Pike County School District Standards Mastery Document

4th Grade Mathematics
Revised 2019

4th Grade Mathematics

The Standards Mastery Document is designed for educators by educators as a resource and tool to help educators increase their depth of understanding of the Common Core Standards. This document will enable teachers to plan College & Career Ready curriculum and classroom instruction that promotes inquiry and higher levels of cognitive demand.

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important "processes and proficiencies" with longstanding importance in mathematics education.

8 Mathematical Practices (MP):

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

4th Grade Mathematics

Table of Contents

4th Grade Mathematics

Kentucky Academic Standards for Mathematics: Grade 4 Overview

Operations/Algebraic Thinking (OA)	Number and Operations in Base Ten (NBT)	Number and Operations Fractions (NF)	Measurement and Data (MD)	Geometry (G)
• Use the four operations with whole numbers to solve problems. • Gain familiarity with fractions and multiples. • Generate and analyze patterns.	• Generalize place value understanding for multi-digit whole numbers. • Use place value understanding and properties of operations to perform multi-digit arithmetic.	• Extend understanding of fraction equivalence and ordering. • Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. • Understand decimal notation for fractions and compare decimal fractions.	• Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. • Understand and apply the statistics process. • Geometric measurement: understand concepts of angle and angle measurements.	• Draw and identify lines and angles and classify shapes by properties of their lines and angles.

In grade 4, instructional time should focus on three critical areas:

1. **In the Number and Operations in Base Ten domain, students will:**
   - generalize their understanding of place value to 1,000,000, understanding the relative sizes of numbers in each place;
   - apply their understanding of models for multiplication (equal-sized groups, arrays, area models), place value and properties of operations, in particular the distributive property, as they develop, discuss and use efficient, accurate and generalizable methods to compute products of multi-digit whole numbers;
   - determine and accurately apply appropriate methods to estimate or mentally calculate products;
   - develop fluency with efficient procedures for multiplying whole numbers; understand and explain why the procedures work based on place value and properties of operations; and use them to solve problems;
   - apply their understanding of models for division, place value, properties of operations and the relationship of division to multiplication as they develop, discuss and use efficient, accurate and generalizable procedures to find quotients involving multi-digit dividends;
   - select and accurately apply appropriate methods to estimate and mentally calculate quotients and interpret remainders based upon the context.

2. **In the Numbers and Operations--Fractions domain, students will:**
   - create an understanding of fraction equivalence and operations with fractions;
   - recognize that two different fractions can be equal and they develop methods for generating and recognizing equivalent fractions;
   - extend previous understandings about how fractions are built from unit fractions, composing fractions from unit fractions; decomposing fractions into unit fractions and using the meaning of fractions and the meaning of multiplication to multiply a fraction by a whole number.

3. **In the Geometry domain, students will:**

   - describe, analyze, compare and classify two-dimensional shapes;
   - strengthen their understanding of properties of two-dimensional objects and the use of them to solve problems involving symmetry through building, drawing and analyzing two-dimensional shapes.

4th Grade Mathematics

Table 1
Common Addition and Subtraction Situations[1]

	Result Unknown	Change Unknown	Start Unknown
Add To	Two bunnies sat on the grass. Three more bunnies hopped there. How many bunnies are on the grass now? $2 + 3 = ?$	Two bunnies were sitting on the grass. Some more bunnies hopped there. Then there were five bunnies. How many bunnies hopped over to the first two? $2 + ? = 5$	Some bunnies were sitting on the grass. Three more bunnies hopped there. Then there were five bunnies. How many bunnies were on the grass before? $? + 3 = 5$
Take From	Five apples were on the table. I ate two apples. How many apples are on the table now? $5 - 2 = ?$	Five apples were on the table. I ate some apples. Then there were three apples. How many apples did I eat? $5 - ? = 3$	Some apples were on the table. I ate two apples. Then there were three apples. How many apples were on the table before? $? - 2 = 3$
	Total Unknown	**Addend Unknown**	**Both Addends Unknown[3]**
Put Together/ Take Apart[2]	Three red apples and two green apples are on the table. How many apples are on the table? $3 + 2 = ?$	Five apples are on the table. Three are red and the rest are green. How many apples are green? $3 + ? = 5, 5 - 3 = ?$	Grandma has five flowers. How many can she put in her red vase and how many in her blue vase? $5 = 0 + 5, 5 = 5 + 0$ $5 = 1 + 4, 5 = 4 + 1$ $5 = 2 + 3, 5 = 3 + 2$
	Difference Unknown	**Bigger Unknown**	**Smaller Unknown**
Compare	("How many more?" version): Lucy has two apples. Julie has five apples. How many more apples does Lucy have than Julie?	(Version with "more"): Julie has three more apples than Lucy. Lucy has two apples. How many apples does Julie have?	(Version with "more"): Julie has three more apples than Lucy. Julie has five apples. How many apples does Lucy have?
	("How many fewer?" version): Lucy has two apples. Julie has five apples. How many fewer apples does Lucy have than Julie? $2 + ? = 5, 5 - 2 = ?$	(Version with "fewer"): Lucy has three fewer apples than Julie. Lucy has two apples. How many apples does Julie have? $2 + 3 = ?, 3 + 2 = ?$	(Version with "fewer"): Lucy has three fewer apples than Julie. Julie has five apples. How many apples does Lucy have? $5 - 3 = ?, ? + 3 = 5$

Blue shading indicates the four Kindergarten problem subtypes. Students in grades 1 and 2 work with all subtypes and variants (blue and green). Yellow indicates problems that are the difficult four problem subtypes students in grade 1 work with but do not need to master until grade 2.

[1] Adapted from Box 2-4 of National Research Council (2009, op. cit., pp. 32, 33).

[2] These *take apart* situations can be used to show all the decompositions of a given number. The associated equations, which have the total on the left of the equal sign, help children understand that the = sign does not always mean *makes* or *results in* but always does mean *is the same number as*.

[3] Either addend can be unknown, so there are three variations of these problem situations. Both Addends Unknown is a productive extension of this basic situation especially for small numbers less than or equal to 10.

[4] For the Bigger Unknown or Smaller Unknown situations, one version directs the correct operation (the version using *more* for the bigger unknown and using *less* for the smaller unknown). The other versions are more difficult.

4th Grade Mathematics

Table 2
Common Multiplication and Division Situations[1]

	Unknown Product	Group Size Unknown	Number of Groups Unknown
	3 × 6 = ?	3 × ? = 18 and 18 ÷ 3 = ?	? × 6 = 18 and 18 ÷ 6 = ?
Equal Groups	There are 3 bags with 6 plums in each bag. How many plums are there in all? Measurement example: you need 3 lengths of string, each 6 inches long. How much string will you need all together?	If 18 plums are shared equally into 3 bags, then how many plums will be in each bag? Measurement example: you have 18 inches of string which you will cut into 3 equal pieces. How long will each piece of string be?	If 18 plums are to be packed 6 to a bag, then how many bags are needed? Measurement example: you have 18 inches of string which you will cut into pieces that are 6 inches long. How many pieces of string will you have?
Arrays[2] Area[3]	There are three rows of apples with 6 apples in each row. How many apples are there? Area example: what is the area of a 3 cm by 6 cm triangle?	If 18 apples are arranged into 3 equal rows, how many apples will be in each row? Area example: a rectangle has area of 18 square centimeters. If one side is 3 cm long, how long is a side next to it?	If 18 apples are arranged into equal rows of 6 apples, how many rows will there be? Area example: a rectangle has area of 18 square centimeters. If one side is 6 cm long, how long is the side next to it?
Compare	A blue hat costs $6. A red hat costs 3 times as much as the blue hat. How much does the red hat cost? Measurement example: a rubber band is 6 cm long. How long will the rubber band be when it is stretched to be 3 times as long?	A red hat costs $18 and that is 3 times as much as a blue hat costs. How much does a blue hat cost? Measurement example: a rubber band is stretched to be 18 cm long and is 3 times as long as it was at first. How long was the rubber band at first?	A red hat costs $18 and a blue hat costs $6. How many times as much does the red hat cost as the blue? Measurement example: a rubber band was 6 cm long at first. Now it is stretched to be 18 cm long. How many times as long is the rubber band now as it was at first?
General	*a × b = ?*	*a × ? = p and p ÷ a = ?*	*? × b = p and p ÷ b = ?*

[1] The first examples in each cell are examples of discrete things. These are easier for students and should be given before the measurement examples.

[2] The language in the array examples shows the easiest form of array problems. A harder form is to use the terms rows and columns: the apples in the grocery window are in 3 rows and 6 columns. How many apples are in there? Both forms are valuable.

[3] Area involves arrays of squares that have been pushed together so that there are no gaps or overlaps, so array problems include these especially important measurement situations.

4th Grade Mathematics

Table 3
Properties of Operations

The variables *a*, *b* and *c* stand for arbitrary numbers in a given number system.
The properties of operations apply to the rational number system, the real number system and the complex number system.

Associative property of addition	$(a + b) + c = a + (b + c)$
Commutative property of addition	$a + b = b + a$
Additive identity property of 0	$a + 0 = 0 + a = a$
Existence of additive inverses	For every a there exists –a so that a + (-a) = (-a) + a = 0
Associative property of multiplication	$(a \times b) \times c = a \; x \; (b \times c)$
Commutative property of multiplication	$a \times b = b \times a$
Multiplicative identity property of 1	$a \times 1 = 1 \times a = a$
Existence of multiplicative inverses	For every $a \neq 0$ there exists 1/a so that $a \times$ 1/a = 1/a $\times a$ =1
Distributive property of multiplication over addition	$a \times (b + c) = a \times b + a \times c$

Table 4
Properties of Equality

The variables *a*, *b* and *c* stand for arbitrary numbers in the rational, real or complex number systems.

Reflexive property of equality	$a = a$
Symmetric property of equality	If $a = b$, then $b = a$
Transitive property of equality	If $a = b$ and $b = c$, then a = c
Addition property of equality	If a = b, then a + c = b + c
Subtraction property of equality	If a = b, then a – c = b – c
Multiplication property of equality	If a = b, then a x c = b x c
Division property of equality	If a = b and c $\neq$ 0, then a ÷ c = b ÷ c
Substitution property of equality	If a = b, then b may be substituted for a in any expression containing a.

4th Grade Mathematics

Table 5
Properties of Inequality

The variables *a*, *b* and *c* stand for arbitrary numbers in the rational or real number systems.

Exactly one of the following is true: a < b, a = b, a > b
If a > b and b > c then a > c
If a > b, then b < a
If a > b, then −a < -b
If a > b, then a ± c > b ± c
If a > b and c > 0, then a x c > b x c
If a > b and c < 0, then a x c < b x c
If a > b and c > 0, then a ÷ c > b ÷ c
If a > b and c < 0, then a ÷ c < b ÷ c

Table 6
Fluency Standards across All Grade Levels

Grade	Coding	Fluency Standards
K	**KY.K.OA.5**	Fluently add and subtract within 5.
1	**KY.1.OA.6**	Fluently add and subtract within 10.
2	**KY.2.OA.2 KY.2.NBT.5**	Fluently add and subtract within 20. Fluently add and subtract within 100.
3	**KY.3.OA.7 KY.3.NBT.2**	Fluently multiply and divide within 100. Fluently add and subtract within 1000.
4	**KY.4.NBT.**	Fluently add and subtract multi-digit whole numbers using an algorithm.
5	**KY.5.NBT.5**	Fluently multiply multi-digit whole numbers (not to exceed four-digit by two-digit multiplication) using an algorithm.
6	**KY.6.NS.2 KY.6.NS.3 KY.6.EE.2**	Fluently divide multi-digit numbers using an algorithm. Fluently add, subtract, multiply and divide multi-digit decimals using an algorithm for each operation. Write, read and evaluate expressions in which letters stand for numbers.

4th Grade Mathematics

Operations and Algebraic Thinking

Standard: 4.OA.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.

Enduring Skills:
MP 2: Reason abstractly and quantitatively
MP 4: Model with mathematics

Know: *What content does the student need to know to demonstrate this standard?*	**Do:** *What skill must the student demonstrate?*	**Mastery:** *How does the student demonstrate the learning of the standard?*
Basic multiplication facts Fact families Meaning of multiplication How to skip count The meaning of the = sign	Read and Interpret a multiplication equation as a comparison (e.g. 18 = 3 times as many as 6 Represent verbal statements of multiplicative comparisons	In a multiplicative comparison, identify which quantity is being multiplied and which factor is telling how many times Write and identify equations and statements for multiplicative comparisons Recognize and correctly use language that describes multiplicative comparisons (e.g. number *of* groups, number of items, total number of items)

Coherence KY.3.OA.1 -> KY.4.OA.1 -> KY.5.NF.5

4th Grade Mathematics

Operations and Algebraic Thinking

Standard: 4.OA.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.

Enduring Skills:
MP 1: Make sense of problems and persevere in solving them
MP 2: Reason abstractly and quantitatively
MP 3: Construct viable arguments and critique the reasoning of others

Know: *What content does the student need to know to demonstrate this standard?*	Do: *What skill must the student demonstrate?*	Mastery: *How does the student demonstrate the learning of the standard?*
Basic multiplication facts Fact Families Meaning of multiplication and division Additive comparison	Connect multiplication as being the inverse operation of division Visually represent multiplication and division equations Distinguish between multiplicative comparison and additive comparison Use appropriate vocabulary (e.g. *factors, product, divisor, dividend, quotient)*	Identify the information in the problem and how it relates to models Determine and use a variety of representations to model problem solving of multiplicative comparisons Write equations to represent the mathematics of the situation

Coherence KY.3.OA.3 -> KY.4.OA.2 -> KY.5.NF.3

4th Grade Mathematics

Operations and Algebraic Thinking

Standard: 4.OA.3

a.) Perform operations in the conventional order when there are no parentheses to specify a particular order.

b.) Solve multistep 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.

Enduring Skill:
MP 1: Make sense of problems and persevere in solving them
MP 4: Model with mathematics

Know: *What content does the student need to know to demonstrate this standard?*	Do: *What skill must the student demonstrate?*	Mastery: *How does the student demonstrate the learning of the standard?*
Basic multiplication facts Relationship between multiplication and division Fact Families How to use concrete and pictorial models to solve problems involving all four operations Solve single step word problems with all four operations Round/estimate	Solve multi-step word problems with all four operations using models or pictures and numbers Use rounding/estimation to check for reasonableness Use knowledge of order of operations even when there are no parenthesis or brackets Represent multi-step word problems using equations with a variable standing for the unknown quantity Know how to utilize inverse of operations and rounding/estimating to check for reasonableness	Recognize a number represents a specific quantity and connects the quantity to written symbols and creates a logical representation of the problem considering both the appropriate units involved and the meaning of quantities. Distinguish an additive comparison by identifying this type of question asks, " How many more?" and a multiplicative comparison focuses on comparing two quantities by asking," How many times as much?" or "How many times as many?" Solve contextual problems using models and equations using a symbol to represent the unknown For example, Mr. May's grade four class is collecting canned goods for a food drive. Their goal is to bring in 50 cans of food by Friday. So far, the students have brought in 10 on Monday and Tuesday, 14 cans on Wednesday and 13 on Thursday. How many more cans will the class need to bring in to reach their goal? 50 = 2 x 10 + 14 + 13 + *c* 50 = 20 + 14 + 13 + *c* 50 = 47 + *c* **3 = *c***

Coherence KY.3.OA.8 -> KY.4.OA.3 -> KY.7.NS.3

4th Grade Mathematics

Operations and Algebraic Thinking

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

Enduring Skills:
　　　　MP 5: Use appropriate tools strategically
　　　　MP 7: Look for and make use of structure

Know: *What content does the student need to know to demonstrate this standard?*	**Do:** *What skill must the student demonstrate?*	**Mastery:** *How does the student demonstrate the learning of the standard?*
Fluent with basic multiplication facts	Differentiate a factor from a multiple and prime/composite	Use patterns to make and justify generalizations if a number is prime or composite
Recognize factor(s) and products	Compose and decompose numbers in to factors Correctly write factors of a given whole number (e.g. 12: 1, 2, 3, 4, 6, 12)	Determine if a given whole number (1-100) is a multiple of a one – digit number
Skip count		
Even and odd whole numbers	Patterns include:	Determine when all the factor pairs of a whole number have been found
Use skip counting and other strategies to list multiples of a given number	• Numbers that end in zero have 10 as a factor. These are multiples of 10. • Numbers that end in zero or have five as a factor. These are multiples of 5. • Even numbers have two as a factor. These numbers are multiples of two. • Numbers that can be halved twice have four as a factor. These numbers are multiples of four.	

Coherence KY.3.OA.7 -> KY.4.OA.4 -> KY.6.NS.4

4th Grade Mathematics

Operations and Algebraic Thinking

Standard: 4.OA.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. *For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.*

Enduring Skills:

MP 2: Reason abstractly and quantitatively
MP 3: Construct viable arguments and critique the reasoning of others

Know: *What content does the student need to know to demonstrate this standard?*	**Do:** *What skill must the student demonstrate?*	**Mastery:** *How does the student demonstrate the learning of the standard?*
How to perform the four operations Skip count Odd and even Meaning of increase and decrease	Generate a rule for a given pattern Identify the meaning of pattern as either repeating (cyclical) or growing (linear). Recognize that patterns can be represented geometrically or numerically Create, extend, and describe geometric and numeric patterns	Extend patterns to solve for missing terms in a function machine or input/output table Build patterns from problem situations and make an organized list Analyze pattern features not apparent in the rule Able to find the (Nth) number or shape in a pattern For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.

Coherence KY.3.OA.9 -> KY.4.OA.5 -> KY.5.OA.3

4th Grade Mathematics

Numbers Base Ten

Standard: 4.NBT.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. For example, recognize that 700 ÷ 70= 10 by applying concepts of place value and division. Example: In the number 435, the digit 5 is in the ones place, while the digit 5 in 652 is in the tens place. The five in 652 is ten times greater than the 5 in 435.

Enduring Skill:

> MP 7: Look for and make use of structure

Know: *What content does the student need to know to demonstrate this standard?*	**Do:** *What skill must the student demonstrate?*	**Mastery:** *How does the student demonstrate the learning of the standard?*
The place and value of digits to 1,000,000 How to multiply and divide by 10 Compare the value of a digit in a given place(< , >)	Recognize the role of commas in written numbers Identify the relationship among places by multiplying by 10 (moving one place to the left) and dividing by 10 (moving one place to the right)	Extend and explore patterns that involve moving digits to different places in a given numeral Explain what is happening to the value of a digit as it appears within various places in a numeral Use precise language, such as "ten times as much as" rather than "ten times more than" to describe place value relationships

Coherence KY.2.NBT.1 -> KY.4.NBT.1 -> KY.5.NBT.1

4th Grade Mathematics

Numbers Base Ten

Standard: 4.NBT.2

Represent and compare multi digit whole numbers.

a.) Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form.
b.) Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.

Enduring Skills:
MP 2: Reason abstractly and quantitatively
MP 7: Look for and make use of structure

Know: *What content does the student need to know to demonstrate this standard?*	Do: *What skill must the student demonstrate?*	Mastery: *How does the student demonstrate the learning of the standard?*
The place (location) and value (worth) of a given digit The period of numbers chunked together – such as three digits on the far right is the ones period, etc.	Compare numbers using place value and symbols Line up numbers in column based on place value Use manipulatives to build numbers to show the location and value of each digit Identify number form: standard, expanded, and word (number name)	Utilize correct terminology when comparing numbers such as less than (<), greater than (>) or equal to (=). Ex: 45 < 54 < 60 Accurately read and write a number in word form, standard form, and expanded form to the 1,000,000 place

Coherence KY.4.NBT.2 -> KY.5.NBT.3

4th Grade Mathematics

Numbers Base Ten

Standard: 4.NBT.3

Use place value understanding to round multi-digit whole numbers to any place.

Enduring Skills:

MP 2: Reason abstractly and quantitatively
MP 6: Attend to precision

Know: *What content does the student need to know to demonstrate this standard?*	Do: *What skill must the student demonstrate?*	Mastery: *How does the student demonstrate the learning of the standard?*
Know the place (location) and value (worth) of a given number to 1,000,000 Multiples of 10	Use place value to round (estimate) a multi-digit whole number up to the 1,000,000 place Plot a number on a closed/open number line Identify the two numbers between which the given number to be rounded falls, in order to determine which rounded number is closer to the original number	Know when/how to round a digit as well as knowing the *best* place to round to in a given situation Determine/Explain the reasonableness of an answer

KY.4.OA.3
Coherence KY.3.NBT.1 -> KY.4.NBT.3 -> KY.5.NBT.4

4th Grade Mathematics

Numbers Base Ten

Standard: 4.NBT.4
Fluently add and subtract multi-digit whole numbers using an algorithm

Enduring Skills:

MP 2: Reason abstractly and quantitatively
MP 8: Look for and express regularity in repeated reasoning

Know: *What content does the student need to know to demonstrate this standard?*	Do: *What skill must the student demonstrate?*	Mastery: *How does the student demonstrate the learning of the standard?*
Fluently know basic addition and subtraction facts Know the properties of addition Place value understanding Understanding of operations (addition & subtraction)	Use various strategies such as mental math, compatible numbers traditional numeric algorithm for adding and subtracting multi- digit whole numbers Use rounding/estimation to check for reasonableness of answer Identify parts of addition and subtraction problems	Fluently utilize chosen strategy to compute/solve multi-digit addition and subtraction problems with and without regrouping Justify reasoning for utilizing particular strategy Use inverse operations to check correctness of sum/difference Know which operation to use (+ or -)

Coherence KY.3.NBT.2 -> KY.4.NBT.4 -> KY.5.NBT.5

4th Grade Mathematics

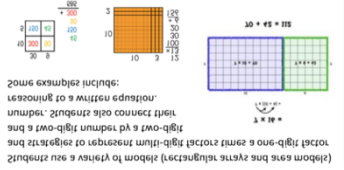## Numbers Base Ten

Standard: 4.NBT.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.

Enduring Skills:
MP 3: Construct viable arguments and critique the reasoning of others
MP 4: Model with mathematics
MP 8: Look for and express regularity in repeated reasoning

Know: *What content does the student need to know to demonstrate this standard?*	**Do:** *What skill must the student demonstrate?*	**Mastery:** *How does the student demonstrate the learning of the standard?*
Know basic multiplication facts	Utilize multiplication strategies such as area model, expanded algorithm (partial products), distributive property, lattice model, standard algorithm, etc… to multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers to find the product	Use various multiplication strategies to solve real world problems
Multiplication fact Families		Justify reasoning for choosing a given strategy/strategies multiplication strategies be utilized to include:
Multiply a single digit factor times a multiple of ten		
Know properties of Multiplication	Make connections and/or generalizations from concrete models to written equations	Multiplying a single digit factor up to a four digit whole Number
Use concrete/pictorial representations to solve multiplication problems	Know/use properties of multiplication	Multiplying two-digit by two-digit whole numbers

KY.3.OA.5
Coherence KY.3.NBT.3 -> KY.4.NBT.5 -> KY.5.NBT.5
KY.3.MD.7

4th Grade Mathematics

Numbers Base Ten

Standard: 4.NBT.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 models.

Enduring Skills:

MP 3: Construct viable arguments and critique the reasoning of others
MP 7: Look for and make use of structure
MP 8: Look for and express regularity in repeated reasoning

Know: *What content does the student need to know to demonstrate this standard?*	**Do:** *What skill must the student demonstrate?*	**Mastery:** *How does the student demonstrate the learning of the standard?*
Fluently know basic multiplication facts Fact families (multiplication/division) Know the meaning of *divide/division* Estimate/Round Place Value understanding Basic division with no remainders	Identify and label dividend, divisor, quotient, and remainder 	Determine when the remainder needs to be considered when solving real world problems Determine the operation (multiply/divide) when solving word problems Identify the parts of a division equation as it relates to solving for X in a given problem solving situation Utilize the inverse operation when checking for reasonableness of answer Illustrate and explain the calculation by using written equations, rectangular arrays, and/or area models

KY.3.OA.5
Coherence KY.3.OA.6 -> KY.4.NBT.6 -> KY.5.NBT.6
KY.3.MD.7

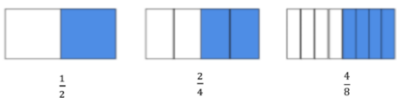**4th Grade Mathematics**

Numbers Fraction

Standard: 4.NF.1
Understand and generate equivalent fractions.
    a.) Use visual fraction models to recognize and generate equivalent fractions that have different numerators/denominators even though they are the same size.
    b.) Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$

Enduring Skill:
    MP 4: Model with mathematics
    MP 7: Look for and make use of structure
    MP 8: Look for and express regularity in repeated reasoning

Know: *What content does the student need to know to demonstrate this standard?*	**Do:** *What skill must the student demonstrate?*	**Mastery:** *How does the student demonstrate the learning of the standard?*
Definition of a fraction	Connect visual representations of equivalent fractions to numerical representations	Describe what happens to the number of pieces in the whole and the number of pieces shaded as they compare ½, 2/4, 3/6, and 4/8 using models, pictures, and numbers. Have student find equivalent fractions "in both directions" to realize that fractions can be written in simpler form
Definition of equivalent		
Difference between numerator and denominator (not just location)	Use pictures, words, and numbers to explain why fractions are equivalent.	
How to identify a fraction such as 1 out of 3 pieces = 1/3	Find equivalent fractions using area models, fraction strips, and the number line	
Basic multiplication facts		Explain that when the number of pieces in the whole is doubled, the number of pieces in the numerator also doubles
Difference between factor and multiple	$\frac{1}{2}$ $\frac{2}{4}$ $\frac{4}{8}$	
		Explain why one multiplies or divides to find an equivalent fraction and connect to rule/algorithm

Coherence KY.3.NF.3 -> KY.4.NF.1 -> KY.5.NF.1

4th Grade Mathematics

Numbers Fraction

Standard: 4.NF.2

Compare two fractions with different numerators and different denominators. 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.

Enduring Skill:

MP 2: Reason abstractly and quantitatively
MP 3: Construct viable arguments and critique the reasoning of others

Know: *What content does the student need to know to demonstrate this standard?*	Do: *What skill must the student demonstrate?*	Mastery: *How does the student demonstrate the learning of the standard?*
Identify the comparison symbols correctly as < less than, > greater than, or = equal to	Find multiples of a number and the least common multiple (LCM)	Use a variety of representations to compare fractions including concrete models, benchmarks, common denominators and common numerators
Difference between numerator and denominator (not just location)	Recognize/Identify 0, ½, 1 on a number line in relation to the given fraction pair	
Recognize if fractions are equivalent	Determine which method makes the most sense for a given situation and justify their thinking	
Find equivalent fractions	Explain that comparing 2 fractions must refer to the same whole	
Basic multiplication facts	Create equivalent fractions with a common denominator to determine the order of the fractions (least to greatest and vice versa)	

Coherence KY.3.NF.3d -> KY.4.NF.2 -> KY.5.NF.2

4th Grade Mathematics

Numbers Fraction

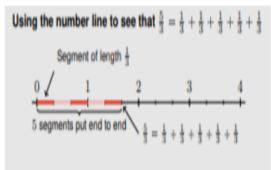**Standard: 4.NF.3**
Understand a fraction a/b with a > 1 as a sum of fractions 1/b.

a.) Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.
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. *Examples:*
3/8 = 1/8 + 1/8 + 1/8 or 3/8 = 1/8 + 2/8   *2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8*
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
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.

Enduring Skill:
        MP 1: Make sense of problems and persevere in solving them
        MP 5: Use appropriate tools strategically
        MP 7: Look for and make use of structure

Know: *What content does the student need to know to demonstrate this standard?*	**Do:** *What skill must the student demonstrate?*	**Mastery:** *How does the student demonstrate the learning of the standard?*
How to perform basic addition and subtraction Understand that fractions are composed of unit fractions Know the meaning of numerator and denominator	b. $\frac{3}{5} = \frac{1}{5} + \frac{1}{5} + \frac{1}{5}$ OR $\frac{3}{5} = \frac{2}{5} + \frac{1}{5}$ $3\frac{1}{4} = 1+1+1+\frac{1}{4}$ OR $3\frac{1}{4} = \frac{4}{4} + \frac{4}{4} + \frac{4}{4} + \frac{1}{4}$ c/d. Adding and subtracting using visual fraction models and/or equations to represent the problem. Find the greatest common factor (GCF) in order to simplify fractions Convert mixed numbers to improper fractions and improper fractions to mixed numbers	Use a variety of materials to model and describe various problem situations that require adding and subtracting fraction/mixed numbers Connect various visual representations to written equation Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, by using visual fraction models and equations to represent the problem

KY.5.NF.1
Coherence KY.3.NF.1 -> KY.4.NF.3 -> KY.5.NF.2

4th Grade Mathematics

Numbers Fraction

Standard: 4.NF.4
Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.

a.) Understand a fraction a/b as a multiple of 1/b. For example, use a visual fraction model to represent 5/4 as the product 5 × (1/4), recording the conclusion by the equation 5/4 = 5 × (1/4). Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.

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. For example, use a visual fraction model to express 3 × (2/5) as 6 × (1/5), recognizing this product as 6/5. In general, n × (a/b) = (n × a)/b

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. *For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?*

Enduring Skills:

MP 5: Use appropriate tools strategically
MP 8: Look for and express regularity in repeated reasoning

Know: *What content does the student need to know to demonstrate this standard?*	Do: *What skill must the student demonstrate?*	Mastery: *How does the student demonstrate the learning of the standard?*
Basic multiplication facts Know the difference between a fraction and a whole number How to compose and decompose fractions less than 1 and greater than 1 with the same denominator	Represent a fraction a/b as a multiple of 1/b (unit fractions) such as 5/4 as an accumulation of five ¼ 's using visual representations (area models and number lines)	Students refer this standard to *n* groups of a fraction (where *n* is a whole number) for example three groups of $\frac{1}{4}$, which can be seen as repeated addition. In grade 5 students will multiply a fraction by a whole number. a. Students use visual fraction models to represent $\frac{7}{5} = 7 \times \frac{1}{5}$ b. Students use the same thinking to see $3 \times \frac{2}{5}$ as $\frac{2}{5} + \frac{2}{5} + \frac{2}{5} = 3 \times \frac{2}{5} = \frac{6}{5}$

KY.4.OA.2
Coherence KY.3.NF.1 -> KY.4.NF.4 -> KY.5.NF.4

4th Grade Mathematics

Numbers Fraction

Standard:4.NF.5

a.) Convert and add fractions with denominators of 10 and 100.
Convert a fraction with a denominator of 10 to an equivalent fraction with a denominator of 100.

b.) Add two fractions with respective denominators 10 and 100.

Enduring Skills:

MP 5: Use appropriate tools strategically
MP 7: Look for and make use of structure

Know: *What content does the student need to know to demonstrate this standard?*	Do: *What skill must the student demonstrate?*	Mastery: *How does the student demonstrate the learning of the standard?*
Recognize and create equivalent fractions Meaning of numerator and denominator How to add fractions with like denominators Recognize that two fractions with unlike denominators can be equivalent	Build equivalent fractions that are tenths to fractions that are hundredths using models and pictures Use knowledge of converting tenths to hundredths to add two fractions with denominators 10 and 100	For example, students express 3/10 as 30/100 and add 3/10 + 4/100 = 34/100 Note: Students who generate equivalent fractions develop strategies for adding fractions with unlike denominators in general. Addition and subtraction with unlike denominators in general is not a requirement at grade 4.

Coherence KY.3.NF.3 -> KY.4.NF.5 -> KY.5.NBT.7

4th Grade Mathematics

Numbers Fraction

Standard: 4.NF.6

Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram*

Enduring Skills:

MP 4: Model with mathematical
MP 7: Look for and make use of structure

Know: *What content does the student need to know to demonstrate this standard?*	**Do:** *What skill must the student demonstrate?*	**Mastery:** *How does the student demonstrate the learning of the standard?*
Know how to represent tenths and hundredths using visual representations (base ten blocks; money in relation to $1; grids; etc...) Rename fractions with 10 and 100 as denominator	Explain the values of the digits in the decimal places Model, read and write decimals through hundredths. Represent fractions with denominators 10 or 100 with multiple representations (place value chart, base ten blocks, grids, and number lines) and decimal notation Understand the meaning of decimal and the meaning of each side of the decimal point	Convert fractions to decimals and decimals to fractions Demonstrate understanding that fractions and decimals are two different ways of writing the same quantity (1/10 and 0.1 mean the same amount when referring to the same whole). Demonstrate understanding that 1/100 is one of 100 equal pieces in one whole or 1 of ten equal parts of a tenth and EXPLAIN their reasoning Connect understandings to real life situations that use decimal notation

Coherence KY.4.NF.6 -> KY.5.NBT.3

4th Grade Mathematics

Numbers Fraction

Standard: 4.NF.7

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

Enduring Skills:
MP 2: Reason abstractly and quantitatively
MP 3: Construct viable arguments and critique the reasoning of others
MP 5: Use appropriate tools strategically

Know: *What content does the student need to know to demonstrate this standard?*	Do: *What skill must the student demonstrate?*	Mastery: *How does the student demonstrate the learning of the standard?*
Read, write, and model decimals Know the meaning of mathematical comparison symbols Know the values of the digits in the decimal places Know how to recognize and create equivalent fractions in relation to decimals	Recognize that comparisons are valid only when the two decimals refer to the same whole by using base-ten and grid models as well as number line models and fractions that are equivalent to the decimals Correctly use <, >, or = to compare two decimals	Compare two decimals to hundredths by reasoning about their size Justify the conclusions using visual models such as fraction numbers, base-ten models/grids, number line, and words Use knowledge of decimal comparison to order decimals least to greatest and greatest to least

Coherence KY.4.NF.7 -> KY.5.NBT.3

4th Grade Mathematics

Measurement and Data

Standard: 4.MD.1

Know relative size of measurement units (mass, weight, liquid volume, length, time) within one system of units (metric system, U.S. standard system and time).

  a.) Understand the relationship of measurement units within any given measurement system.
  b.) Within any given measurement system, express measurements in a larger unit in terms of a smaller unit.
  c.) Record measurement equivalents in a two-column table.

Enduring Skill:

       MP 5: Use appropriate tools strategically
       MP 6: Attend to precision

Know: *What content does the student need to know to demonstrate this standard?*	**Do:** *What skill must the student demonstrate?*	**Mastery:** *How does the student demonstrate the learning of the standard?*
Basic measurements (inches, feet, etc…) Multiplication Facts Choose appropriate tools for measurement such as: thermometer for temperature/degrees; ruler for smaller items; and yardstick for larger items	Know relative size of measurement units (km, m; kg, g; lb, oz; L, mL; hrs, min, sec) Compare and convert the different units within the same system of measurement (e.g. 1 ft = 12 in; 1 lb = 16 oz) Use both metric and standard measurement vocabulary Know where to begin measuring when using a ruler	c. Two- column tables may include: | kg	g		ft	in		lb	oz
---	---	---	---	---	---	---	---
1	1000		1	12		1	16
2	2000		2	24		2	32
3	3000		3	36		3	48	

Coherence KY.4.MD.1 -> KY.5.MD.1

4th Grade Mathematics

Measurement and Data

Standard: 4.MD.2

Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects and money.

a.) Solve measurement problems involving whole number, simple fractions or decimals.
b.) Solve problems that require converting a given measurement from a larger unit to a smaller unit within a common measurement system, such as 2 km = 2,000 m.
c.) Visually display measurement quantities using representations such as number lines that feature a measurement scale.

Enduring Skill:

MP 1: Make sense of problems and persevere in solving them
MP 4: Model with mathematical

Know: *What content does the student need to know to demonstrate this standard?*	**Do:** *What skill must the student demonstrate?*	**Mastery:** *How does the student demonstrate the learning of the standard?*
Add, subtract, multiply and divide

Units of measurement

Strategies to solve word problems

Interpret fractions when measuring such as ¼ of an inch | Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale

Identify what operation to use to solve a given measurement problem

Include appropriate unit when solving measurement problems | Add, subtract, multiply, and divide fractions and decimals Grade 4 expectations are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12 and 100.

Express measurements given in a larger unit in terms of a smaller unit: 2km = 2,000m

Solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money including measurement problems that include simple fractions or decimals |

Coherence KY.3.MD.2 -> KY.4.MD.2

28

4th Grade Mathematics

Measurement and Data

Standard: 4.MD.3
Apply the area and perimeter formulas for rectangles in real world and mathematical problems. *For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.*

Enduring Skill:

MP 1: Make sense of problems and persevere in solving them
MP 3: Construct viable arguments and critique the reasoning of others

Know: *What content does the student need to know to demonstrate this standard?*	Do: *What skill must the student demonstrate?*	Mastery: *How does the student demonstrate the learning of the standard?*
Add and Multiply How to use manipulatives to find area and perimeter	Know that the formula for the perimeter of a rectangle is 2L + 2W or L+L+W+W Know that the formula for the area of a rectangle is L x W Identify the difference between area and perimeter	Apply the formula for perimeter of a rectangle to solve real world and mathematical problems Apply the formula for area of a rectangle to solve real world and mathematical problems. Solve area and perimeter problems in which there is an unknown factor (n)

KY.3.MD.8
Coherence KY.3.MD.7 -> KY.4.MD.3 -> KY.5.MD.5

4th Grade Mathematics

Measurement and Data
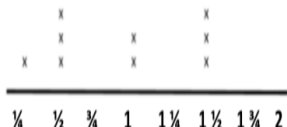
Standard 4.MD.4
Use dot plots to analyze data to a statistical question.
   a.) Identify a statistical question focused on numerical data.
   b.) Make a dot plot to display a data set of measurements in fractions of a unit ½, ¼, 1/8.
   c.) Solve problems involving addition and subtraction of fractions by using information presented in dot plots.

Enduring Skill:
   MP 1: Make sense of problems and persevere in solving them
   MP 6: Attend to precision

Know: *What content does the student need to know to demonstrate this standard?*	**Do:** *What skill must the student demonstrate?*	**Mastery:** *How does the student demonstrate the learning of the standard?*
Generate measurement data Understand a fraction as a number on the number line How to add and subtract fractions with like denominators	Create dot plots to show data set of objects with fractional measurements of ½, ¼, and 1/8.	Students create dot plots to show a data set of objects with fractional measurements. Solve simple word problems involving addition, subtraction of the fractions found in the dot plots Use appropriate vocabulary when working with dot plots and fractional measurements

Coherence KY.3.MD.4 -> KY.4.MD.4 -> KY.5.MD.2

4th Grade Mathematics

Measurement and Data

Standard: 4.MD.5
Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement

Clarifications:
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 1/360 of a circle is called a "one-degree angle," and can be used to measure angles. An angle that turns through n one-degree angles is said to have an angle measure of n degrees.

Enduring Skill:
MP 7: Look for and make use of structure

Know: *What content does the student need to know to demonstrate this standard?*	Do: *What skill must the student demonstrate?*	Mastery: *How does the student demonstrate the learning of the standard?*
Two dimensional shapes Rays and endpoints Addition and Subtraction Skills	Identify and construct angles as geometric shapes that are formed whenever two rays share a common endpoint Use visual models to identify acute, obtuse, right, and straight angles Use correct vocabulary when describing angles. *Students may think that the angle size is determined by the length of the rays rather than by the size of the turn. Have them extend the lines of the rays to see that the length of the ray does not change the interior measure*	Recognize a circle as a geometric figure that has 360 degrees and an angle is a fraction of a circle Explain the angle measurement in terms of degrees Compare angles to circles with the angles point at the center of the circle to determine the measure of the angle Calculate angle measurement using the 360 degrees of a circle

KY.4.MD.6
Coherence KY.4.MD.5 -> KY.4.MD.7

4th Grade Mathematics

Measurement and Data

Standard: 4.MD.6
Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.

Enuring Skill:
MP 5: Use appropriate tools strategically
MP 6: Attend to precision

Know: *What content does the student need to know to demonstrate this standard?*	Do: *What skill must the student demonstrate?*	Mastery: *How does the student demonstrate the learning of the standard?*
Estimate angles based on size/degrees	Understand how angles are measured in degrees	Determine which scale on the protractor to use, based on the direction the angle is open.
Correct names of angles in reference to the size/degrees	Measure angles in whole numbers degrees using a protractor	Determine the kind of angle based on the specified measure to decide reasonableness of the sketch.
	Use measurement vocabulary as they measure and draw angles	
	**Asking them to estimate the angle prior to measuring may help prevent them from misreading the protractor. Also, students can write whether the angle is acute, obtuse or more or less than a right angle prior to measuring	Sketch angles of specified measure and justify reasoning

KY.4.MD.6
Coherence KY.4.MD.5 -> KY.4.MD.7

4th Grade Mathematics

Measurement and Data

Standard: 4.MD.7

Recognize angle measure as additive. When an angle is decomposed into non-overlapping 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.

Enduring Skill:

MP 1: Make sense of problems and persevere in solving them
MP 4: Model with mathematics

Know: *What content does the student need to know to demonstrate this standard?*	Do: *What skill must the student demonstrate?*	Mastery: *How does the student demonstrate the learning of the standard?*
Identify acute, obtuse, right, and straight angles Addition and subtraction skills Measure angles in degrees using a protractor Define variable	Recognize angles as additive Recognize that an angle can be divided into smaller angles Use measurement vocabulary for angles Identify that the angle measurement is the sum of its decomposed angles	Solve addition and subtraction equations to find unknown angle measurements on a diagram in real world problems Find an angle measure by adding the measurements of the smaller angles that make up the larger angle Find an angle measure by subtracting the measurements of the smaller angle from the larger angle $25° + \boxed{?} = 90°$

Coherence KY.4.MD.7 -> KY.7.G.5

4ᵗʰ Grade Mathematics

Geometry

Standard: 4.G.1

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

Enduring Skill:

MP 5: Use appropriate tools strategically
MP 6: Attend to precision

Know: *What content does the student need to know to demonstrate this standard?*	**Do**: What skill must the student demonstrate?	**Mastery:** *How does the student demonstrate the learning of the standard?*
Identify basic two dimensional shapes Identify types of angles	Identify and define points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines Identify properties of quadrilaterals Use correct geometric terminology when drawing the shapes	Draw and label points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines Extend thinking to analyze two-dimensional figures to identify points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines Explain the difference in the above geometric terms

Coherence KY.3.G.1 -> KY.4.G.1

4th Grade Mathematics

Geometry

Standard: 4.G.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.

Enduring Skill:

MP 7: Look for and make use of structure

Know: *What content does the student need to know to demonstrate this standard?*	**Do:** *What skill must the student demonstrate?*	**Mastery:** *How does the student demonstrate the learning of the standard?*
Identify two dimensional shapes including quadrilaterals	Identify parallel or perpendicular lines in two dimensional figures	Classify and describe 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
Identify and define parallel and perpendicular lines	Discuss the relationship among various quadrilaterals based on the number of sides, opposite sides, side lengths, and angle measurement	
Identify right, obtuse, and acute angles		Identify right triangles as a category of classification of triangles
	Identify right triangles	
	Use geometrical terminology as they talk about, classify, and sort shapes	

Coherence KY.3.G.1 -> KY.4.G.2 -> KY.5.G.3

4th Grade Mathematics

Geometry

Standard: 4.G.3
Identify lines of symmetry.

a.) 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.

b.) Identify line-symmetric figures and draw lines of symmetry.

Enduring Skill:

MP 5: Use appropriate tools strategically
MP 7: Look for and make use of structure

Know: *What content does the student need to know to demonstrate this standard?*	Do: *What skill must the student demonstrate?*	Mastery: *How does the student demonstrate the learning of the standard?*
Identify basic two dimensional shapes	Identify mirror image and relate to symmetry Experiment with two-dimensional shapes to discover and draw lines of symmetry Recognize a line of symmetry as a line across a figure that when folded along creates matching parts Use geometric terminology to describe the 2-D shapes used to draw lines of symmetry Identify whether a figure is symmetrical	Describe how 2-D shapes with equal sides have "x" number of lines of symmetry vs. 2-D shapes that do not have equal sides such as trapezoids, parallelograms, etc. Draw lines of symmetry for two-dimensional figures and correctly label the number of lines of symmetry Describe why a figure is or is not symmetrical