3. Pose the problem: Pass out 6 counters. Can you make 2 patterns using the 6 counters? 4. Model: Hold up the 5 and 1 Two-Part Pattern Card. Point to the 5-pattern on the card. How many dots are in this part? (5) Then point to the 1. How many dots are in this part? (1) How many dots are there altogether? (6) Count the number of dots with children. Have children make the pattern on the work mat. Model how to arrange the counters. I make one part of the pattern on this side. What do you think I will put on the other side? (1 counter) Place 1 yellow counter on the other side of the line. What are some ways we can find out how many dots are on the mat? Have children discuss possible strategies. Emphasize that counting may not be the quickest method. 5. Repetition: Do the same with a Two-Part Card that shows 4 and 5, and then 3 and 6. 6. As students work on pages 4 and 5, assist or work with small groups as necessary.	Providing Practice	
3, 4, 5	1.OA1, 1.OA7, 1.OA.8	**Introduce Addition Expressions and Number Sentences** 1. Set the purpose: You have learned about finding the sums of numbers. Today you will learn how to write an addition number sentence to show parts of a total. 2. Connect: Review the term in all. Hold up 5 fingers; 3 on one hand and 2 on the other. How many fingers am I holding up in all? (5) When you used 4 counters and 5 counters, how many did you have in all? (9) 3. Pose the problem: Have children count 9 red cubes and 9 blue cubes, and put them into a paper bag. If I take out a handful of cubes, some of the cubes might be red and some of the cubes might be blue. Can I use addition to find the number of cubes I took in all? Allow children time to explore with the cubes and share how they decided. When you put two parts together, you add the parts. The title is the sum. 4. Model: Without looking, take a small handful of cubes out of the bag. Make 2 piles of cubes: one red and one blue. How many red cubes are there? How many blue cubes are there? Have children put red and blue cubes on the workmat. Guide them to one color on each side. How many cubes are there in all? Lead them to show the parts and the whole in one sentence. Now write it next to item 1. Example: 3 and 2 is 5 in all. 5. Small group interaction: Have children work in pairs. Tell them to put their connecting cubes into a paper bag. Instruct them to take turns removing a handful of cubes from the bag. The child who takes out the cubes should group	Setting Objectives and Providing Feedback Nonlinguistic Representations Providing Practice	A

		them by color and place them on the workmat. Have the partner say aloud the sentence that shows the parts and the whole. 6. As students work on pages 20 and 21, assist or work with small groups as necessary.		
1, 2, 6, 7	1.OA.1, 1.OA.8	**Stories About Comparing** 1. Set the purpose: You have learned how to write subtraction number sentences to describe stories about taking away. Today, you will learn how to write subtraction sentences to compare two groups. 2. Connect: What does it mean to have more of something, such as marbles? (to have a greater number) If I have more marbles than you have, what would you need to know to find out how many more? (how many you had and how many I had) 3. Pose the problem: Display a tower of 6 red connecting cubes and a tower of 4 blue connecting cubes. Are there more blue cubes or red cubes? How many more? How can you tell? 4. Whole class discussion: Distribute connecting cubes and present a story. Lori sees several cars driving by. She sees 6 red cars and 4 blue cars. Lori wonders, "How many more red cars drove by?" Show a tower with 6 cubes. What do these cubes show? (the red cars) Show a tower with 4 connecting cubes. What do these cubes show? (the blue cars) Put the two towers next to each other. Which group is taller? (the group with 6 cubes) Point to the top of the tower with 6 cubes. There are 2 more cubes in this tower. So we know that there are 2 more red cars. Explain that children can write a number sentence that shows how the towers compare. Write 6-4=2 on the board. The difference between 6 cubes and 4 cubes is 2 cubes. 5. Small-Group Interaction: Have children work in groups of 3. Have one child think of a comparing story that uses numbers less than 10. Have the second child model the story using connection cubes and tell the difference. Have the third child write the numbers sentence in item 1. Guide children to switch roles and complete items 2 and 3. 6. As students work on pages 62 and 63, assist or work with small groups as necessary.	Nonlinguistic Representations Providing Practice Cooperative Learning	B
2, 3	1.OA4, 1.OA6, 1.OA.8	**Finding Missing Parts of 10** 1. Set the purpose: You have learned how to show parts of 10 on a ten-frame. Today you will learn how to use a part of 10 to help you find the missing part. 2. Connect: If you have a box of crayons that says "10 crayons" on the front of the box, but the box is not full, how can you find how many crayons are missing?	Setting Objectives and Providing Feedback	A

		3. Pearson Realize Pose the problem: At the beach, Tracy collected 10 shells. A crab came along and covered a part of her collection. Tracy could only see 8 shells. How many shells did the crab cover? 4. Model: Work in pairs. Ask one child to place 10 counters, some on the left side of the box and some right side of the box on page 103. Then have the child put the cup over one side of the box to hide those counters. Have the second child try to find how many hidden counters there are. Draw the counters you know in the one part of the part-part-whole model. Find the missing part without lifting the cup. Draw the missing part in the other part of the model. Then lift the cup to check your work. 5. As students work on pages 104 and 105, assist or work with small groups as necessary.	Generating and Testing Hypotheses Providing Practice Cooperative Learning	
3, 4, 5	1.OA.4, 1.OA.8, 1.OA.6	**Thinking Addition to 8 to Subtract** 1. Set the purpose: you have learned how to use doubles addition facts to solve subtraction problems. Today you will learn how to use addition facts to solve subtraction facts. 2. Connect: Invite 4 children to the front of the class. I need 7 children in all. How many more do I need? How did you figure this out? Some children may say they used addition. Write 4 + 3 = 7 on the board and circle the 3. If you subtract 4 from 7, would that help you find how many more students I needed? Write 7 – 4 = 3 and circle the 3. If you know one of these facts you also know the other. 3. Pose the problem: how can you use an addition fact to find the answer to 6 – 4 = ? 4. Model: Have children place 4 counters in the left space and place the number card 6 on the top. Ask children to identify the subtraction sentence. Write 6 – 4 = __. You know the whole is 6 and one of the parts is 4. How many more counters do you need to make 6? So 2 is the missing part. 5. Small-Group interaction: Give pairs of children number cards 5-8, counters and a cup. Have the first child place a card face up in the box above the mat. Put the same number of counters in a cup. The second child takes some counters out of the cup and places them on the left side of the mat. Use what you know about the whole and the part shown to find the missing part. Write the addition fact shown by the counters on your workmat. Now use the addition fact to find and record the related subtraction fact.	Cues, Questions, and Advance Organizers Providing Practice Cooperative Learning	A

		6. As students work on pages 146-146, assist or work with small groups as necessary.		
3, 5	1.OA.6, 1.OA.1, 1.OA.7, 1.OA.8	**Doubles Plus 2** 1. Set the purpose: You have learned how to use doubles facts to find doubles-plus-1 facts. Today you will learn how to use doubles facts to find doubles-plus 2 facts. 2. Connect: You want to share your crackers with a friend. You put the crackers in 2 bowls. One bowl has 2 more crackers than the other. What could you do to have the same number of crackers in each bowl? 3. Pearson Realize- Pose the problem: Ken and Sue go to the beach to look for seashells. They each find 5 seashells. Have children use connecting cubes to model the doubles fact. What doubles fact shows how many seashells they have altogether? (5 + 5 + 10) If Ken finds 2 more seashells, how could you find how many seashells there are in all? 4. Have children work in pairs. The number on the seashell is the number of shells Ken and Sue each have. The first child uses the blue cubes to show this doubles fact. Then the second child chooses where to add the 2 extra yellow cubes. What did you do to show the extra seashells? Now the cubes show 5 + 5 and 2 more. What number sentence finds the sum of the new numbers? (5 + 7 + 12) What is the difference between the numbers? Can you find another double to use? 5. As students work on pages 172-173, assist or work with small groups as necessary.	Setting Objectives and Providing Feedback Nonlinguistic Representations Providing Practice	A
3, 5	1.OA.4, 1.OA.6, 1.OA.8	**Fact Families** 1. Set the purpose: You have learned how to write a subtraction fact that is related to an addition fact. Today you will learn how to write all the related addition and subtraction facts for a whole and two parts. 2. Connect: What do you call a group of people who are related? What do you think you call a group of related facts? What are some related facts? 3. Pose the problem: Can you write two addition and two subtraction facts that use the numbers 5, 8, and 13? Use what you know about related facts. 4. Model: Give each pair 13 counters to use on the part-part-whole model. Model addition and subtraction sentences using the 3 numbers and write them. Find all 4 facts. What number is the whole? What are the parts? How can you show these on the part-part-whole model? What number do you start with for a subtraction sentence?	Setting Objectives and Providing Feedback Cues, Questions, and Advance Organizers Providing Practice	A

		5. Small-group: Ask one child to rearrange the 13 counters in the part-part-whole model. Each child uses this arrangement to write another fact family for 13. Have partners compare and discuss their work. 6. As students work on pages 218-219, assist or work with small groups as necessary.		

UNIT RESOURCES
Teacher Resources: ● **Envisions Teacher Manual** ● **Pearson Realize** ● **Manipulative kit**
Student Resources: ● Envisions Student Book
Vocabulary: ● Part: a piece of a whole ● Whole: you combine parts to find the whole ● Addend: the numbers you add together to find a total ● Join: put together ● Doubles: a whole that has two equal parts ● Missing part: that part that is not known ● Subtract: you can subtract a part from the whole to find the missing part ● Difference: the difference is the amount that is left after you subtract ● Compare: find the difference ● Subtraction sentence: a subtraction sentence is a way to show a subtraction problem ● Near double: an addition fact that has an addend that is one more than the other addend ● 1 less than: 1 less than 8 is 7 ● Doubles plus 1: a doubles plus 1 more with addends that are 1 apart ● Doubles plus 2: a doubles plus 2 more with addends that are 2 apart ● Related fact: addition facts and subtraction facts that have the same numbers ● Fact family: a group of related addition and subtraction facts.

Content Area: Math	**Course: Grade 1**	**UNIT: Numbers & Operations in Base 10**
Unit Description: A numeration system is a system or a plan for naming numbers. Our numeration system is called the Hindu-Arabic numeration system. Roman (numerals) is another system you are probably familiar with. The Hindu-Arabic system has the following attributes. 1. It uses the **digits** 0 through 9. 2. It uses groups of 10. 3. Position tells the value of a digit. 4. Each position to the left is 10 times more than the one to its right. The third attribute above is why we often use the term "place value" when talking about our numeration system. It is important to remember that this is only one attribute of our system for naming numbers. Counting to 100 is a skill based on counting objects by 1s. Connecting these concepts by making groups of 10 is an important step for children. The use of a ten-frame emphasizes the concept of "10 and some more." This language helps children learn the teen numbers, whose names do not form an easily recognized pattern. Understanding place value requires integrating the concept of grouping by **tens** with the knowledge of how groups are recorded in our place-value system, how numbers are written, and how they are spoken. Children can count out a set of 46, one by one, but they should also see that making groupings of tens and leftovers is another more efficient way of counting the same quantity. Consecutive numbers are sequences of numbers in which each number is one more than the previous number. For example 89, 90, 91 are consecutive numbers, but 89, 92, and 95 are not. When children count, they are listing a set of consecutive numbers. Although they are not usually aware of it, each time they say a number, they are adding one to the previous number. Children can become aware that counting is the same as adding one as they work with the idea of one more. The idea of one less is the same as counting back. Children often use the idea of one more and one less when talking about dates, ages, and other everyday occurrences. Children have learned and used many computational strategies for single-digit addition and subtraction. Many of these strategies apply to multi-digit arithmetic as well. Fluency with traditional algorithms for operations with multi-digit numbers requires a conceptual understanding of numbers. It is important to remember that number sense (i.e., mental math and estimation) for adding and subtracting whole numbers should be developed prior to introducing algorithms. This number sense provides a critical foundation for understanding and remembering algorithms. Base-ten materials and the hundred chart can be used to represent the meaning of addition. Provide children with the opportunities to work with base-ten concepts and models so that they begin to use these ideas to solve problems. Children need to have a well-developed number sense prior to subtracting two-digit numbers. This includes comfort with the basic addition and subtraction facts and an understanding of the place-value attribute of our numeration system. There are many ways to subtract two-digit numbers. Some children may develop their own strategies for subtracting two-digit numbers before they are taught the standard algorithm. For example, some children count up to subtract larger numbers, which is a legitimate strategy.		**Unit Timeline:** 28-33 days

DESIRED RESULTS
Transfer Goals- ***Students will be able to independently use their learning to…*** ● Complete a number pattern by counting by 1s or 10s. ● Select, write, and represent a number as different combinations of tens and ones. ● Complete a portion of a hundred chart and then use it to compare and order numbers. ● Use a hundred chart to add multiples of 10 to two-digit numbers. ● Use a hundred chart to subtract multiples of 10 from two-digit numbers and to subtract tens or ones from a two-digit number. ● Make sense of problems and persevere in solving them. ● Reason abstractly and quantitatively. ● Construct viable arguments and critique the reasoning of others. ● Model with mathematics. ● Use appropriate tools strategically. ● Attend to precision. ● Look for and make use of structure. ● Look for and express regularity in repeated reasoning.

Understandings - ***Students will understand that…***

1. Numbers can be used to tell how many.
2. Counting and place-value patterns can be seen on a number chart. A number chart shows numbers in order in rows and columns.
3. Numbers 11 through 20 can be shown as a group of 10 and up to 10 more.
4. The decade numbers are built on groups of ten. The oral names are similar, but not the same as the number of tens counted. . When there are only tens, counting by 10s can be used to find how many there are in all.
5. Counting by 10s can be used to find the total number of objects in a collection of equal groups.
6. Some problems can be solved by identifying elements that repeat in a predictable way.
7. Sets of 10 can be perceived as single entities. In a standard numeral, the tens are written to the left of the ones.
8. When objects are grouped in sets of 10 and leftovers (ones), counting the groups of ten and adding ones tells how many there are in all.
9. Numbers greater than 10 can be represented as the sum of the tens and the ones.
10. Number greater than 10 can be named in more than one way and have the same value.
11. Some problems can be solved by generating a list of outcomes and organizing that list in a systematic way so all outcomes are accounted for.
12. 1 more, 1 less, 10 more, and 10 less express a relationship between two numbers.

13. For 2 two-digit numbers, the number with more tens is the greater number. If the 2 numbers have an equal number of tens, then the number with more ones is greater.
14. Place value can be used to compare numbers.
15. Numbers can be represented on a hundred chart.
16. Adding groups of 10 is similar to adding numbers less than 10.
17. There is more than one way to do a mental calculation. Techniques for doing addition calculations mentally involve changing the numbers or the expression so the calculation is easy to do mentally.
18. The traditional algorithm for adding a two-digit number and a two-digit number starts by adding ones. Sometimes 10 ones need to be regrouped as 1 ten. Then the tens are added.
19. Information in a problem can often be shown using a picture or diagram and can be used to understand and solve the problem. Some problems can be solved by writing and completing a number sentence or equation.
20. Subtracting groups of 10 is similar to subtracting numbers less than 10.
21. There is more than one way to do a mental calculation. Techniques for doing subtraction calculations mentally involve changing the numbers or the expression so the calculation is easy to do mentally.

Essential Questions: ***Students will keep considering…***

- What number patterns are there when counting to 120?
- How can you use ten-frames to show numbers 11 to 19 as a group of 10 and some more?
- How can you express the relationship between two numbers that are 1 or 2 more than or fewer than each other?
- How can you use groups of 10 to count?
- How is counting with numbers greater than 100 similar to counting with smaller numbers?
- How can you use counting by 10s to find a total number of objects?
- How can finding a number pattern help you solve a problem?
- How can numbers 10 and higher be shown, counted, read, and written?
- How can a number be broken into groups of 10 and leftover ones?
- How many tens make up each of the decade numbers from 10 through 90?
- When objects are grouped in sets of 10 and leftovers (ones), how do you write the number for how many there are in all?
- How does adding the values of digits produce the total value of the number?
- How can you use tens and ones models to represent a number in different ways?
- How can you use an organized list to solve a problem?
- How can numbers to 100 be compared?
- How is a number changed when its ones digit is changed by 1 or its tens digit is changed by 1?
- How can a hundred chart show the relationships of 1 more than, 1 less than, 10 more than, and 10 less than?
- How can you compare two-digit numbers?

- For any 2 two-digit numbers, how can you identify the greater number?
- How does listing all the possible ways to do something help to solve a problem?
- What are ways to add with tens and ones?
- How is adding groups of 10 similar to adding numbers less than 10?
- What changes when you add tens to a two-digit number?
- How do two-digit numbers change when multiples of ten are added to them?
- How can you use mental math to add multiples of 10 to a two-digit number?
- How do you know when to regroup when adding to a two-digit number?
- How can you solve a problem by drawing a picture and writing a number sentence?
- What are ways to subtract two-digit numbers?
- How is subtracting groups of 10 from groups of 10 similar to subtracting 1 from numbers less than 10?
- How can you use a hundred chart to subtract tens from other tens?
- How do two-digit numbers change when multiples of ten are subtracted from them?
- Why does only the tens digit change when subtracting tens from a two-digit number?
- How can you draw a picture and write a number sentence to solve a problem?

Students Will Know…	Students Will Be Able to …	Standard
● tens: the second place form the right in the numeral. ● ones: the digit to the right of the tens ● digit: the symbols that make up a number ● break apart a ten: break apart a ten to make ten ones ● 1 more: adding 1 more to a number ● 1 less: taking 1 away from a number ● 10 more: adding 10 more to a number ● 10 less: taking away 10 from a number ● greater than: the bigger number when comparing two numbers ● less than: the smaller number when comparing two numbers ● equal to (=): when comparing two numbers the tens and the ones are the same in both numbers ● regroup: whenever there are 10 or more ones, you should regroup the ones to make one more ten	1. Counting to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral. 2. Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: a. 10 can be thought of as a bundle of ten ones-called a "ten." b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones. c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and o ones) 3. Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, <. 4. Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten. 5. Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used. 6. Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.	1.NBT.1 1.NBT.2 1.NBT.2a 1.NBT.2b 1.NBT.2c 1.NBT.3 1.NBT.4 1.NBT.5 1.NBT.6

EVIDENCE of LEARNING			
Understandings	Standards	**Unit Performance Assessment**:	**R/R Quadrant**
2, 16	1.NBT.6	**Summative: Topic 11 Performance Task** ○ **Scoring Guide:** see 3-point scoring rubric on page 378 of Envisions TE	B
6	1.NBT.1	**Formative #1: Topic 7 Performance Task** ○ **Scoring Guide:** see 3-point scoring rubric on page 266 of Envisions TE	A
4, 7, 11	1.NBT.2	**Formative #2: Topic 8 Performance Task** ○ **Scoring Guide:** see 3-point rubric on page 296 of Envisions TE	A
16, 18	1.NBT.3	**Formative #3: Topic 9 Performance Task** ○ **Scoring Guide:** see 3-point rubric on page 322 of Envisions TE	B
16, 17, 18	1.NBT.4	**Formative #4: Topic 10 Performance Task** ○ **Scoring Guide:** see 3-point rubric on page352	B

SAMPLE LEARNING PLAN				
Pre-assessment: Use "Review What you Know" to diagnose students' readiness by assessing prerequisite content.				
Understanding	**Standards**	**Major Learning Activities:**	**Instructional Strategy:**	**R/R Quadrant**
1, 2, 3	1.NBT.1	**Making Numbers 11 to 19** 1. Set the purpose by telling students that they have learned how to make numbers to 10 using a ten-frame. Today they will use ten-frames to make numbers to 19. 2. Connect by holding up 15 pencils in one hand. "Let's count how many pencils I am holding." Count the pencils aloud with the class. "Who knows how to write the number 15?" Invite a volunteer to write 15 on the board.	Cues, Questions, and Advance Organizers Providing Practice Cooperative Learning	B

		3. Pose the problem: Distribute counters to each child. "How can you use counters and ten-frames to show 15?" Allow time for children to work with their counters and the workmat. Invite children to share their work. 4. Model /Demonstrate- Draw 2 ten-frames on the board. "How can I show 15 on these ten-frames?" Ask a volunteer to show 15 as 10 in the first ten-frame and 5 in the second ten-frame. "How many are in the second ten-frame?" (5) "So, 15 is 10 and 5 more. How can you show 12 on the ten-frames?" Have another volunteer show 12 on two ten-frames. "How are 15 and 12 alike?" [Sample answer: for 15, five parts of the second ten-frame are covered. For 12, only two parts of the second ten-frame are covered.] 5. Have children work with a partner. Ask one child to use the ten-frames to show a number between 11 and 19. Have the child ask "What number am I showing?" Allow the other child to decide what number was made. When they have decided, guide them to write the number in the first space in Item 1, then count the counters in each ten-frame to see that the number is 10 and some more. Children record this in the remaining spaces in Item 1. Have children switch roles and complete Item 2. 6. As students work on pages 240 and 241, assist or work with small groups as necessary.		
5, 7	1.NBT.2a	**Counting with Groups of 10 and Leftovers** 1. Set the purpose by telling students they have learned how to make sums to 10. Today they will learn how to show two-digit numbers as groups of ten and leftover ones. 2. Connect by holding up 12 crayons. "I have 12 crayons. If I fill a box that holds 10 crayons, some crayons will be left over." Place 10 crayons in one hand and show 2 in the other. "How many of the 12 crayons fit in the box? How many are left over?" [10 fit; 2 are left over.] 3. Pose the problem: Write 34 on the board. "How many groups of 10 can you make with 34 cubes?" Observe and facilitate as children work with the cubes. Have them share their decisions. 4. Model/Demonstrate: Display 34 cubes as 3 trains of 10 with 4 left over. Have children count the cubes aloud. "How many groups of 10 did I make?	Generating and Testing Hypotheses Cues, Questions, and Advance Organizers Nonlinguistic Representations Providing Practice	A

		[3] Are there enough to make another group of 10?" [No, there are only 4.] Emphasize that the leftovers are kept apart because there are not enough of them to make a group of 10. "So, you have 3 groups of 10 and 4 leftovers. Check to make sure there are a total of 10 cubes in each group, 4 leftovers, and 34 cubes in all. 34 is 3 groups of 10 and 4 left over." Write this sentence on the board and have children read it aloud. Show children how to record the numbers as Item 1 on page 269. 5. Have children work in groups for Item 2. Write the number 48 on the board. One child takes 48 cubes from the bag and places them on the workmat. Another child counts the number of cubes aloud to check that 48 have been taken out of the bag. Children work together to find the groups of 10 in the number. To make the groups of 10 easily visible, children can connect 10 cubes together in a cube train. Children then record the number of groups of 10, the number cubes left over, and the total number of cubes in the spaces in Item 2. Repeat the activity with the number 21 for Item 3. Have children switch roles. 6. As students work on pages 270 and 271, assist or work with small groups as necessary.	Cooperative Learning	
13	1.NBT.5 1.NBT.4	**1 More, 1 Less; 10 More, 10 Less** 1. Set the purpose by telling students they have learned to count, and how to skip count by 10s. Today you will find 1 more than, 1 less than, 10 more than, and 10 less than a given number. 2. Connect by having children skip count by 10s from multiples of ten, such as 20, 30, and 40. Then have children count on and count back from two-digit numbers, such as 45. 3. Pose the problem: Give each child 23 connecting cubes and have them show 12. "How can you use connecting cubes to find 1 more than 12? What about 1 less than 12?" Invite volunteers to show the resulting cube trains and tell what numbers they found. 4. Academic vocabulary: Have a volunteer hold up a train of 12 cubes and add 1 more to it. "How many cubes are there now? [13] 13 is **1 more** than 12." Take away the added cube, to make the original train of 12 cubes. Then, take one away. "I took 1 cube away from 12. How many cubes are left?	Cues, Questions, and Advance Organizers Nonlinguistic Representations Providing Practice	B

		[11] 11 is **1 less** than 12." Demonstrate with connecting cubes **10 more** and **10 less** than 12. You could also use the Animated Glossary on Pearson Realize 5. Instruct in small steps: Have children work in pairs to show 36 in tens and ones with connecting cubes. "How did you show 36 using tens and ones? [Three trains of 10, then 6 singles.] Now show 1 more than 36. Add 1 cube to find the number. What is the number? [37] How are 36 and 37 related?" [37 is 1 more than 36; 36 is 1 less than 37.] Children record their answers in Item 1. Guide children to find 1 less, 10 more, and 10 less than 36. Discuss how each number and 36 are related. 6. Distribute number cards and a number cube to pairs. Tell them to keep the cards face down. One partner tosses the number cube and writes the number on the first line in Item 2. The other partner then picks a card and writes the number on the next line in Item 2. Pairs work together to complete Item 2, and continue in the same way to complete Items 3 and 4. 7. As students work on pages 300 and 301, assist or work with small groups as necessary.		
17, 18	1.NBT.4	**Adding Groups of 10** 1. Set the purpose by telling students they have learned how to add ones. Today they will learn how to add tens. 2. Connect by holding up a single-color 10-cube tower. "How many tens? [1 ten] How many ones are in one ten?" [10] Hold up two 10-cube towers. "How many tens? [2] How many ones in two tens?" [20] Hold up three 10-cube towers. "How many tens? [3] How many ones in three tens?" [30] 3. Pose the problem: Write 3+5=__ and 30+50=__ on the board. "How are these problems alike?" [They are both addition problems; They both have a 3 and a 5.] "How can you use 3+5 to find the sum of 30+50?" Have children work together to discuss and share ideas. 4. Link to prior knowledge: "Knowing how to add ones can help you add tens." Refer to 3+5 on the board. "How can you show 3+5 with your cubes?" Have small groups of children use their cubes to model and then share what they did. "What is 3+5?" [8] Write 8 as the sum of 3+5 on the board.	Cues, Questions, and Advance Organizers Providing Practice	B

		5. Model/Demonstrate: "How can you show 30+50 with your cubes?" [Show three 10-cube towers for 30 and five 10-cube towers for 50.] Have groups of children use their cubes to model the problem and share what they did. "How many 10-cube towers do you have in all? [8] How many ones are in eight 10-cube towers? [80] So what is 30+50?" [80] Write 80 as the sum of 30+50 on the board. 6. Distribute 2 sets of number cards to groups of children. Ask each group to pick two cars (one from each set) to put in the boxes at the top of page 325. "Use the small pieces of paper to cover the zeros on the number cards." For example, if a group has 20+50, they should cover up the zeros to show 2+5. "Use cubes to add the ones. Write the number sentence." Have children remove the pieces of paper to uncover the zeros. "Now use your cubes to add the tens. Write the number sentence." Have groups repeat with different number cards to complete Items 2-4 7. As students work on pages 326 and 327, assist or work with small groups as necessary.		
22, 23	1.NBT.6	**Subtracting Groups of 10** 1. Set the purpose by telling students they have learned to subtract ones. Today they will learn how to subtract tens. 2. Connect by holding up a 10-cube tower (all one color). "How many groups of ten? [1 ten] How many ones are in one group of ten?" [10] Hold up two 10-cube towers. "How many ones are in two groups of ten?" [20] Hold up three 10-cube towers. "How many ones are in three groups of ten?" [30] 3. Pose the problem: Write 4-1=__ on the board. Under that write 40-10=__. "How are these problems alike?" [They are both subtraction problems; they both have a 4 and a 1] "How can we use 4-1 to find the difference of 40-10?" Have children work together to solve problems. 4. Link to Prior Knowledge: "Knowing how to subtract ones can help you to subtract tens." Point to 4-1=__ on the board. "How can you show 4-1 with your cubes?" Have children show this and then share what they did. Write 3 as the difference for 4-1. 5. Model/Demonstrate: "We are going to solve 40-10. How can you show 40 with your place-value blocks?" [Show 4 tens.] Have children do the same.	Generating and Testing Hypotheses Cues, Questions, and Advance Organizers Nonlinguistic Representations Providing Practice	B

		"How many tens do you have? [4] How many ones are in 4 tens? [40] What are you taking away? [10] So, how many tens should you take away?" [1 ten] Remove 1 ten. "How many tens do you have now? [3] How many ones is this? [30] So, what is 40-10?" [30] Write 30 as the difference on the board. 6. Have children place their number cards in two piles on page 355 (one with numbers 50, 60, 70, 80, 90 beside the left box and one with numbers 10, 20, 30, 40 beside the right box. Ask each group to pick a card from each pile and put it in the box next to that pile. "Use the small pieces of paper to cover the zeros on the number cars. Record the numbers in Item 1 and use your place-value blocks to subtract ones. Write the number sentence." Have children remove the pieces of paper. "Now use your place-value blocks to subtract tens. Write the number sentence." Repeat for Items 2-4. 7. As students work on pages 356 and 357, assist or work with small groups as necessary.		

UNIT RESOURCES
Teacher Resources: ● **Envisions Teacher Manual** ● **Pearson Realize** ● **Manipulative kit**
Student Resources: ● Envisions Student Book
Vocabulary: ● tens: the second place form the right in the numeral. ● ones: the digit to the right of the tens ● digit: the symbols that make up a number ● break apart a ten: break apart a ten to make ten ones ● 1 more: adding 1 more to a number ● 1 less: taking 1 away from a number ● 10 more: adding 10 more to a number ● 10 less: taking away 10 from a number

- greater than: the bigger number when comparing two numbers
- less than: the smaller number when comparing two numbers
- equal to (=): when comparing two numbers the tens and the ones are the same in both numbers
- regroup: whenever there are 10 or more ones, you should regroup the ones to make one more ten

Content Area: Math	**Course:** Grade 1	**UNIT:** Measurement and Data
Unit Description: Measurement provides a real-world context for revisiting mathematics from other strands in the mathematics curriculum: whole numbers, spatial sense, place value, and sorting by classes of attributes. The *process* of measurement is the same for every attribute that is measurable. ● The attribute being **measured** is identified (for example, length). ● An appropriate unit is selected (for example, a unit of length). ● That unit is compared to the object being measured. (For example, a child uses a ruler to find the length of a leaf.) ● The number of units is reported. Choosing an appropriate unit gives children an opportunity to discover an important idea about the relationship between the size of a unit and the number of units required to measure the object. For example, if a larger unit of length (such as a straw) is chosen to measure an object, it will take fewer of them than choosing a smaller unit of length (such as a cube). Children should be aware of the fact that all measures are approximate. They should learn to report the results of measuring as, for example, "about 3 cubes" or "about 4 straws." The measurement of time is an ancient but human phenomenon. The length of a year is determined by the revolution of the earth around the sun and the length of a day is the time it takes the earth to rotate on its axis. Units of time are arbitrary and have developed differently in different cultures. Many of the units of time that we use are based on ones established by the Babylonians and Egyptians. Children need numerous experiences with time in the context of their everyday lives in order to develop the relationships among the various units. Regular references to clock time and the amount of time that elapses during various activities help them gain a sense of hours, minutes, and seconds. Children can deepen their understanding of time by using nonstandard measures ranging from sand clocks to their pulses to measure time. They will realize that our units of time are arbitrary, but that standard units are important for effective communication. Graphs are ways of organizing and displaying information in order to describe data and draw conclusions about it. Identifying the attribute being studied is a key concept for accurately collecting and organizing data. The same collection can be viewed or discussed based on numerous criteria. At this point, children learn to correctly identify the attribute used as a basis for sorting. Data is always gathered to answer a question. How the data is organized or sorted depends on the question being asked. For example, the question asked can be about shoes with laces or about favorite shoe colors. Each shoe has a color attribute and a laces attribute. When the data is sorted, it can be graphed using a picture graph or a bar graph. Both graphs help answer the question by showing the results visually. There is no advantage or disadvantage in the type of graph itself, but different graphs can be more suitable for different data.		**Unit Timeline:** 17-20 days

DESIRED RESULTS

Transfer Goals - ***Students will be able to independently use their learning to…***

- Compare lengths, estimate lengths, and measure lengths.
- Read a schedule, use information in that schedule to solve problems, and tell time to the hour and half hour.
- Choose numbers based on given parameters, write tally marks to represent those numbers and record them in a table, make a bar graph from the data table, and use the bar graph to answer questions.
- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.
- Use appropriate tools strategically.
- Attend to precision.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

Understandings -***Students will understand that…***

1. Objects can be compared and ordered by length.
2. Two objects can be compared indirectly by comparing both to a third object.
3. Measurement is a process of comparing a unit to the object being measured. The length of any object can be used as a measurement unit for length.
4. Different units can be used to measure length.
5. Some problems can be solved by reasoning about the conditions in the problem.
6. The hour hand tells the hour, and the minute hand tells the number of minutes after the hour.
7. Time to the hour can be shown on an analog clock or on a digital clock and can be written in two ways: __o'clock or __:00.
8. Time can be given to the half hour.
9. In order to solve some problems, data needs to be selected from a source outside the statement of the problems like a table.
10. Each type of graph is most appropriate for certain kinds of data.
11. Real graphs, picture graphs, and bar graphs make it easy to compare data.
12. The key for a picture graph determines the number of pictures needed to represent each number in a set of data.
13. Some problems can be solved by making, reading, and analyzing a graph.

Essential Questions: ***Students will keep considering…***

- How can objects be measured, compared, and ordered by length?

- How can you compare and then order concrete objects according to length?
- How can you compare the lengths of two objects when they are in different places?
- How can you estimate and measure length with nonstandard units?
- How can you use a nonstandard unit such as a connecting cube to measure and compare the lengths and heights of objects?
- Does the way you measure change when you measure with different objects?
- How can you measure length using cubes and straws?
- How can clocks and schedules be read and used?
- How do the hands on a clock show time?
- What are the different ways that you write and see times on clocks?
- How do you tell and write time to the half hour?
- How can you use information in a table to solve problems?
- How can graphs be used to show data and answer questions?
- What questions can you answer by looking at a real-object graph?
- What questions can you answer by looking at a picture graph?
- What questions can you answer by looking at a bar graph?
- How can tally marks be used to record information?
- How can connecting cubes be used to make a real graph?
- How can you create a picture graph to show information and to answer questions?
- How can you use information in a tally chart to make a bar graph and answer questions?

Students Will Know…	Students Will Be Able to …	Standard
● Longest: when comparing the length of objects, the one that is longer ● Shortest: when comparing the length of objects, the one that is shorter ● Taller: when comparing the heights of two people or objects, taller tells which person has the greater height ● Shorter: when comparing the heights of two people or objects, shorter tells which person has the least height ● Estimate: to make a good guess ● measure: finding the actual length instead of a good guess ● Hour hand: the short hand on the clock which shows what hour it is ● Hour: there are 60 minutes in an hour ● Minute hand: the long hand on the clock which shows how many minutes after the hour it is ● Minute: there are 60 minutes in an hour ● O'clock: when the minute hand is on the 12, you say o'clock ● Half hour: 30 minutes ● Schedule: shows times; it lists activities; it is a table ● Picture graph: a graph that uses pictures to show information ● Bar graph: a graph that uses bars of different lengths to show information ● Tally mark: a mark used to record one piece of data ● Data: information that is collected	1. Order three objects by length; compare the lengths of two objects indirectly by using a third object 2. Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. *Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.* 3. Tell and write time in hours and half-hours using analog and digital clocks. 4. Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.	1.MD.1 1.MD.2 1.MD.3 1.MD.4

EVIDENCE of LEARNING			
Understanding	Standards	**Unit Performance Assessment**:	**R/R Quadrant**
1, 2	1.MD.4	**Summative: Topic 14 Performance Task** ○ **Scoring Guide:** see 3-point scoring rubric on page 464 of Envisions TE	C
3, 4	1.MD.1; 1.MB.2	**Formative #1: Topic 12 Performance Task** ○ **Scoring Guide:** see 3-point scoring rubric on page 408 of Envisions TE	A
7, 8, 9	1.MD.3	**Formative #2: Topic 13 Performance Task** ○ **Scoring Guide:** see 3-point scoring rubric on page 430 of Envisions TE	C

SAMPLE LEARNING PLAN				
Pre-assessment: Use "Review What you Know" to diagnose students' readiness by assessing prerequisite content.				
Understanding	**Standards**	**Major Learning Activities:**	**Instructional Strategy:**	**R/R Quadrant**
1, 2	1.MD.1	**Comparing and Ordering by Length** 1. Set the purpose by telling students that they have learned how to put numbers in order from greatest to least. Today they will learn how to compare the length of different objects and put them in order from longest to shortest. 2. Connect by having three children with hair of very different lengths stand in front of the class. Use the words longer and shorter to compare the hair of two children at a time. "Whose hair is longer? Whose hair is shorter?" 3. Pose the problem: "When you have three things with different lengths, how can you put them in order from longest to shortest?" Give children time to discuss different ways they would approach ordering objects by length. 4. Use the 3 different-length straws to introduce vocabulary. Start by showing children two straws. Explain that when comparing length, it is important the objects being compared have their ends lined up. Ensure children understand that if objects are not aligned in this way, any comparison may not be accurate. Line up the two straws. "Which straw is longer?" Have children compare that straw to the third straw. "Which straw is longer?" Tell children that, because this straw is longer than both of the others, it is the **longest**. Use a similar explanation for the **shortest** straw. You could also use the Animated Glossary on Pearson Realize . 5. Give each child 10 connecting cubes connected as a train. "Break your cubes into three not equal parts. Put them in order from longest to shortest. You can compare two groups of cubes at a time to find the longest group." Give children time to order their cubes. "Once you've found the longest, how can you find the shortest?" [I can put the other two next to each other.] Have children put the cubes on Item 1 on page	Setting Objectives and Providing Feedback Cues, Questions, and Advance Organizers Nonlinguistic Representations Providing Practice Cooperative Learning	A

		385. Have them trace around each train, to draw a line to show the length of each group. 6. Give each pair of children three classroom objects of different lengths, such as a crayon, a pencil, and an eraser. "Put them in order from longest to shortest." Have children draw or trace the objects in Item 2. Invite volunteers to show their objects in order from longest to shortest. 7. As students work on pages 382 and 383, assist or work with small groups as necessary.		
6, 7, 8	1.MD.3	**Understanding the Hour and Minute Hands** 1. Set the purpose by telling students they have learned to describe objects, such as by length or weight. Today they will learn to use a clock to describe time. 2. Connect by asking why people use clocks. If there were no clocks, how could you tell what time it is, or what part of the day it is? 3. Pose the problem by holding up the geared demonstration clock, or point to the clock in the classroom. "How many numbers are there? [12] How many hands are there? [2] How are the hands different? [They have different lengths.] How do you think the numbers and the hands show the time?" Have the children discuss and share their ideas. 4. Tell students that there are 60 minutes in an hour. Explain that the short hand on a clock is the **hour hand**, which shows what hour it is, and that the long hand is the **minute hand**, which shows how many minutes after the hour it is. Set the clock to 2 o'clock. "What is the hour hand pointing to? [2] What is the minute hand pointing to? [12] When the minute hand is on the 12, you say o'clock. What time does the clock show?" [2 o'clock] 5. Use a geared demonstration clock to demonstrate for children how the hour hand and minute hand rotate around the clock. Start at 2 o'clock and move the minute hand slowly through the hour. "What did the hour hand do? [It moved from 2 to 3.] What did the minute hand do? [Possible answers: It moved all the way around the clock; it started at 12 and ended at 12.] The minute hand travels all the way around the clock	Nonlinguistic Representations Providing Practice Cooperative Learning	A

		once in one hour. When it reaches the 12, it is a new hour. What time does the clock show now?" [3 o'clock] 6. Write the following times on the board: 7 o'clock, 3 o'clock, 6 o'clock, 12 o'clock, 1 o'clock, 9 o'clock, and 11 o'clock. Have children work in pairs. One child selects a time and writes it in Item 1 on page 411. The partner draws the hands on the clock in Item 1 to show the same time. Children take turns repeating the activity to complete Items 2-4. 7. As students work on pages 412 and 413, assist or work with small groups as necessary.		
10, 11, 12, 13	1.MD. 4	**Using Data from Real Graphs** 1. Set the purpose by telling the students that they can compare groups of objects to tell which has more or fewer. Today they will be learning how to compare and answer questions about objects in real-objects graphs. 2. Drop 7 two-color counters on a table. "Are there more counters that are yellow or red? Are there fewer counters that are yellow or red? [Answers will vary according to how the counters land.] 3. Pose the problem: Invite a child to come to the table to work with you. The child will choose a color; for this example, the child chooses red. "I will be yellow. I will place one yellow counter in the bottom box of the yellow column. Now you will need to do the same with a red counter. We will take turns until no more pairs can be made. The partner with counters remaining places the extra counters in the column for that color. How could this graph make it easier to answer the questions about the counters?" [Sample answer: It is easy to see which color there are more of and which color there are fewer of.] 4. Have pairs of children drop 7 counters onto the workmat on page 433 and take turns placing one at a time on the grid to make pairs. When no more counter pairs can be made, the child with counters remaining places them on the grid. Have children answer the questions on page 433. Discuss children's work. "It is easier to tell which color has more when the counters are in a group, or in a graph? [In a graph] How does a graph make it easier to answer questions about the counters?" [It is easier to see which bar is taller.]	Generating and Testing Hypotheses Cues, Questions, and Advance Organizers Nonlinguistic Representations Providing Practice	B

		5. As students work on pages 434 and 435, assist or work with small groups as necessary.		

UNIT RESOURCES

Teacher Resources:

- **Envisions Teacher Manual**
- **Pearson Realize**
- **Manipulative kit**

Student Resources:

- Envisions Student Book

Vocabulary:

- Longest: when comparing the length of objects, the one that is longer
- Shortest: when comparing the length of objects, the one that is shorter
- Taller: when comparing the heights of two people or objects, taller tells which person has the greater height
- Shorter: when comparing the heights of two people or objects, shorter tells which person has the least height
- Estimate: to make a good guess
- measure: finding the actual length instead of a good guess
- Hour hand: the short hand on the clock which shows what hour it is
- Hour: there are 60 minutes in an hour
- Minute hand: the long hand on the clock which shows how many minutes after the hour it is
- Minute: there are 60 minutes in an hour
- O'clock: when the minute hand is on the 12, you say o'clock
- Half hour: 30 minutes
- Schedule: shows times; it lists activities; it is a table
- Picture graph: a graph that uses pictures to show information
- Bar graph: a graph that uses bars of different lengths to show information
- Tally mark: a mark used to record one piece of data
- Data: information that is collected

Content Area: Math	**Course: Grade 1**	**UNIT: Geometry**
Unit Description: Geometry, the study of shapes in space and spatial relationships, is important because it offers children opportunities to relate mathematics to the real world. Children's first experiences in trying to understand the world around them are spatial and geometric as they distinguish one object from another and determine how close or far away an object is. Research suggests that spatial ability is related to problem-solving ability. Developing children's geometric concepts and spatial sense makes it more likely that they will benefit from the use of models and diagrams in other strands of mathematics. Experience with fractions begins with parts and wholes of everyday objects. A very young child is happy to get part of a favorite food, for example, and pays little attention to the size of the serving or whether the serving is an equal share. As time passes the same child becomes aware of the concepts of equal shares and may have conflicts with a sibling or friend over whether or not fairness prevails. Although young children often use the word half to refer to a part of any size it is still significant that the child knows that there is a special term that names a part of a whole. By first grade many children have a clear idea of what a half is although they may not be able to verbalize this. Other children need to learn that two parts are not necessarily halves. They must learn to make the connection between equal parts and halves.		**Unit Timeline:** 14-16 days

DESIRED RESULTS
<u>Transfer Goals:</u> - ***Students will be able to independently use their learning to…***

- Write a sorting rule, identify solid objects according to that rule, and choose two solids that do not follow the rule. Write a new rule for those solids.
- Count the number of parts of a whole.
- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.
- Use appropriate tools strategically.
- Attend to precision.

- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

Understanding: ***Students will understand that…***

1. Many everyday objects are close approximations of standard plane shapes.
2. Plane shapes have many properties that make them different from one another. Many plane shapes can be described by their sides and vertices.
3. Plane shapes can be combined to make new plane shapes.
4. Many everyday objects closely approximate standard geometric solids.
5. Many solid figures are comprised of flat surfaces and vertices.
6. Attributes can be used to sort solid figures. Many sets of solid figures can be sorted in more than one way.
7. Solid figures can be combined to make other solid figures.
8. Some problems can be solved by generating a list of outcomes and organizing that list in a systematic way so all outcomes are accounted for.
9. Some problems can be solved by reasoning about the conditions in the problem.
10. A region can be divided into equal sized parts in different ways. Equal -sized parts of a region have the same area but not necessarily the same shape.
11. Information in a problem can often be shown using a picture or diagram and used to understand and solve the problem.

Essential Questions: ***Students will keep considering…***

- How can shapes and solids be described, compared, and used to make other shapes?
- How are many everyday objects close approximations of standard plane shapes?
- How does writing down all the ways of doing something help to solve a problem?
- How can identifying the properties of plane shapes help you sort the shapes?
- How can you combine plane shapes to make different pictures?
- How can plane shapes be combined to make new plane shapes?
- What are some everyday objects that are close approximations of geometric solids?
- How does the number of flat surfaces and vertices (corners) help you describe solid figures?
- How can attributes be used to sort solid figures?
- How can solid figures be combined to make new solid figures?
- How do you know the name of a plane shape or solid figure?
- How can fractions be used to name a part of a whole object?
- How can you divide a shape into equal parts?

- How can you describe equal parts of a whole?
- How can a shape that is folded into halves/fourths be described?
- How can drawing a picture help you solve problems related to parts of a whole?

Students Will Know…	Students Will Be Able to …	Standard
● Plane shape: a flat shape (circle, rectangle, square, triangle) ● Hexagon: a six-sided plane shape ● Trapezoid: four-sided shape, the four sides are not the same length, only two lines are parallel ● Sort: to group things according to how they are similar ● Side: straight line of a shape ● Corner: where two straight lines meet on a shape ● Solid figures: a figure that has length, width and height ● Cube: 3-D shape with 6 square sides ● Rectangular prism- 3-D shape with 6 sides, the flat parts look like rectangles ● Sphere: there are no flat parts or corners ● Cylinder: 2 flat circle sides and it rolls ● Cone: has a pointed top, a flat circle and curves ● Flat surface: a non-curved side ● Vertex (vertices): a point where 3 or more edges meet ● Pyramid: a solid shape with a polygon as a base and triangular faces that taper to a point ● Equal parts: parts of a whole that are the same size ● Halves: two equal parts of a whole ● Fourths: four equal parts of a whole ● Quarters: four equal parts of a whole	1. Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes. 2. Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape. 3. Partition circles and rectangles into two and four equal shapes, describe the shapes using the words halves, fourths, quarters and use the phrases half of, fourth of and a quarter of. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.	1.G.1 1.G.2 1.G.3

EVIDENCE of LEARNING			
Understanding	Standards	**Unit Performance Assessment**:	**R/R Quadrant**
9, 10	1.G.3	**Summative: Topic 16 Performance Task** o Scoring Guide: see 3-point scoring rubric on page 510 and 532 of Envisions TE	A, B
5,6	1.G.2	**Formative #1: Write 4 clues about a solid figure. Draw the figure.** o Scoring Guide: see appendix	A, B

SAMPLE LEARNING PLAN				
Pre-assessment: Use "Review What you Know" to diagnose students' readiness by assessing prerequisite content.				
Understanding	**Standards**	**Major Learning Activities:**	**Instructional Strategy:**	**R/R Quadrant**
5	1.G.1	**Flat Surfaces and Vertices** 1. Set the purpose: You have learned how to identify solid figures such as cubes, rectangular prisms, spheres, cylinders, and cones. Today, you will learn how to describe solid figures according to the number of flat surfaces and vertices they have. 2. Connect: How can you describe plane shapes? 3. Pose the problem: Hold up several solid figures. How can you describe plane shapes? 4. Model: Display a cube, rectangular prism, cylinder, cone and sphere. Four of these have flat surfaces. You can set these figures on a desk or table with a face surface facing down and the figures will not roll. A sphere has no flat surfaces. If you set it on the desk it will probably roll. Point to the vertex on the cube. This corner is a vertex. When you have more than one vertex, you call them vertices. These words you can use to describe many solid figures. Who can tell me how to describe the cube? 5. Small-group interaction: display and pass around the remaining geometric solids and discuss which ones have flat surfaces and vertices, and how many of each. How many flat surfaces does this cube have? How many vertices does it have? Have children continue with spheres and cylinders. Have pairs of children use the figures to answer the same questions. 6. As students work on pages , assist 492-492 or work with small groups as necessary.	Setting Objectives and Providing Feedback Nonlinguistic Representations Providing Practice	A
7	1.G.2	**Building Shapes** 1. Set the purpose: You have learned different kinds of plane shapes. Today, you will learn how to make pictures using plane shapes. 2. Connect: On the board, draw a picture of a house using two squares, and a trapezoid. What does this look like?	Cues, Questions, and Advance Organizers Nonlinguistic Representations	B

		3. Pose the problem: Display pictures children have already created in class. What can you use to make a picture? You can use shapes to make a picture. Use shapes to make a small boat. Have children work with pattern blocks. 4. Model: Have pairs show how they made their boat. Ask, how many shapes did you use? What shapes are they? 5. Small-group interaction: You can make a bigger boat by building off your first boat. Use more blocks to make your boat bigger. Which shapes did you use to build a bigger boat? Why did you choose them? 6. As students work on pages 480-481, assist or work with small groups as necessary.	Providing Practice Cooperative Learning	
9, 10	1.G.3	**Describing Equal Parts of Whole Objects** 1. Set the purpose: You have learned how to tell if a shape is divided into equal parts. Today you will learn how to describe the parts. 2. Connect: Have you ever divided something into two parts? What was it? Have you ever divided something into four parts? What was it? 3. Pose the problem: Have children work in pairs. Distribute two index cards to each pair. Work with you partner. Fold one card into two equal parts and fold the other card into four equal parts. 4. Instruct in small groups: On the board, draw the four shapes from page 517. Divide and shade them as shown. Ask children to look at the first shape. Shade this shape to match the one on board. How many equal parts does this shape have? How many parts are shaded? Write the numbers to describe how many parts are shaded. The first number shows the number of shaded parts. The second number shows the number of total parts. Show the sentence that tells us that there are two equal parts and 1 of them is shaded. Have partners look at the other shapes. Have them complete the statements for each item describing the shaded parts. Discuss again how to write the sentences if needed. When each pair has finished, have them exchange pages and check each other's work. Look again at the shape in item 1. Which of your index cards can you shade to match this shape? Your other card is also a rectangle, so why can it not be used? 5. As students work on pages 518-519, assist or work with small groups as necessary.	Nonlinguistic Representations Providing Practice Cooperative Learning	A

UNIT RESOURCES

Teacher Resources:

- **Envisions Teacher Manual**
- **Pearson Realize**
- **Manipulative kit**

Student Resources:

- Envisions Student Book

Vocabulary:

- Plane shape: a flat shape (circle, rectangle, square, triangle)
- Hexagon: a six-sided plane shape
- Trapezoid: four-sided shape, the four sides are not the same length, only two lines are parallel
- Sort: to group things according to how they are similar
- Side: straight line of a shape
- Corner: where two straight lines meet on a shape
- Solid figures: a figure that has length, width and height
- Cube: 3-D shape with 6 square sides
- Rectangular prism- 3-D shape with 6 sides, the flat parts look like rectangles
- Sphere: there are no flat parts or corners
- Cylinder: 2 flat circle sides and it rolls
- Cone: has a pointed top, a flat circle and curves
- Flat surface: a non-curved side
- Vertex (vertices): a point where 3 or more edges meet
- Pyramid: a solid shape with a polygon as a base and triangular faces that taper to a point
- Equal parts: parts of a whole that are the same size
- Halves: two equal parts of a whole
- Fourths: four equal parts of a whole
- Quarters: four equal parts of a whole