3rd Grade Mathematics

Unit 5 - Curriculum Map April 28th – June 27
New Content – Operations and Algebraic Thinking/Geometry
Review Content - In-Depth Opportunities

ORANGE PUBLIC SCHOOLS

OFFICE OF CURRICULUM AND INSTRUCTION

OFFICE OF MATHEMATICS

Unit Overview

3rd Grade
New Standards
3.OA.5, 3.OA.6
3.G.1
In-Depth Opportunity Standards
3.OA.3
3.OA.7
3.MD.2
3.MD.7
3.NF.2

Essential Concepts

3.OA

- Explain and give a numeric example commutative, associative & distributive property of multiplication
- State the property shown in a given multiplication equation
- Describe division in terms of multiplication (inverse operations)
- Solve division problems through application of fact families
- There is an inverse relationship between multiplication and division.
- Multiplication is finding an unknown product (the whole), and division is finding an unknown factor
- Understanding the properties of multiplication (commutative, associative, distributive) helps us become efficient and flexible problem solvers.

3.G.1

- Shapes can be compared and classified by their sides, angles and the relationship between opposite sides.
- A single shape can belong in several categories.
- Shapes in different categories may have shared attributes that define a larger category. (A rhombus and a rectangle are both quadrilaterals.)
- Shapes can be partitioned into parts with equal areas in several ways.

New Content - Essential Questions

3.OA

- How are multiplication and division related?
- How might you rewrite this multiplication problem as a division problem? *Mary has three friends. She gave each friend four stickers. How many stickers did she give her friends in all?*
- Can the order of the factors be reversed in a multiplication problem? If so, is this always true? Why or why not?
- Can the order of the numbers be reversed in a division problem? If so, is this always true? Why or why not?
- How might you decompose this array to help you solve the multiplication problem 6 x 7?

3.G.1

- To which different categories does this shape belong? Support your answer.
- Which shape or shapes do not belong to this group?
- How do the shape's angles, sides and/or vertices support your choice?
- Which attributes distinguish different shapes? (eg: How is a *rhombus* different from a *rectangle*?)
- In what different ways can you divide this square into *four* equal parts?

New Content - Common Core Standards

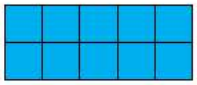
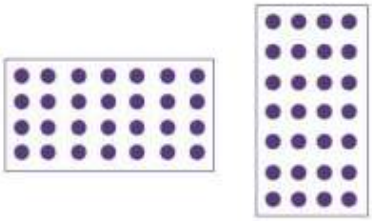
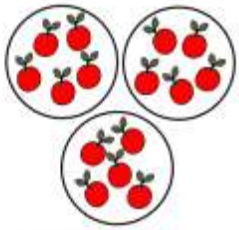
Unit 5	
3.OA.5	Apply properties of operations as strategies to multiply and divide. *Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property.)*
3.OA.6	Understand division as an unknown-factor problem. *For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8.*
3.G.1	Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

Connections to the Mathematical Practices

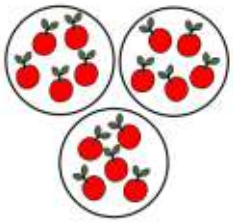
1	Make sense of problems and persevere in solving them
	In **third** grade, students know that doing mathematics involves solving problems and discussing how they solved them. Students explain to themselves the meaning of a problem and look for ways to solve it. Third graders may use concrete objects or pictures to help them conceptualize and solve problems. They may check their thinking by asking themselves, "Does this make sense?" They listen to the strategies of others and will try different approaches. They often will use another method to check their answers.
2	Reason abstractly and quantitatively
	Third graders should recognize that a number represents a specific quantity. They connect the quantity to written symbols and create a logical representation of the problem at hand, considering both the appropriate units involved and the meaning of quantities.
3	Construct viable arguments and critique the reasoning of others
	In **third** grade, students may construct arguments using concrete referents, such as objects, pictures, and drawings. They refine their mathematical communication skills as they participate in mathematical discussions involving questions like "How did you get that?" and "Why is that true?" They explain their thinking to others and respond to others' thinking. Students experiment with representing problem situations in multiple ways including numbers, words (mathematical language), drawing pictures, using objects, acting out, making a chart, list, or graph, creating equations, etc. Students need opportunities to connect the different representations and explain the connections. They should be able to use all of these representations as needed. **Third** graders should evaluate their results in the context of the situation and reflect on whether the results make sense.
4	Model with mathematics
	Students experiment with representing problem situations in multiple ways including numbers, words (mathematical language), drawing pictures, using objects, acting out, making a chart, list, or graph, creating equations, etc. Students need opportunities to connect the different representations and explain the connections. They should be able to use all of these representations as needed. **Third** graders should evaluate their results in the context of the situation and reflect on whether the results make sense.
5	Use appropriate tools strategically
	Third graders consider the available tools (including estimation) when solving a mathematical problem and decide when certain tools might be helpful. For instance, they may use graph paper to find all the possible rectangles that have a given perimeter. They compile the possibilities into an organized list or a table, and determine whether they have all the possible rectangles.
6	Attend to precision
	As **third** graders develop their mathematical communication skills, they try to use clear and precise language in their discussions with others and in their own reasoning. They are careful about specifying units of measure and state the meaning of the symbols they choose. For instance, when figuring out the area of a rectangle they record their answers in square units.
7	Look for and make use of structure
	In third grade, students look closely to discover a pattern or structure. For instance, students use properties of operations as strategies to multiply and divide (commutative and distributive properties).
8	Look for and express regularity in repeated reasoning
	Students in third grade should notice repetitive actions in computation and look for more shortcut methods. For example, students may use the distributive property as a strategy for using products they know to solve products that they don't know. For example, if students are asked to find the product of 7 x 8, they might decompose 7 into 5 and 2 and then multiply 5 x 8

	and 2 x 8 to arrive at 40 + 16 or 56. In addition, third graders continually evaluate their work by asking themselves, “Does this make sense?”

Vocabulary

Visual Definition **The terms below are for teacher reference only and are not to be memorized by students.** Teachers should first present these concepts to students with models and real life examples. Students should understand the concepts involved and be able to recognize and/or use them with words, models, pictures, or numbers.
area **2 rows of 5 = 10 square units** **or** **2 × 5 = 10 square units**  The measure, in square units, of the inside of a plane figure.
Commutative Property of Multiplication  $4 \times 7 = 7 \times 4$ Changing the order of the factors does not change the product.
divide  $15 \div 3 = 5$ To separate into equal groups and find the number in each group or the number of groups.
dividend $7\overline{)56}$ A number that is divided by another number.
divisor $7\overline{)56}$ The number by which another number is divided.

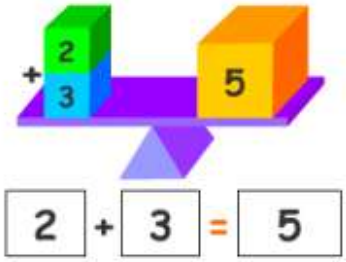
equal groups



There are 3 equal groups of 5.

Groups that contain the same number of objects. Whenever you divide, you separate items into equal groups.

equation



A mathematical sentence with an equal sign. The amount on one side of the equal sign has the same value as the amount on the other side.

fact family

Fact Family for 3, 5, 15

$3 \times 5 = 15$	$15 \div 5 = 3$
$5 \times 3 = 15$	$15 \div 3 = 5$

A group of related facts that use the same numbers. (also known as related facts)

factor

$$2 \times 6 = 12$$

factors

The whole numbers that are multiplied to get a product.

formula

To find the area of any rectangle, multiply its length by its width. This rule can be written as an equation:

$$A = l \times w$$

A general mathematical rule that is written as an equation.

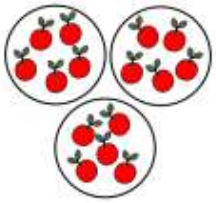
inverse operations

Multiplication and division are inverse operations.

$8 \times 5 = 40$
$40 \div 5 = 8$

Operations that undo each other.

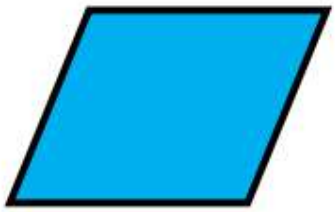
multiply



$3 \times 5 = 5 + 5 + 5$

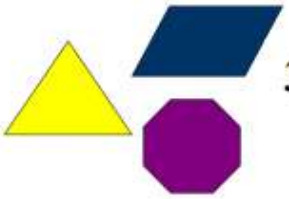
The operation of repeated addition of the same number.

parallelogram



A quadrilateral with 2 pairs of parallel and congruent sides.

polygon



3 + sides

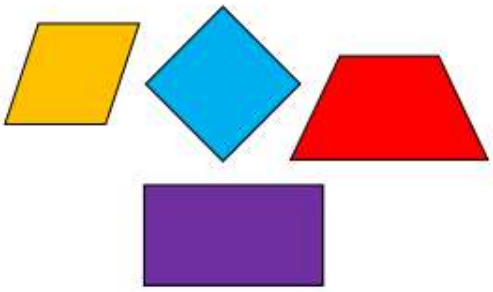
A closed plane shape made by line segments.

product

$5 \times 3 = 15$

The answer to a multiplication problem.

quadrilateral



A polygon with 4 sides.

quotient

$$7 \overline{)56} \quad 8$$

The answer to a division problem.

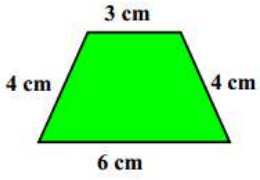
rectangle

A quadrilateral with 2 pairs of equal, parallel sides and 4 right angles.

rhombus

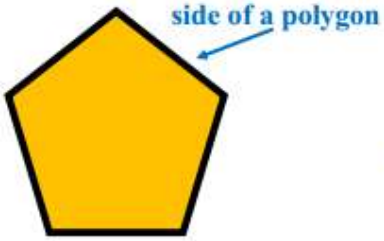
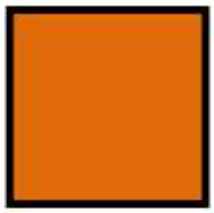
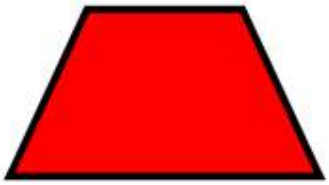
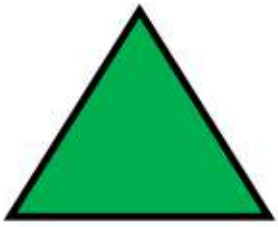
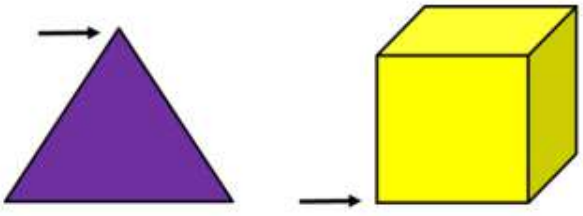
A quadrilateral with all 4 sides equal in length.

perimeter



The distance around the outside of a figure.

Perimeter = 4 cm + 6 cm + 4 cm + 3 cm
= 17 cm

side		One of the line segments that makes a polygon.
square		A parallelogram with 4 equal angles AND 4 equal sides.
trapezoid		A quadrilateral with 1 pair of parallel sides and 1 pair of sides that are not parallel.
triangle		A polygon with 3 sides and 3 angles.
vertex		The point where sides of a shape or angles meet. (plural - vertices)

NEW CONTENT

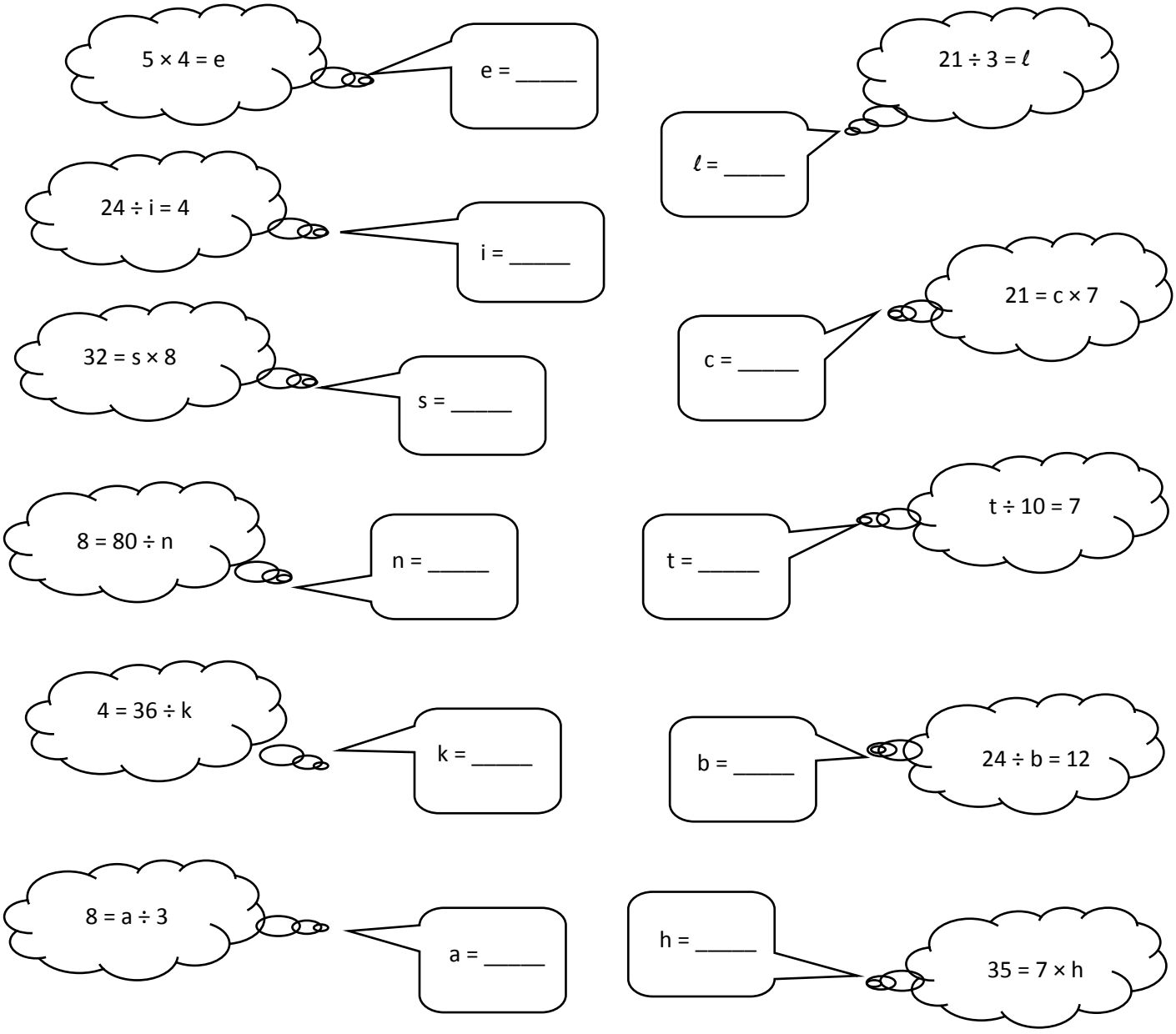
New Content - Suggested Lessons, Tasks and Projects

Lesson Suggestion from Current Resources – Everyday Math	CCSS	Teacher Notes
4.1 Multiples of Equal Groups	3.OA.5, 3.OA.6	Part 1 Teacher the Lesson **and** Part 3 Differentiation Options only
4.2 Multiplication Arrays	3.OA.5, 3.OA.6	Part 1 Teacher the Lesson **and** Part 3 Differentiation Options only
4.3 Equal Shares and Equal Groups	3.OA.5, 3.OA.6	Part 1 Teacher the Lesson **and** Part 3 Differentiation Options : Making Equal Groups of Cookies
4.4 Division Ties to Multiplication	3.OA.5, 3.OA.6	Part 1 Teaching the Lesson and Part 2 Ongoing Learning and Practice: Playing Division Arrays
4.5 Multiplication Fact Power and Shortcuts	3.OA.5, 3.OA.6	Part 1 Teaching the Lesson. Part 1 is critical to this standard. This part of the lesson introduces students to the properties of operations. Provide students will ample opportunities to apply these “Shortcuts”.
4.6 Multiplication and Division fact Families	3.OA.5, 3.OA.6	Part 1 Teaching the Lesson and Part 2 Ongoing Learning and Practice: Practicing with ×, ÷ Fact
4.8 Exploring Arrays and Facts	3.OA.5, 3.OA.6	Part 1 Teaching the Lesson
6.4 Triangles	3.G.1	Part 1 Teaching the Lesson and Part 3 Differentiation Options: Investigating Shapes of Triangles
6.5 Quadrangles	3.G.1	Part 1 Teaching the Lesson and Part 3 Differentiation Options: Playing Touch-and-Match Quadrangles; Adding to the Vocabulary Chart

New Content - Tasks

3.OA.5 & 3.OA.6 - Riddle Me This (Engage NY)

1. Each equation contains a letter representing the unknown. Find the value of the unknowns, then write the letters that match the answers to solve the riddle.



Which tables do you NOT have to learn?

_____	_____	_____	_____	_____	_____	_____		_____	_____	_____	_____	_____	_____
9	**6**	**70**	**3**	**5**	**20**	**10**		**70**	**24**	**2**	**7**	**20**	**4**

3.OA.5 & 3.OA.6 - Number Bonds (Engage NY)

Use number bonds to help you skip-count by seven by making ten or adding to the ones.

(a) 7 + 7 = **10** + **4** = _____

3 4

(b) 14 + 7 = _____ + _____ = _____

6 1

(c) 21 + 7 = _____ + _____ = _____

20 1

(d) 28 + 7 = _____ + _____ = _____

2 5

(e) 35 + 7 = _____

5 2

(f) 42 + 7 = _____ + _____ = _____

(g) 49 + 7 = _____ + _____ = _____

(h) 56 + 7 = _____ + _____ = _____

3.OA.5 & 3.OA.6 - Blueberry Muffins (Engage NY)

Melanie decides to bake blueberry muffins next. Her recipe calls for 5 blueberries per muffin. She makes 10 muffins.

a. Draw a picture and write a multiplication sentence to find the total number of blueberries she uses for 10 muffins.

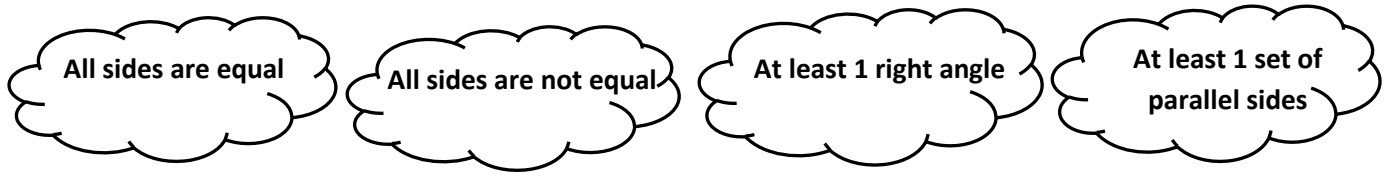
b. Melanie uses the equation 10 = _____ ÷ 5 to figure out how many blueberries she needs. Is her method correct? Why or why not?

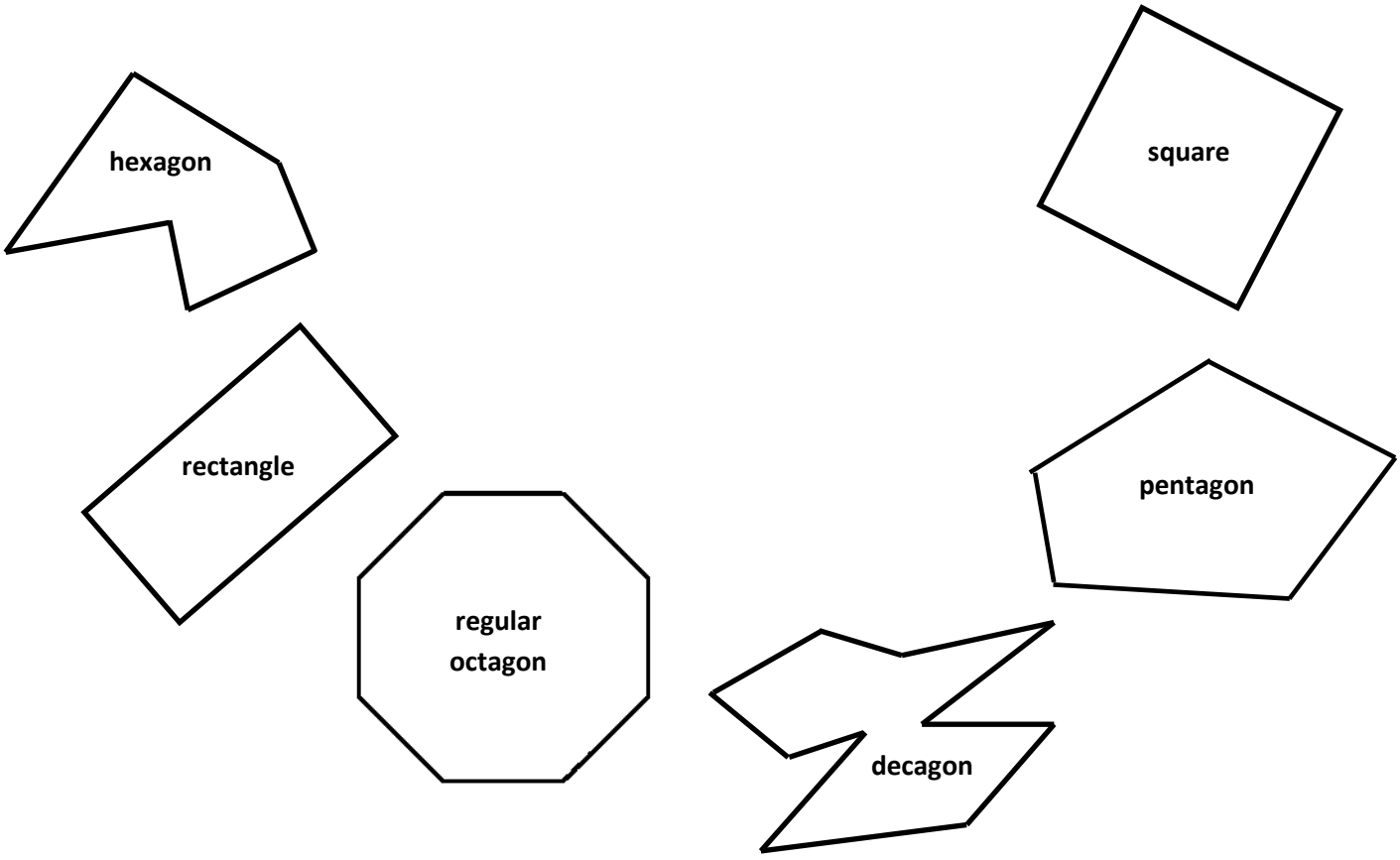
c. If she has a total of 90 blueberries, how many are left after she makes the 10 muffins?

d. She boxes the 10 muffins. Each box fits 2. Draw a picture and write a number sentence to show how many boxes Melanie fills.

3.G.1 – Geometry Clouds (Engage NY)

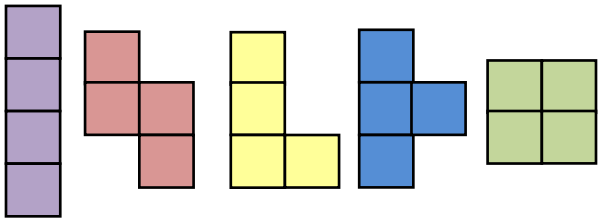
Match the polygons with their appropriate clouds. A polygon can match to more than 1 cloud.





3.G.1 – Tetris (Engage NY)

Use the tetrominoes below to color in the grid to create three different rectangles. You may use the same tetromino more than once.



Tetrominoes

CUMULATIVE REVIEW

Standards for In-Depth Opportunities

The Common Core Standards with opportunities for in-depth focus are identified in the PARCC Model Content Frameworks. These standards highlight some individual standards that play an important role in the content at each grade. The indicated mathematics might be given an especially in-depth treatment, as measured, for example, by the type of assessment items; the number of days; the quality of classroom activities to support varied methods, reasoning, and explanation; the amount of student practice; and the rigor of expectations for depth of understanding or mastery of skills.

Description of Unit Materials

The curriculum guide in this section of the unit consists primarily of projects and tasks. Students should work in groups or pairs with teacher facilitation and a strong focus on problem solving skills and logical reasoning. Since these standards have already been formally taught in previous units, the teacher should release responsibility to students and allow for student exploration, growth, and critique of their own work and the work of classmates.

The teacher should collect all student tasks in a portfolio for the items to move on with the student in future mathematics classes.

Core Standards - Unit 5 :In Depth Opportunity Standards	
3.OA.3	Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem
3.OA.7	Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.
3.MD.2	Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).6 Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem
3.MD.7	Relate area to the operations of multiplication and addition. a. Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths. b. Multiply side lengths to find areas of rectangles with whole number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning. c. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and $b + c$ is the sum of $a \times b$ and $a \times c$. Use area models to represent the distributive property in mathematical reasoning. d. Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.
3.NF.2	Understand a fraction as a number on the number line; represent fractions on a number line diagram. a. Represent a fraction $1/b$ on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size $1/b$ and that the endpoint of the part based at 0 locates the number $1/b$ on the number line. b. Represent a fraction a/b on a number line diagram by marking off a lengths $1/b$ from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line.

Suggested Pacing Guide for Selected Tasks

In-Depth Opportunity Standards	Project	Teaching Notes	Suggested Work Time
3.OA.3	Ice Cream Shop	Encourage students to use color coded manipulatives to keep track of the different types of ice creams. This problem may cause disorganized students to struggle. A table or pictures will assist in monitoring work.	1 day
	Stone Soup	Students who are unable to recognize that each serving must be multiplied by the number of people should be encouraged to create a table for the first five people. This will allow them to see the additive process and may prompt multiplicative reasoning.	1 day
3.OA.7	Cookie Dough	Since the number of tubs are relatively small, students can draw diagrams or pictures to see the relationship between multiplication and division.	1 day
	Calculating Sale Price	Ideally, students will create the number sentence P÷3 = S for the price of an item and the sale calculation and S*3 = P to calculate the original price. Encourage struggling students to write out the operation in sentence form first and then incorporate variables.	1 day
3.MD.2	Scale Riddles	Encourage struggling students to write a number sentence with the pieces of fruit. For example, Baby Food + Tomato = 671, and replace the food names with known information.	1 day
	Car Capacity	Encourage struggling students to write in each of the liter marks. This will allow them to more accurately plot the numbers.	1 day
3.MD.7	Three Hidden Rectangles	Provide multiple copies of the figure and different colored markers so students can try out as many ways as possible.	1 days

	Which House Is Bigger?	Ask struggling students to draw in a grid for each 1 meter. This will allow for them to see the shape compositely but to break up in rectangles as they see fit. Also provide different colored markers so students can better visualize the space.	1 day
3.NF.2	Flower Garden	Provide cut out manipulatives for students. This task was adapted from the interactive "PARCC style" test items. If students are used to physically rearranging the tiles in person, it will translate more easily in the digital practice.	1 day
	Fractions on the Number Line	Struggling students should sketch out a fraction model. They can test multiple statements – encourage trial and error until the student is able to make the instant mental connection between the relative sizes of the numerators and denominators.	1 day

In-Depth Opportunity Projects and Tasks

3.OA.3 – Ice Cream Shop (Georgia Core)

The Super Delicious Ice Cream Shop has the very best ice cream in town. They sell their ice cream in double scoops, triple scoops, or double-double (that's four) scoops. The top selling ice creams are listed on the sign below. You have $1.00 to spend. Don't worry about tax.

Use pictures, words, and numbers to show all of your work as you answer the questions below.

Ice Cream Flavors and Prices for a Single Scoop

Varoom Vanilla	$0.50
Cha-Cha Chocolate	$0.10
Cheery Cherry	$0.20
Rockin' Rocky Road	$0.30
Striped Strawberry	$0.17
Kid's Delight	$0.12

1. With $1.00, which flavor can you buy, triple Varoom Vanilla, or triple Cheery Cherry? Would you have any money left?

2. To spend most of your money, should you buy a double, triple, or double-double scoop of Rockin' Rocky Road? How much money would you have left?

3. Which ice cream flavors can you buy if you order a double-double scoop?

4. On a different day, you and 5 of your friends decide to all order a double scoop of Cha-Cha Chocolate. How much money will the group spend in all?

5. You have been saving pennies for a whole month! You saved 96 pennies. If you and two of your friends share the pennies fairly, how many pennies will each of you have to buy ice cream? Which flavor could you buy and how many scoops can you get?

3.OA.3 – Stone Soup (Inside Mathematics)

A small group of six soldiers came into a small town. They were very hungry, but none of the townspeople offered them food. One of the soldiers announced that they would make Stone Soup. “How do you make Stone Soup a towns’ person asked?” Well the soldier replied, “You need a big pot, water and a large stone.” The townspeople, very curious to see how Stone Soup was made, gathered together the materials. The soldiers started to cook the soup over a fire they made. Once the soup began to boil, a soldier said, “sure this will be a tasty stone soup, but a delicious stone soup would have additional ingredients.” The townspeople, now even more curious, asked what extra ingredients might be added. “Well for each person you would need 2 baby carrots, 3 green onions and five chunks of meat.”

What ingredients are needed to make a delicious stone soup for the six soldiers?

What ingredients are needed to make a delicious stone soup for ten people?

What ingredients are needed to make a delicious stone soup for 25 people?

In the space below, use pictures or equations to explain how you determined your answers.

3.OA.7 – Cookie Dough (Engage NY)

The students at East Orange Middle school are selling Cookie Dough in tubs for a fundraiser. Draw a diagram for each response.

Chocolate Chip Cookie Dough $5 a tub	Peanut Butter Cookie Dough $4 a tub	Oatmeal Cookie Dough $3 a tub

1. Jill sold 2 tubs of Oatmeal Cookie Dough. How much did she raise?

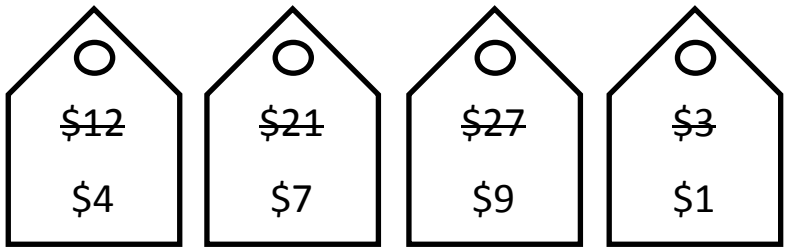
2. Joe sold 4 tubs of Peanut Butter Cookie Dough and 4 tubs of Chocolate Chip Cookie Dough. How much money did he raise in all?

3. Jade sold only Peanut Butter Cookie Dough. She raised $32. How many tubs did she sell?

4. Jermaine's mother loves oatmeal cookies. She has $20 to spend. What is the greatest number of tubs of Oatmeal Cookie Dough she can buy?

3.OA.7 – Calculating Sale Price (Engage NY)

A group of friends notice a sale at Forever 21. Compare the crossed out prices to the new sale prices.



a. If all sale prices are calculated in the same way, what would the sale price be on an item that originally cost $24? Use words and equations to explain how you know.

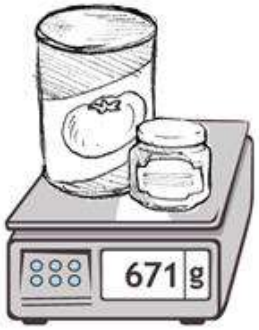
b. What is the original price of a t-shirt that is on sale for $30

c. How would you calculate the sale price of any item? Use an equation or word description.

d. How would you calculate the original price of any sale item? Use an equation or word description.

3.MD.2 - Scale Riddles (Engage NY)

1. The total weight in grams of a can of tomatoes and a jar of baby food is shown below.



   a. The jar of baby food weighs 113 grams. How much does the can of tomatoes weigh?

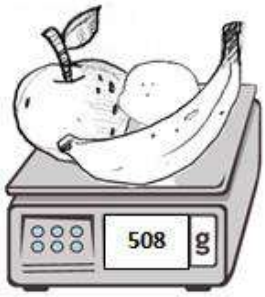
   b. How much more does the can of tomatoes weigh than the jar of baby food?

2. The weight of a pen in grams is shown below.

   a. What is the total weight of 10 pens?

   b. An empty box weighs 82 grams. What is the total weight of a box of 10 pens?

3. The total weight of an apple, lemon, and banana in grams is shown below.



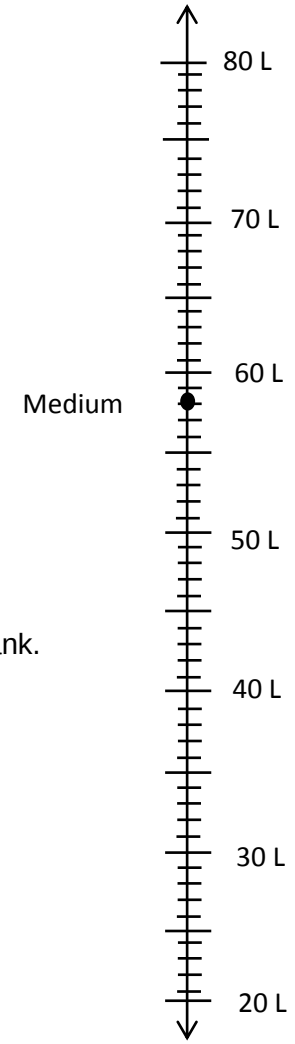
   a. If the apple and lemon together weigh 317 grams, what is the weight of the banana?

   b. If we know the lemon weighs 68 grams less than the banana, how much does the lemon weigh?

3.MD.2 – Car Capacity (Engage NY)

Kristen is comparing the capacity of gas tanks of cars.
Use the chart below to answer the questions.

Size of car	Capacity in liters
Large	74
Medium	57
Small	42



a. Label the number line to show the capacity of each gas tank. The medium car has been done for you.

b. Which car's gas tank has the greatest capacity?

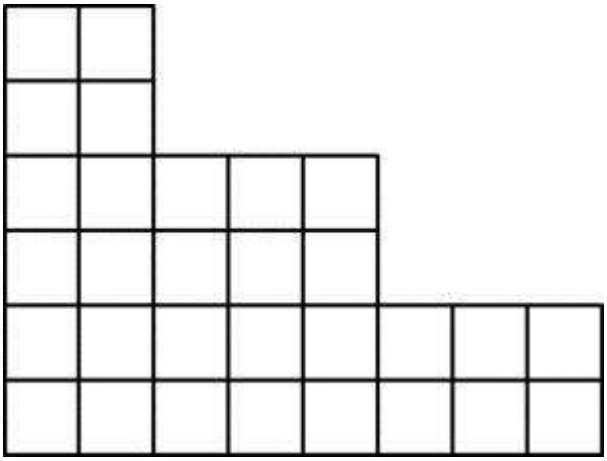
c. Which car's gas tank has the least capacity?

d. Kristen's car has a gas tank capacity of about 60 liters. Which car from the chart has about the same capacity as Kristen's car?

e. Use the number line to find how many more liters the large car's tank holds than the small car's tank.

3.MD.7 – Three Hidden Rectangles (Illustrative Math)

There are many ways to find the area of this figure.



a. Try to find as many ways as you can to split this figure into exactly 3 rectangles. Be sure that none of the rectangles overlap and the 3 rectangles cover the entire figure.

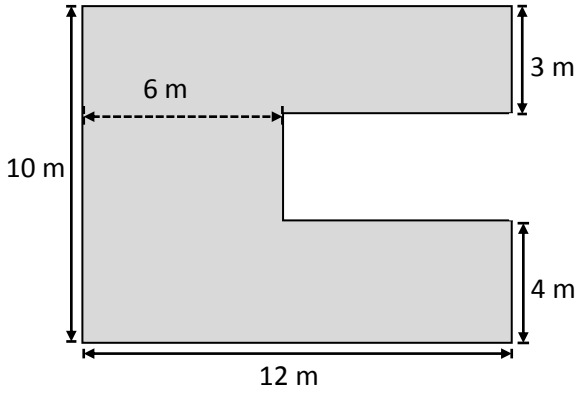
b. For every example you found in part a, write an expression that represents the area as the sum of the three rectangles.

c. Find the total area of this figure.

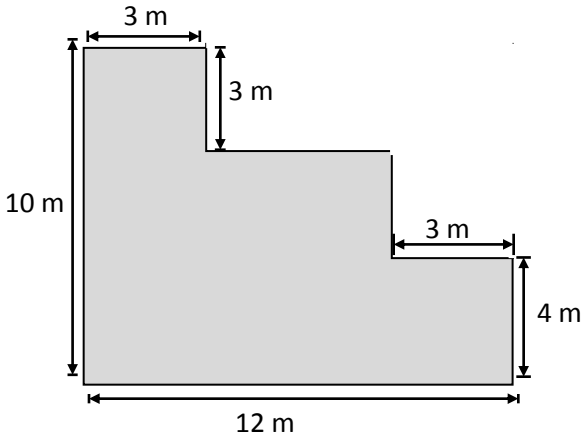
3.MD.7 - Which House Is Bigger? (Engage NY)

1. Mr. and Mrs. Jackson are buying a new house. They are deciding between the two floor plans below.

House A



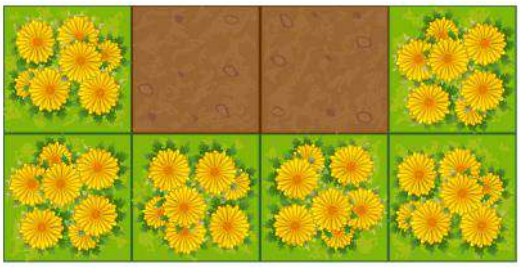
House B



Which floor plan has the greater area? Show how you found your answer on the drawings above. Show your calculations below.

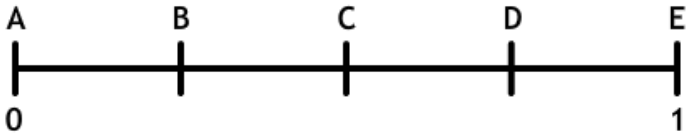
3.NF.2 – Flower Garden (Dana Center)

Part A: The picture shows Mark's flower garden. Fill in the blank to make a fraction that represents the part of Mark's garden that is covered with flowers.



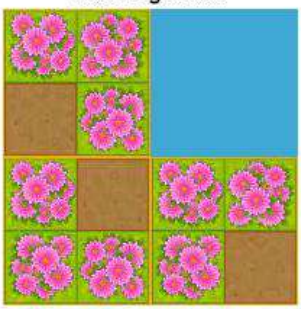
$\frac{6}{\square}$

Which letter represents this fraction's location on the number line?



Part B: Julia is planting flowers. She wants to cover ¾ of the garden with flowers. Circle a tile that will finish covering ¾ of her garden with flowers.

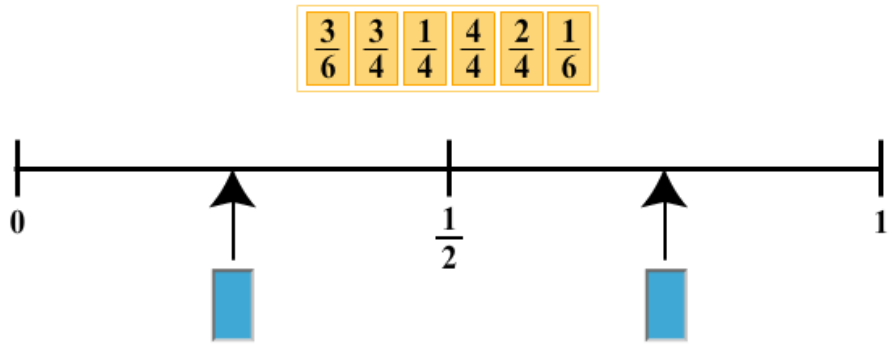
Julia's garden



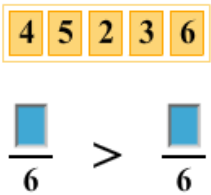
Possible tiles:

3.NF.2 - Fractions on the Number Line (Dana Center)

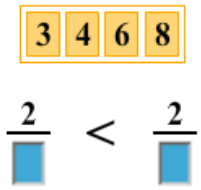
Part A: Use the fraction bank to match each location on the number line.



Part B: Select the numbers to build fractions that make the statement true. There is more than one correct answer. Explain your reasoning.



Part C: Select the numbers that make the fractions true. There is more than one correct answer. Explain your reasoning.



Cumulative Review

Problem Solving

1. Circle the multiplication sentences hidden in the number grid. They can be in a row (→), column (↓), or diagonal (↘, ↗).

An example has been done for you.

9	4	8	32	40	4
3	7	21	63	84	9
27	28	63	95	30	36
9	6	54	5	8	40
57	34	6	9	7	16
20	11	72	45	56	35

Solve

2. A bag of pencils can be divided evenly among 6 or 8 children without any pencils left over.

What is the least number of pencils that the bag may contain?

3. How many total times does the letter A appear below? Explain how you found the answer using multiplication facts.

A A A A A A
A A A A A A
A A A A A A
A A A A A A
A A A A A A
A A A A A A

A A A A A A A
A A A A A A A
A A A A A A A

A A A A A A A
A A A A A A A
A A A A A A A

4. **Solve and show your work.**

Kim buys 3 books for $7 each.
She sells them for $9 each.
Kim then buys another 5 books for $8 each but sells them for only $6 each.
How much money does Kim make or lose in all?

5. Fill in the missing digits.

Use mulitplication facts of 6, 7, 8, or 9.

$$\begin{array}{r} C \\ \times\ C \\ \hline DC \end{array}$$

C = ☐ D = ☐

6.

$$\begin{array}{r} F \\ \times\ F \\ \hline GH \end{array} \quad \text{and} \quad G + H = F$$

F = ☐ G = ☐ H = ☐

7.

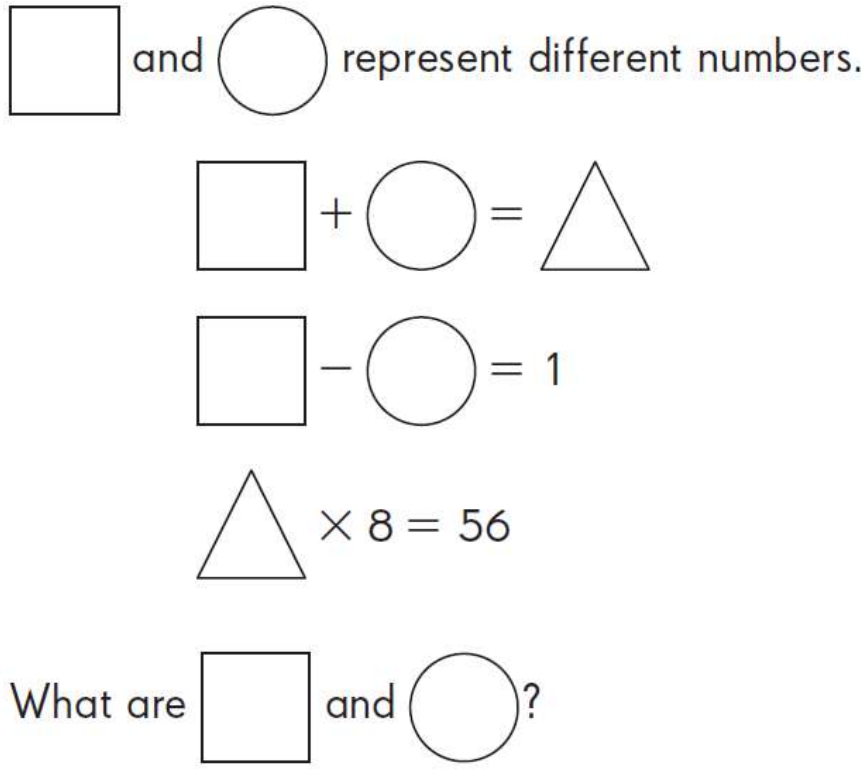
7.

$$\begin{array}{r} K \\ \times\ L \\ \hline MN \end{array} \quad \text{and} \quad M + N = K$$

K = ☐ L = ☐ M = ☐ N = ☐

Solve.

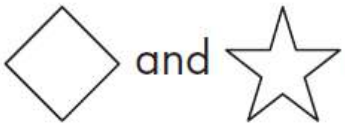
8.



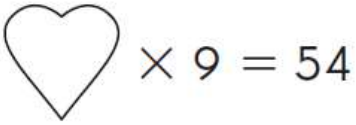
= _____

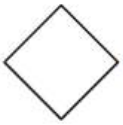
= _____

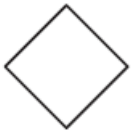
9.

 and represent different numbers.

These two numbers are between 7 and 15.



What are  and  ?

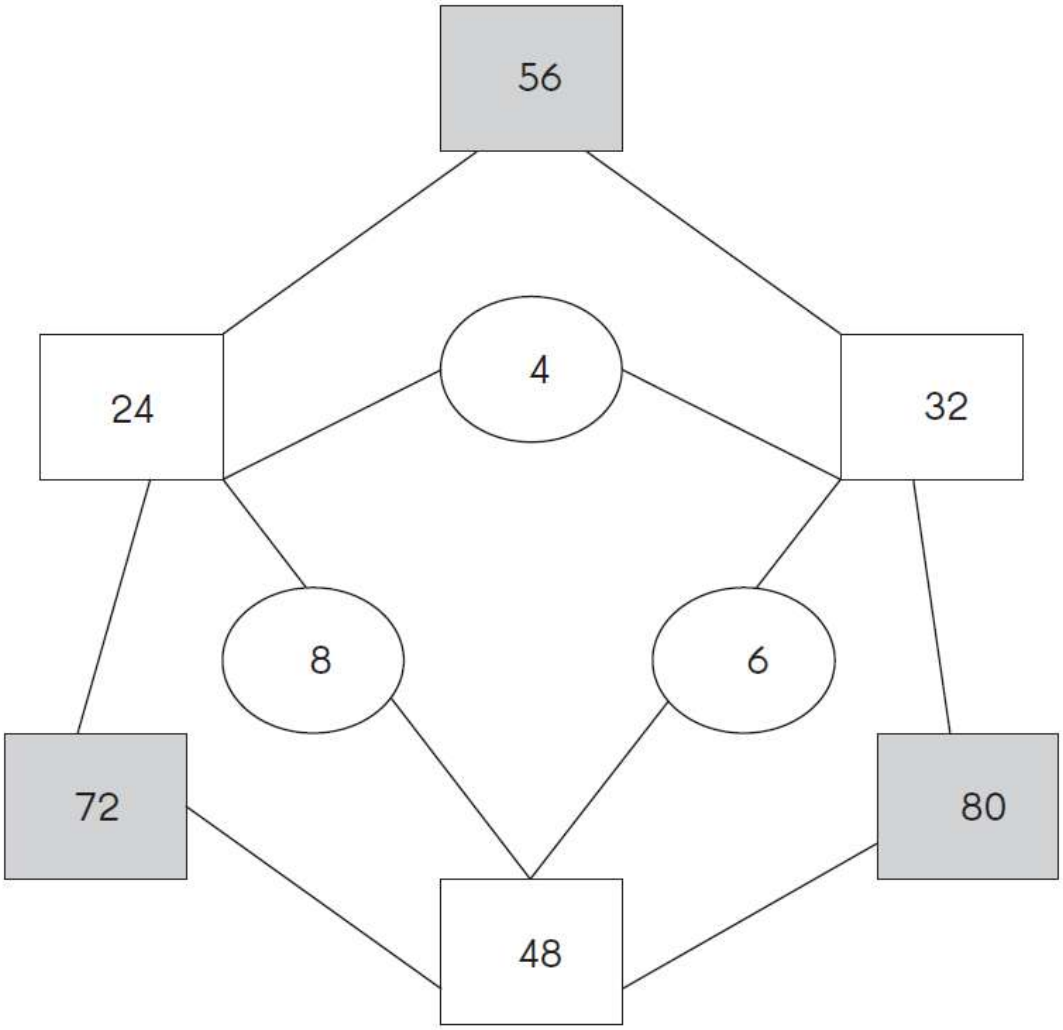
 = _____

 = _____

Solve. Show your work.

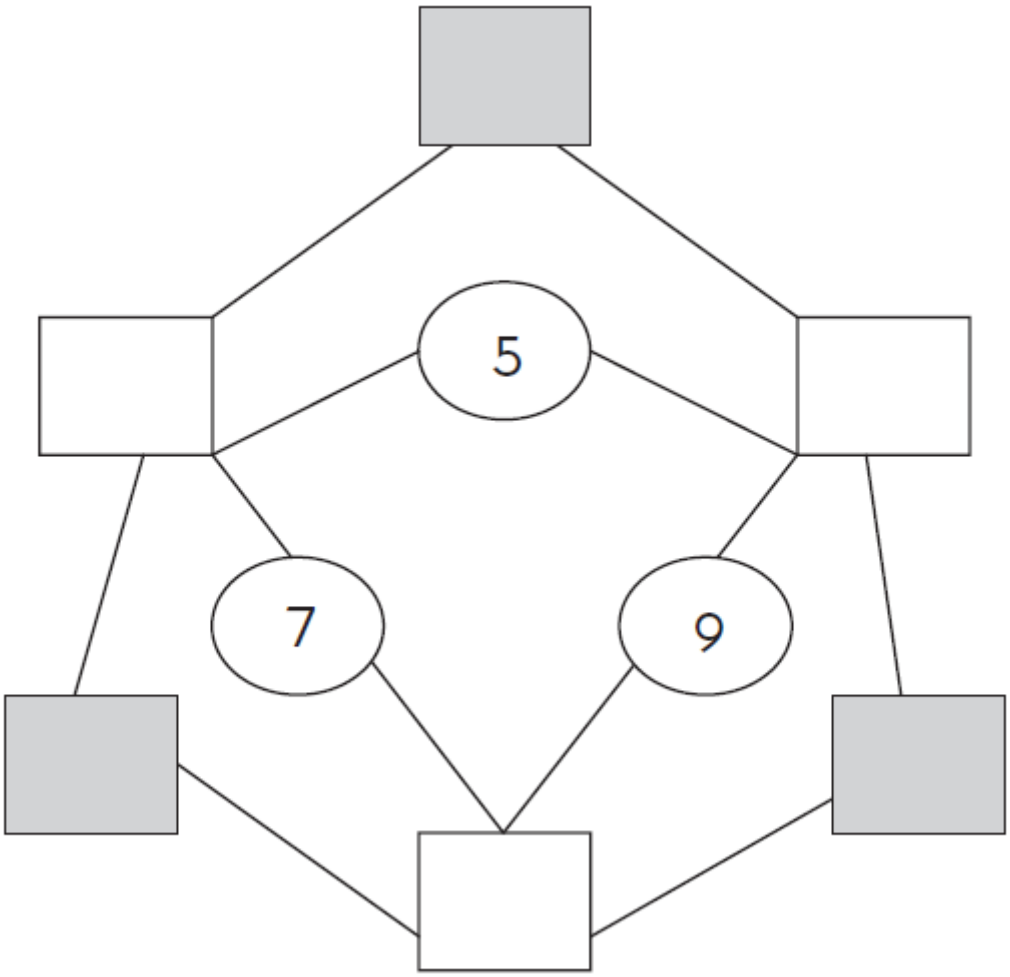
10. Eugene has 6 times as many toys cars as Joseph.
Brandon has half as many toy cars as Eugene.
Joseph has 18 toy cars less than Brandon.
How many toy cars do Eugene and Brandon have in all?

Study the figure below.
The numbers are arranged in a pattern.
Use the pattern to fill in the numbers on the next page.



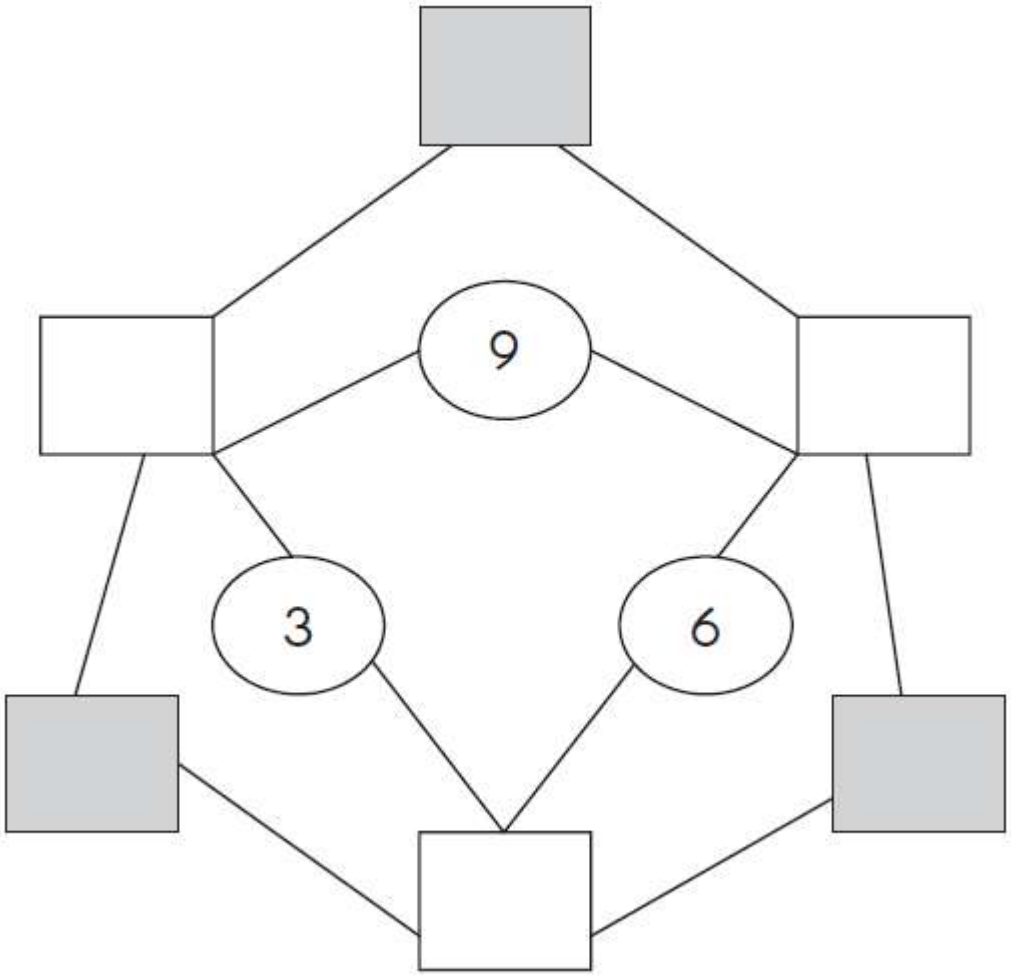
11. Fill in the missing numbers in each figure.

Figure 1:



12.

Figure 2:



Solve. Show your work.

13. Find 7 x 3.
Use a number line and multiplication facts to help you.
Use **three** different methods.

14. Casey bought 5 flower pots for $9 each. He sold them for $7 each. Casey then bought another 3 flower pots for $6 each. What is the least amount of money in whole dollars he must sell each flower pot for so that he does not lose any money?

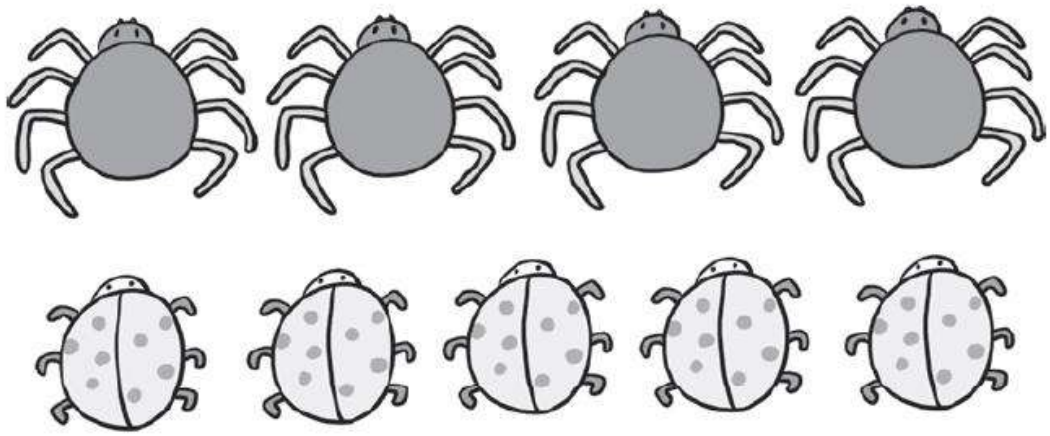
Journal Writing

Solve

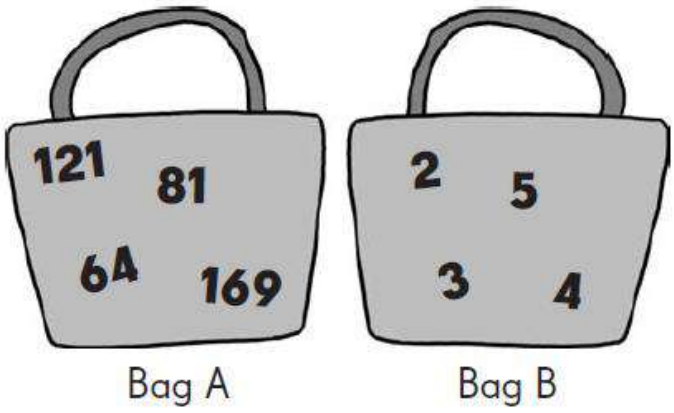
15. Study the picture.

Write a word problem about the number of legs.

Then solve the problem.



For exercises 1-3, pick one number from Bag A and one number from Bag B.

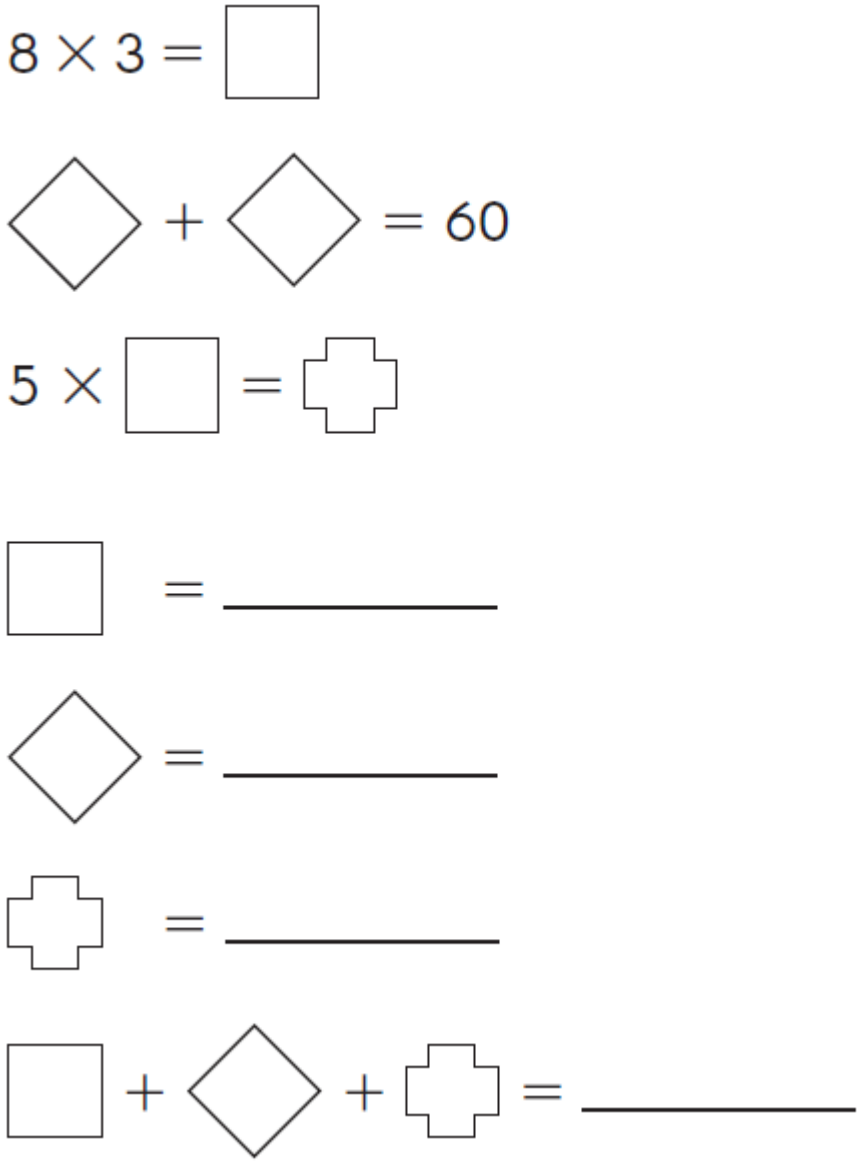


1. Pick two numbers that give a product between 100 and 500.

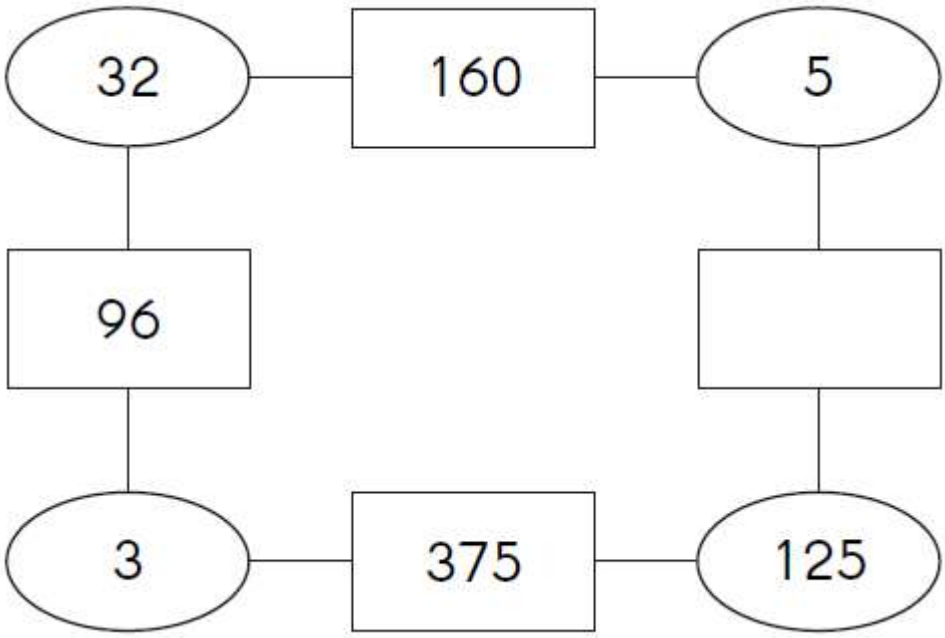
2. Pick two numbers that give a product between 501 and 750.

3. Pick two numbers that give a product between 751 and 1,000.

4. Solve



5. Look for a pattern. Fill in the missing number.



Solve. Show your work.

6. Jack has a total of 80 rabbits and chickens on his farm.
The animals have a total of 210 legs.
How many of each animal does Jack have?

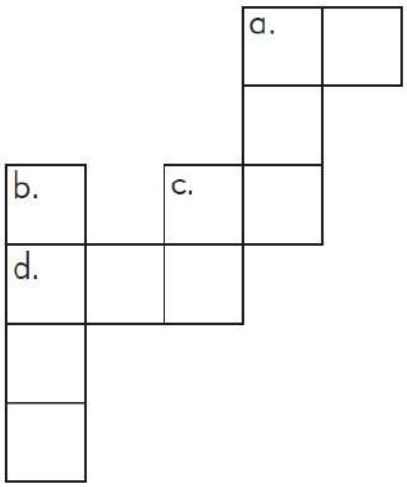
7.
Complete the number puzzle

Across

a. 96 ÷ 2
c. 180 ÷ 9
d. 2,000 ÷ 5

Down

a. 820 ÷ 2
b. 7,200 ÷ 3
c. 140 ÷ 7



8.
For every $5 Sally saves, her mother gives her $1. Sally's father gives her $2 for every $8 she saves. How much will Sally have in all after she saves $80 on her own?

9. A grocer has 93 eggs. He separates them into two groups. One group has twice as many eggs as the other group. The grocer packs eggs from the larger group into crates that hold 5 eggs each.

   He packs eggs from the smaller group into crates that hold 3 eggs each.

How many eggs are not packed?

Potential Student Misconceptions

Students don't interpret multiplication by considering one factor as the number of groups and the other factor as the number in each group.
Have students model multiplication situations with manipulatives or pictorially. Have students write multiplication and division word problems.

Students solve multiplication word problems by adding or division problems by subtracting.
Students need to consider whether a word problem involves taking apart or putting together equal groups. Have students model word problems and focus on the equal groups that they see.

Students believe that you can use the commutative property for division.
For example, students think that 3÷15 =5 is the same as 15÷3=5. Have students represent the problem using models to see the difference between these two equations. Have them investigate division word problems and understand that division problems give the whole and an unknown, either the number of groups or the number in each group.

Students don't understand the relationship between addition/multiplication and subtraction/division.
Multiplication can be understood as repeated addition of equal groups; division is repeated subtraction of equal groups. Provide students with word problems and invite students to solve them. When students solve multiplication problems with addition, note the relationship between the operations of addition and multiplication and the efficiency that multiplication offers. Do the same with division problems and subtraction.

Students don't understand the two types of division problems.
Division problems are of two different types--finding the number of groups ("quotative" or "measurement") and finding the number in each group ("partitive" or "sharing"). Make sure that students solve word problems of these two different types. Have them create illustrations or diagrams of each type, and discuss how they are the same and different. Connect the diagrams to the equations.

Students use the addition, subtraction, multiplication or division algorithms incorrectly.
Remember that the traditional algorithms are only one strategy. Partial sums, partial products and partial quotients are examples of alternative strategies that highlight place value and properties of operations. Have students solve problems using multiple models, including numbers, pictures, and words.

Extensions and Sources

Online Resources

Common Core Tools
http://commoncoretools.me/
http://www.ccsstoolbox.com/
http://www.achievethecore.org/steal-these-tools

Manipulatives

http://nlvm.usu.edu/en/nav/vlibrary.html
http://www.explorelearning.com/index.cfm?method=cResource.dspBrowseCorrelations&v=s&id=USA-000
http://www.thinkingblocks.com/

Problem Solving Resources

***Illustrative Math Project**
http://illustrativemathematics.org/standards/k8
http://illustrativemathematics.org/standards/hs
The site contains sets of tasks that illustrate the expectations of various CCSS in grades K–8 grade and high school. More tasks will be appearing over the coming weeks. Eventually the sets of tasks will include elaborated teaching tasks with detailed information about using them for instructional purposes, rubrics, and student work.

***Inside Mathematics**
http://www.insidemathematics.org/index.php/tools-for-teachers
Inside Mathematics showcases multiple ways for educators to begin to transform their teaching practices. On this site, educators can find materials and tasks developed by grade level and content area.

IXL
http://www.ixl.com/

Sample Balance Math Tasks
http://www.nottingham.ac.uk/~ttzedweb/MARS/tasks/

New York City Department of Education
http://schools.nyc.gov/Academics/CommonCoreLibrary/SeeStudentWork/default.htm
NYC educators and national experts developed Common Core-aligned tasks embedded in units of study to support schools in implementation of the CCSSM.

***Georgia Department of Education**
https://www.georgiastandards.org/Common-Core/Pages/Math-K-5.aspx
Georgia State Educator have created common core aligned units of study to support schools as they implement the Common Core State Standards.

Gates Foundations Tasks

http://www.gatesfoundation.org/college-ready-education/Documents/supporting-instruction-cards-math.pdf

Minnesota STEM Teachers' Center
http://www.scimathmn.org/stemtc/frameworks/721-proportional-relationships

Singapore Math Tests K-12
http://www.misskoh.com

Math Score:
Math practices and assessments online developed by MIT graduates.
http://www.mathscore.com/

Massachusetts Comprehensive Assessment System
www.doe.mass.edu/mcas/search

Performance Assessment Links in Math (PALM)

PALM is currently being developed as an on-line, standards-based, resource bank of mathematics performance assessment tasks indexed via the National Council of Teachers of Mathematics (NCTM).
http://palm.sri.com/

Mathematics Vision Project
http://www.mathematicsvisionproject.org/

***NCTM**
http://illuminations.nctm.org/

Assessment Resources

- *Illustrative Math: http://illustrativemathematics.org/
- *PARCC: http://www.parcconline.org/samples/item-task-prototypes
- NJDOE: http://www.state.nj.us/education/modelcurriculum/math/ (username: model; password: curriculum)
- DANA: http://www.ccsstoolbox.com/parcc/PARCCPrototype_main.html
- New York: http://www.p12.nysed.gov/assessment/common-core-sample-questions/
- *Delaware: http://www.doe.k12.de.us/assessment/CCSS-comparison-docs.shtml

Professional Development Resources

Edmodo

http://www.edmodo.com

Course: iibn34

Clark County School District Wiki Teacher

http://www.wiki-teacher.com/wikiDevelopment/unwrappedSearch.php#contentAreaId=6&courseId=474

Learner Express Modules for Teaching and Learning

http://www.learner.org/series/modules/express/videos/video_clips.html?type=1&subject=math

Additional Videos
http://www.achieve.org/achieving-common-core;
http://www.youtube.com/user/TheHuntInstitute/videos

Mathematical Practices

Inside Mathematics

http://www.insidemathematics.org/index.php/commmon-core-math-intro

Also see the ***Tools for Educators***

The Teaching Channel

https://www.teachingchannel.org

***Learnzillion**

https://www.learnzillion.com

***Engage NY**

http://www.engageny.org/video-library?f[0]=im_field_subject%3A19

**Adaptations of the these resources has been included in various lessons.*