Rising Accelerated 2 Students



PRINCE GEORGE'S COUNTY PUBLIC SCHOOLS

Division of Academics

Department of Curriculum and Instruction



Rising Accelerated 2 Students

Note to the Student

You learned so much in Grade 6! It is important that you keep practicing your math skills over the summer to be ready for the Accelerated 2 course. In this packet, you will find weekly activities for the summer break.



Directions:

- ➤ Create a personal and fun math journal by stapling several pieces of paper together or use a notebook or binder with paper. Be creative and decorate the cover to show math in your world.
- > Each journal entry should:
 - ❖ Have the week number and the problem number.
 - ❖ Have a clear and complete answer that explains your thinking.
 - ❖ Be neat and organized.
- Pay attention to the gray boxes that you see at the beginning of each week's activities. Those boxes indicate the Common Core domain and standard that the

subsequent activities address. If you see a NON-CALCULATOR SYMBOL to a gray box, then do not use a calculator for the activities in that section!

Playing board and card games are a good way to reinforce basic computation skills and mathematical reasoning. Try to play board and card games at least once a week. Some suggested games to play are: Monopoly, Chess, War, Battleship, Mancala, Dominoes, Phase 10, Yahtzee, 24 Challenge, Sudoku, KenKen, Connect Four, and Risk.

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Where to Go to Get Help ... or Practice!

During the course of your math work this summer, you may need some assistance with deepening your understanding the skills and concepts. You also might want to get some more practice. Here are some sites you can visit online:



To get the exact definition of each standard, go to www.corestandards.org and search for the content standard (for example, 7.NS.1a).



Khan Academy has helpful videos and self-guided practice problems for every grade level. Go to www.khanacademy.org to get started.

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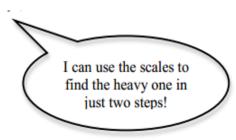
WEEK 1 || **Expression and Equations Standards 6.EE.4-6.EE.5**: Apply and extend previous understandings of arithmetic to algebraic expressions. Use reasoning to solve one-variable equations and inequalities.

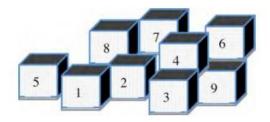
Directions: Read the scenario and answer the questions.

There are nine small boxes.

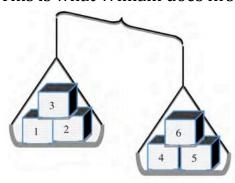
They all look exactly the same, but one is a bit heavier than the others.

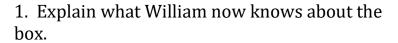
William says:

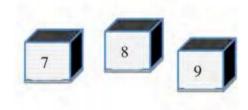




This is what William does first.

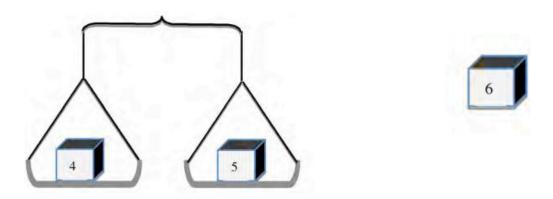






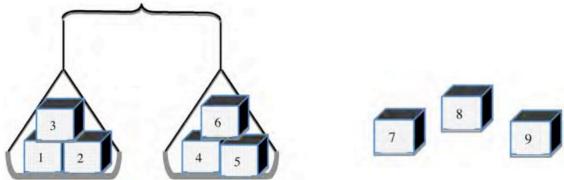
heavy

Then William does this:



2. Which is the heavy box? Explain how you know.

3. Suppose the scales showed this the first time instead.



What should William do now to find the heavy box?

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WEEK 2 | Ratios and Proportional Relationships Standard 6.RP.1-6.RP.3:

Understand ratio concepts and use ratio reasoning to solve problems.

Directions:

1. Find five examples of ratios in the real world. Write them down and describe the situation in which they are found. *Remember, ratios are comparisons of two quantities which can be written in the following ways:

$$\frac{a}{b}$$



Example: At the grocery store, Brandi noticed that there were three times as many carts as there were baskets for shoppers to use to carry their food.

The ratio of carts to baskets (c:b) is 3 to 1.

2. Create a problem using ratios for your parents/guardians or friends to solve. Write both your problem and solution in your journal.

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Ratios and Proportional Relationships Standards 7.RP.1-7.RP.3: Analyze proportional relationships and use them to solve real-world and mathematical problems.

Directions: Solve the following problems.

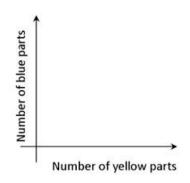
The students in Ms. Brown's art class were mixing yellow and blue paint. She told them that two mixtures will be the same shade of green if the blue and yellow paint are in the same ratio.



The table below shows the different mixtures of paint that the students made.

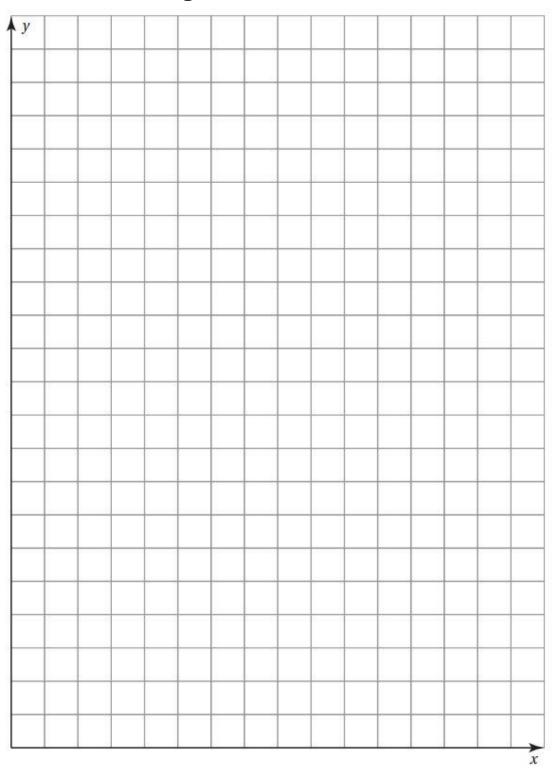
	A	В	С	D	E
Yellow	1 part	2 parts	3 parts	4 parts	6 parts
Blue	2 parts	3 parts	6 parts	6 parts	9 parts

- a. How many different shades of paint did the students make?
- b. Some of the shades of paint were bluer than others. Which mixture(s) were the bluest? Show work or explain how you know.
- c. Using the coordinate grid on the next page, carefully plot a point for each mixture on a coordinate plane like the one that is shown in the figure to the right.



d. Draw a line connecting each point to (0, 0). What do the mixtures that are the same shade of green have in common?

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WEEK 3 || **Ratios and Proportional Relationships Standards 7.RP.1-7.RP.3:** Analyze proportional relationships and use them to solve real-world and mathematical problems.

Directions: Complete the following three problems to apply your understanding of percentages and ratios.



Problem #1:

Jesse's Awesome Autos advertised a special sale on cars – Dealer cost plus 5%! Quinten and Shapera bought a luxury sedan for \$23,727.90. What was the dealer's cost?

Problem #2:

You and some friends went out to T.G.I. Fridays for dinner. You ordered a root beer, sweet potato fries and cheese quesadillas. The total bill came to \$21.86. Your dad has told you many times that it's important to leave a good tip; about 20%. You have \$26.00 in your wallet. How much would the total be if you left a 20% tip? Can you cover the cost?

Problem #3:

Builders have observed that windows in a home are most attractive if they have the width to length ratio 3:5. If a window is to be 48 inches wide, what should its length be for the most attractive appearance?

- 2. Create your own problems.
 - Create one original problem involving a percentage (discount or tax).
 - Create one original problem involving a ratio or part/whole relationship.
 - Solve both and keep the answer key.
 - Challenge a friend or family member to solve your problems.

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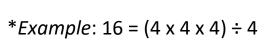
WEEK 4 | Number System Standards 7.NS.1-7.NS.3: Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.

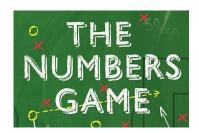


Directions: Complete the two problems below.

Problem 1:

Using exactly four 4's and any operations or symbols $[+, -, x, \div, (), x^e]$ write an expression to equal each of the following:





Problem 2:

Find three different ways to fill in operations in the boxes below to make the equations true.

*Hint: Operations include: +, -, x, \div , ()

$$6 \square 1 \square 2 \square 2 = 5$$

$$6 \square 1 \square 2 \square 2 = 5$$

$$6 \square 1 \square 2 \square 2 = 5$$

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Expression and Equations Standards 7.EE.3-7.EE.4: Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

Directions: Read the problem below, then, answer the questions.



The Dysons love to give parties. Last Friday, they gave a party and the doorbell rang 15 times. At the first ring, one guest arrived. Each time the doorbell rang after that, two more guests arrived than the time before.

On Saturday they had another party. At the first ring of the doorbell a single guest arrived, at the second ring two guests appeared, at the third ring three guests and so on. If the doorbell rang 20 times Saturday night, how many guests attended? Was this party bigger than Friday's party? How do you know?

2. Draw a picture to show one way to solve this problem.

3. Create a table to show a second way to solve the problem.

4. Write your answer below and explain how you arrived at your solution.

WEEK 5 | Number System Standards 7.NS.1-7.NS.3: Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.



Directions: Without a calculator, evaluate each expression in your math journal, showing all of the necessary steps for your solution. Match your answers with the corresponding letters to figure out the answer to the riddle.

Where Does A Salad Dressing Get A Good Night's Sleep?

Write the letter of each answer in the box containing the exercise number.

Subtract. Write the fractions in simplest form.

1.
$$\frac{3}{4} - \frac{9}{4}$$

2.
$$-3 - \frac{7}{2}$$

3.
$$-\frac{1}{5} - \left(-\frac{5}{11}\right)$$
 4. $-\frac{5}{8} - \frac{2}{7}$

4.
$$-\frac{5}{8} - \frac{2}{7}$$

5.
$$-2\frac{2}{3}-4\frac{1}{6}$$

5.
$$-2\frac{2}{3} - 4\frac{1}{6}$$
 6. $-3\frac{1}{9} - \left(-2\frac{1}{3}\right)$

9.
$$-4.125 - (-2.8)$$
 10. $-12.33 - 7.21$

Find the distance between the two numbers on a number line.

13.
$$-3\frac{1}{4}$$
, $4\frac{1}{2}$

15. Your project requires a board that has a length of
$$5\frac{3}{16}$$
 inches. You found a board that has a length of $9\frac{1}{8}$ inches. How much of the board needs to be cut to use it for your project?

Answers

O.
$$-\frac{7}{9}$$
 A. $-6\frac{1}{2}$

A.
$$-6\frac{1}{2}$$

T. 8.812 **E.**
$$-1\frac{1}{2}$$

T. 0.3 **E.**
$$\frac{14}{55}$$

c.
$$7\frac{3}{4}$$

C.
$$7\frac{3}{4}$$
 F. -1.325

L.
$$3\frac{15}{16}$$

E.
$$-\frac{51}{56}$$

U.
$$-6\frac{5}{6}$$

Directions: Without a calculator, evaluate each expression in your math journal, showing all of the necessary steps for your solution. Match your answers with the corresponding letters to figure out the answer to the riddle.

When Is A Baby Like A Basketball Player?

Write the letter of each answer in the box containing the exercise number.

Multiply. Write fractions in simplest form.

1.
$$-\frac{4}{5} \cdot \left(-\frac{5}{7}\right)$$

2.
$$2\frac{2}{3} \cdot \left(-4\frac{1}{4}\right)$$

3.
$$\left(-\frac{3}{4}\right)^3$$

4.
$$0.8 \times (-2.1)$$

5.
$$-7.5 \times (-0.3)$$
 6. $(-0.8)^3$

6.
$$(-0.8)^3$$

Divide. Write fractions in simplest form.

7.
$$\frac{5}{8} \div \left(-\frac{1}{4}\right)$$

8.
$$-1\frac{1}{6} \div \frac{2}{9}$$

9.
$$-6\frac{2}{5} \div \left(-2\frac{2}{7}\right)$$
 10. $0.3 \div \left(-1.5\right)$

10.
$$0.3 \div (-1.5)$$

11.
$$-5.415 \div (-2.85)$$
 12. $-16.29 \div 3.62$

12.
$$-16.29 \div 3.62$$

13. What is the square foot area of a room with a length of $10\frac{3}{4}$ feet and a width of $8\frac{1}{2}$ feet?

Answers

E.
$$-\frac{27}{64}$$

s.
$$-2\frac{1}{2}$$

D.
$$91\frac{3}{8}$$

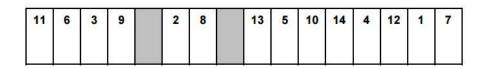
E.
$$-5\frac{1}{4}$$

E.
$$\frac{4}{7}$$

N.
$$2\frac{4}{5}$$

H.
$$-11\frac{1}{3}$$

14. For a fundraiser, the seventh grade class sells 45 submarine sandwiches. They collect a total of \$150.75. What is the cost per sub?



WEEK 6 | Expression and Equations Standards 7.EE.3-7.EE.4: Solve real-life and mathematical problems using numerical and algebraic expressions and equations.



Directions: Without a calculator, solve each equation in your math journal, showing all of the necessary steps for your solution. Check your solutions. Match your answers with the corresponding letters to figure out the answer to the riddle.

What Did One Bowling Ball Say To The Other Bowling Ball?

Write the letter of each answer in the box containing the exercise number.

Solve the equation.

1.
$$2c - 5 = 9$$

2.
$$3m + 7 = -8$$

3.
$$-7x - 3 = 12$$
 4. $15 = 4a + 3$

4.
$$15 = 4a + 3$$

5.
$$5y - 6 = -20$$

5.
$$5y - 6 = -20$$
 6. $9f + 3.6 = 10.8$

7.
$$-4p - 5.7 = 11.1$$

7.
$$-4p - 5.7 = 11.1$$
 8. $-20.3 = 6w + 3.1$

9.
$$2 + 5.3k = 18.43$$

9.
$$2 + 5.3k = 18.43$$
 10. $7.8b - 2.14 = -42.7$

11.
$$\frac{1}{4}z - \frac{2}{7} = \frac{5}{7}$$
 12. $3 - \frac{r}{8} = -\frac{9}{2}$

12.
$$3 - \frac{r}{8} = -\frac{9}{2}$$

13.
$$-\frac{1}{3} + 5e = -\frac{3}{4}$$
 14. $14d - 2d = -84$

14.
$$14d - 2d = -84$$

15.
$$-5g - 13g = 54$$
 16. $-3(t - 8) = 32$

16.
$$-3(t-8) = 32$$

- **17.** Kayla's age is 3 less than twice her brother's age. Kayla is 13 years old. How old is her brother?
- **18.** Mario spent \$23.85 at the bookstore on one book and some magazines. The book cost \$12.60 and the magazines cost \$2.25 each. How many magazines did Mario buy?
- **19.** Ethan planted a tree that is 37.5 inches tall. If the tree grows 3 inches each year, how long will it take for the tree to reach a height of 54 inches?

Answers

T.
$$-5.2$$

E.
$$-2\frac{4}{5}$$

L.
$$-2\frac{1}{7}$$

o.
$$-\frac{1}{12}$$

$$M. -5$$

P.
$$-2\frac{2}{3}$$

$$0. -3.9$$

D.
$$-3$$

$$0. -4.2$$

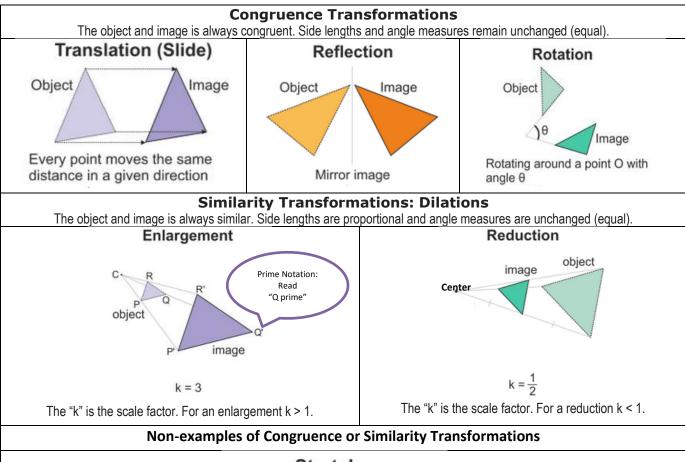
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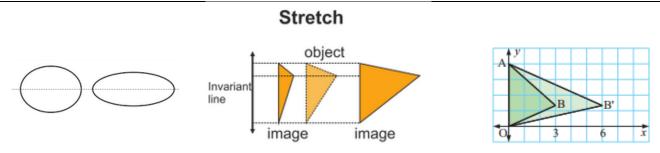
WEEKS 7 & 8 | ACCELERATED 2 UNIT 1 PREVIEW | Geometry Standards 8.G.1-8.G.5: Understand congruence and similarity using physical models, transparencies, or geometry software.

Directions: Study the graphic below. Use it to complete the following tasks.

Transformations

A change in size, shape, orientation or position of an object is called transformation.



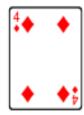


Stretching: Increasing or decreasing an object in one deminsion/direction only.

Stretches are define by a stretch factor and an invariant line. The image is neither congruent or similar to its object.

Rising Accelerated 2 Students Strange Pictures!

Look carefully at this picture of a playing card:



What has happened to these cards? In each case describe the changes.

Α.



В



C.



D.



E.



F.



G.



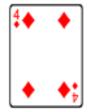
Н.



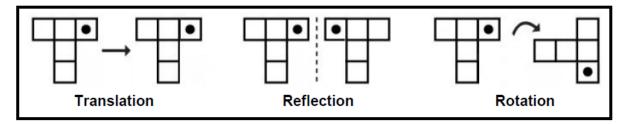
K.



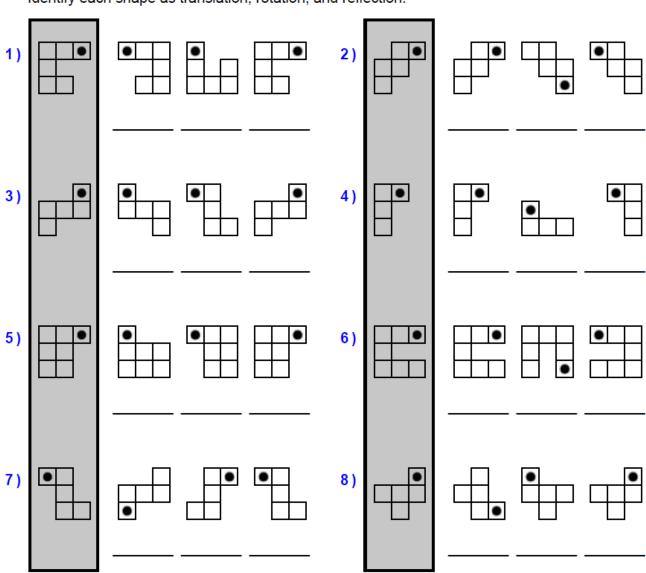
M.



Translation, Rotation, and Reflection

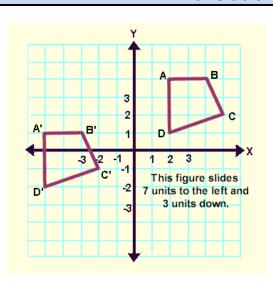


Identify each shape as translation, rotation, and reflection.



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Translations in the Coordinate Plane



Description:

7 units to the left and 3 units down.

Mapping Rule:

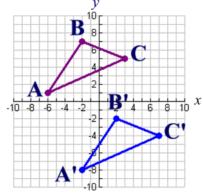
$$(x,y) \rightarrow (x-7,y-3)$$

(This is read: "the x and y coordinates will be translated into x-7 and y-3.

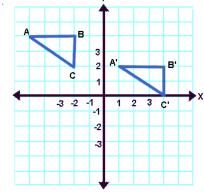
Notice that adding a negative value (subtraction), moves the image left and/or down, while adding a positive value moves the image right and/or up.)

Notation:

(The -7 tells you to subtract 7 from all of your x-coordinates, while the -3 tells you to subtract 3 from all of your y-coordinates.)

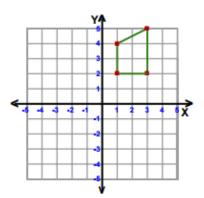


Describe the translation that will move triangle *ABC* onto triangle *A'B'C'*. Name the corresponding parts.



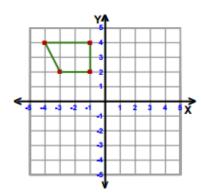
Give the mapping rule for the translation that will move triangle *ABC* onto triangle *A'B'C'*.

Translation: 4 left and 3 down



Graph the image of the figure using the given translation. Provide the notation of the translation.

Translation: 3 right and 4 down



Graph the image of the figure using the given translation. Provide the notation and mapping rule of the translation.

Rising Accelerated 2 Students **Triangle Reflections Task Sheet**

Perform each reflection and name the location of each point for the image.

- 1. Reflect figure ABC over the x-axis
- 2. Reflect figure DEF over the y-axis

$$A(-10, -9) \rightarrow A'(___,__)$$

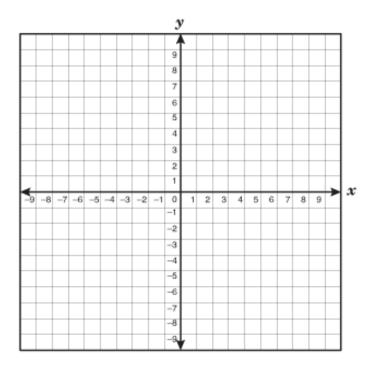
$$D(-5, -3) \rightarrow D'(\underline{\hspace{1cm}},\underline{\hspace{1cm}})$$

$$B(-6, -8) \rightarrow B'(___,__)$$

$$E(-1, -1) \rightarrow E'(\underline{\hspace{1cm}},\underline{\hspace{1cm}})$$

$$C(-4, -10) \rightarrow C'(\underline{\hspace{1cm}},\underline{\hspace{1cm}})$$

$$F(-2, -6) \rightarrow F'(\underline{\hspace{1cm}},\underline{\hspace{1cm}})$$



What are the shortcuts that can be applied to each coordinate?

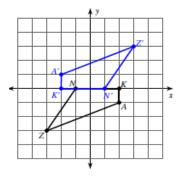
When reflecting a figure over the x-axis ...

When reflecting a figure over the y-axis ...

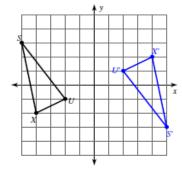
18

Rotations Made Easy!

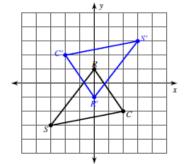
Look at the images of the figures below after their rotations 180° about the origin. The coordinates are given in the table. Fill in the coordinates of the images after the rotations. Then examine the pairs of coordinates and determine the coordinate mapping rule. Use the coordinate mapping rule to determine what the shortcut is when rotating figures 180° about the origin.



Quadrilateral ZNKA	Z (-3, 3)	N (-1, 0)
Coordinate Mapping	Z'	N'
Rule:		
(x,y)→(,)	K (2, 0)	A (2, -1)
(3)17 (K'	A'



Triangle XUS	X(-4, -2)	U(-2, -1)
	X'	U'
Coordinate Mapping		
Rule:	S(-5, 3)	
(x,y)→(,)	S'	



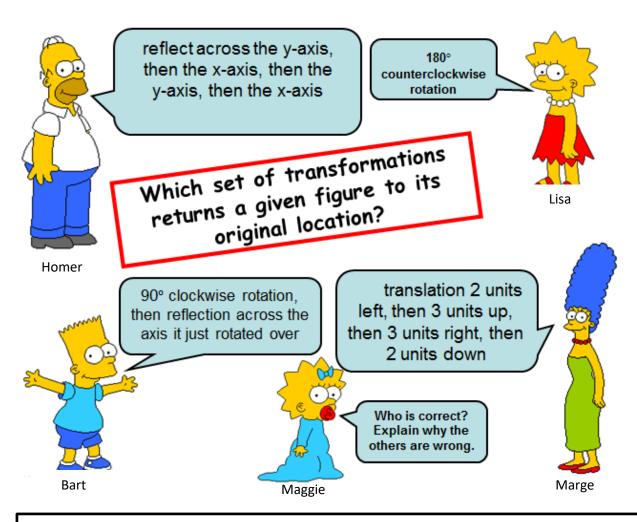
Triangle CRS	C(2, -2)	R(0, 1)
	C'	R'
Coordinate Mapping		
Rule:	S(-3, -3)	
(x,y)→(,)	S'	

What is the shortcut for rotating figures 180° ?

Provide a congruency statement for the rotation of Triangle CRS.



Reasoning with Transformations



Use the space provided to write a note to Maggie.

Changing Shapes

Suppose you are going to be designing a logo for a club at your school. To prepare for this project, draw a non-rectangular shape in the coordinate plane so that portions of the shape are in each of the four quadrants. Explain what would happen to your shape if you transformed it using each of the given rules with the center of dilation at the origin.

a.
$$(4x, 4y)$$

d.
$$(3x, 3y + 5)$$

e.
$$(x + 5, y - 5)$$

c.
$$(2x, y)$$

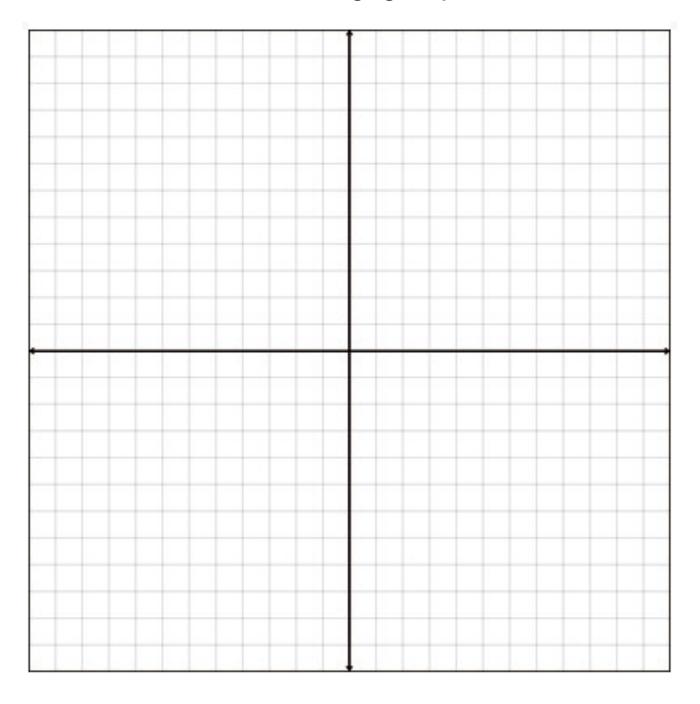
f.
$$(\frac{1}{2}x, \frac{1}{2}y)$$

g. Will any of the transformed figures be similar to the original figure? Explain.

h. If you make a new figure by adding 2 units to the length of each side of your shape, will the two figures be similar? Why or why not?

i. Write a general rule for transformations in the plane that produce similar figures.

Changing Shape



Summing It Up ... TRANSFORMATIONS!

Complete this graphic organizer.

Congruence		Similarity		
$\Delta ABC \cong \Delta DEF$				
		Imprecise Language (avoid)		
	Imprecise Language (avoid) The same, equal, "same shape and same size"		Stretch, scaled, resized, shrink, expand, "same shape"	
"corresponding angles e	Precise Academic Language (use) "corresponding angles equal and corresponding line segments equal"		Precise Academic Language (use) "corresponding angles equal and corresponding line segments proportional"	
Definition A two-dimensional figure is congruent to another if the 2nd can be obtained from the 1st by a combination of translations, rotations, and reflections.		Definition A two-dimensional figure is similar to another if the 2nd can be obtained from the 1st by a combination of congruence and dilation.		
Prop	erties	Properties		
Congruency Statem	Congruency Statement: $\triangle ABC \cong \triangle DEF$		Similarity Statement: $\Delta ABC \sim \Delta DEF$	
Corresponding Angles	Corresponding Sides	Corresponding Angles	Corresponding Sides	
$\angle A \cong \angle D$	$AB \cong DE$	$\angle A \cong \angle D$	AB BC AC	
$\angle B \cong \angle E$ $\angle C \cong \angle F$	$BC \cong EF$ $AC \cong DF$	$\angle B \cong \angle E$	$\frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF}$	
$\angle \mathbf{C} = \angle \mathbf{F}$	AC = DF	$\angle C \cong \angle F$		
Examples		Examples		
Non-examples		Non-examples		

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Complete the table.

Transformations	What Changes	What Stays the Same
Translation		Side lengths, angle measures
Rotation		
Reflection	Orientation	
Dilation		

TRANSFORMATIONS from A to Z

Reflect on what your learned by filling in a word or phrase related to transformations for each letter.

A	J	S
В	K	T
С	L	U
D	M	V
E	N	W
F	O	X
G	P	Y
H	Q	Z
Ι	R	