Summer Enrichment Packet

Rising Accelerated 2 Students

ANSWER KEY

PRINCE GEORGE'S COUNTY PUBLIC SCHOOLS
Division of Academics
Department of Curriculum and Instruction

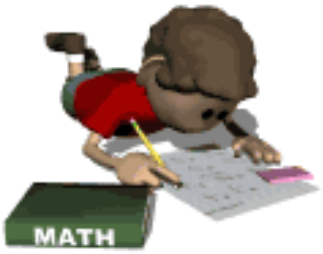
PGCPS

Summer Student Enrichment Packet

Accelerated 2

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*  *next to a gray box, then do not use a calculator for the activities in that section!*

Playing board games 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.

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:

COMMON CORE STATE STANDARDS INITIATIVE — PREPARING AMERICA'S STUDENTS FOR COLLEGE & CAREER	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	***Khan Academy*** has helpful videos and self-guided practice problems for every grade level. Go to www.khanacademy.org to get started.

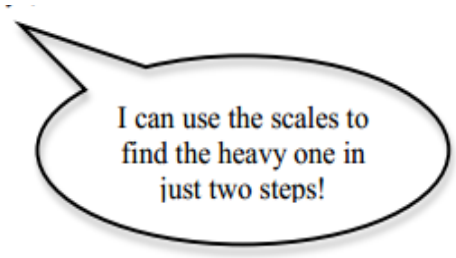
Accelerated 2

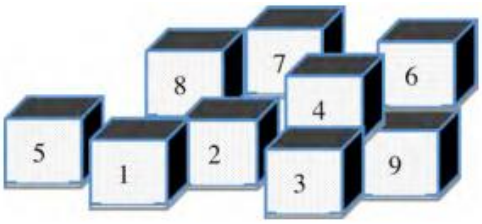
WEEK 1 || Expression and Equations Standards 6.EE.4-6.EE.5: Apply and extend previous understandings of arithmetic to algebraic expressions. Reason about and solve one-variable equations and inequalities.

Directions: Read the scenario and answer the questions.

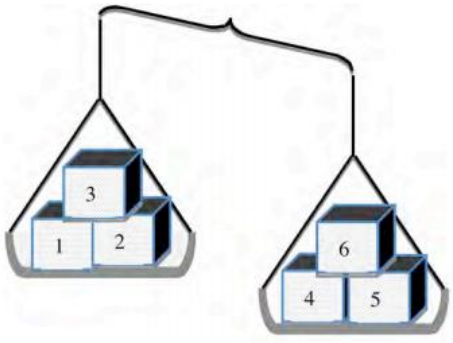
There are nine small boxes.
They all look exactly the same, but one is a bit heavier than the others.

William says:





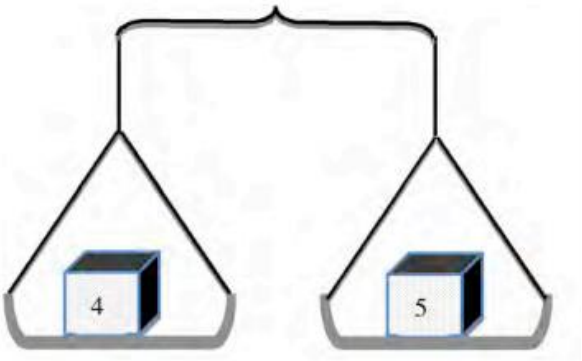
This is what William does first.



1. Explain what William now knows about the heavy box.

William knows that the heavy box is either 4, 5, or 6 because that side of the scale is lower, meaning it is heavier than the other side.

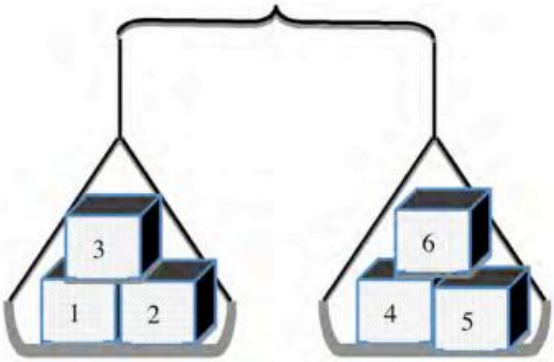
Then William does this:



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

The heavy box is 6. From the first picture, I know that the heavy box is 4, 5, or 6. From this picture, if 4 and 5 are equal in weight, than 6 must be the heavy box.

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



What should William do now to find the heavy box?

Since the two sides right now are equal, I would take off 4, 5, and 6 and put on 7, 8, and 9. One box among 7, 8, and 9 must be the heavy one. From there, I would place 7, 8, and 9 by themselves on either side of the scale to determine which one was the heavy one.

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:*

a to b $\frac{a}{b}$ 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.

Answers will vary. 5 apples to 4 oranges. 10 boys to 7 girls. Etc.

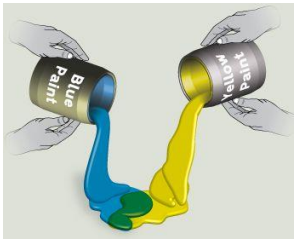
2. Create a problem using ratios for your parents/guardians or friends to solve. Write both your problem and solution in your journal.

Answers will vary.

Accelerated 2

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	B	C	D	E
Yellow	1 part	2 parts	3 parts	4 parts	6 parts
Blue	2 part	3 parts	6 parts	6 parts	9 parts

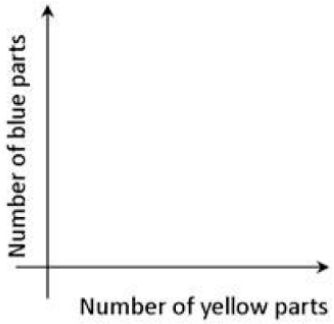
a. How many different shades of paint did the students make?

The students made two shades of paint.

b. Some of the shades of paint were bluer than others. Which mixture(s) were the bluest? Show work or explain how you know.

Mixtures A and C were bluer than B, D, and E because they contain a ratio of 2 parts blue to 3 total parts (≈67% blue) while B, D, and E have a ratio of 3 parts blue to 5 total parts (≈60% blue).

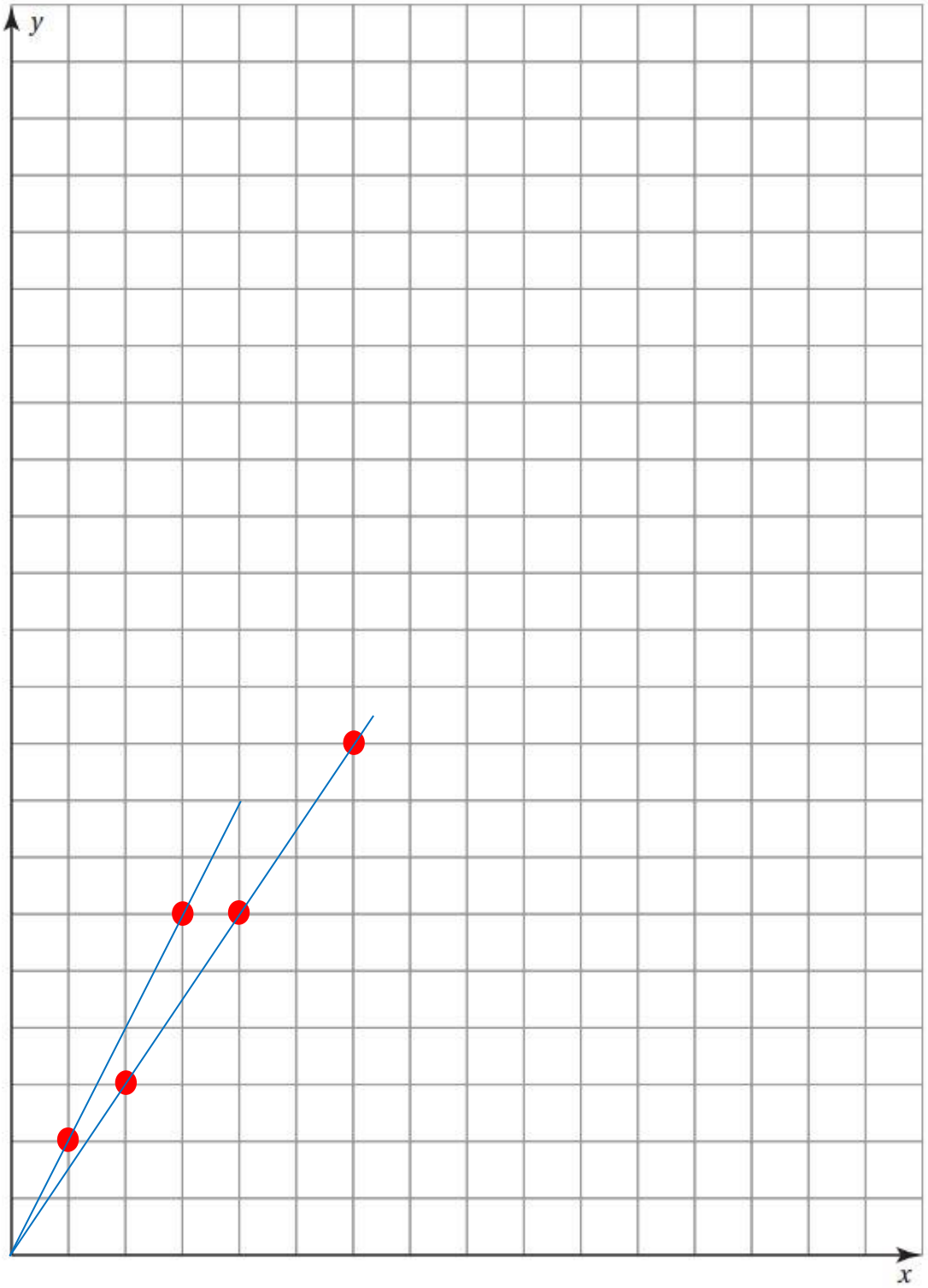
c. Using the coordinate grid on the next page, carefully plot a point for each mixture on a coordinate plane like the one that is shown in the figure to the right.



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

The mixtures that are the same shade of green lie on the same line that goes through (0, 0). It shows that they have equivalent ratios.

Accelerated 2



Accelerated 2

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?

Dealer's cost = d

$d + 0.05d = 23{,}727.90$

$1.05d = 23{,}727.90$, so $d = \$22{,}598$

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?

21.86 x 1.20 = 26.23. If I left a 20% tip, the total would be $26.23, so $26 is not quite enough to cover the cost of the meal and a 20% tip.

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?

It would be 80 inches in length because a width of 3 x 16 = 48; to find an equivalent ratio, multiply 5 x 16 to get 80.

2. Create your own problems.

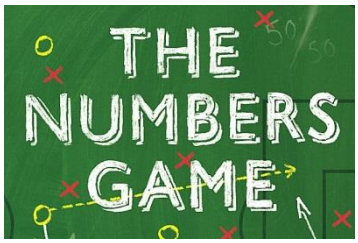
- Create one original problem involving a percentage (discount or tax).
- Create one original problem involving a ratio or part/whole relationship.
- Solve both and keep the answer key.
- Challenge a friend or family member to solve your problems.

Answers will vary.

Accelerated 2

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, ÷, ( ), x^e] write an expression to equal each of the following:

*_Example_: 16 = (4 x 4 x 4) ÷ 4
Answers will vary.

1 = (4 + 4) / (4 + 4)

2 = (4 x 4) / (4 + 4)

3 = $4 - 4^{4-4}$

4 = 4^{4-4} x 4

5 = 4^{4-4} + 4

6 = 4 x .4 x 4 – .4

7 = 4 + 4 – 4/4

8 = 4 + 4 – 4 + 4

9 = 4 + 4 + 4/4

Problem 2:
Find three different ways to fill in operations in the boxes below to make the equations true.

*Hint: Operations include: +, –, x, ÷, ( )

Answers will vary. Sample:

$6 \boxed{-} 1 \boxed{-} 2 \boxed{+} 2 = 5$

$6 \boxed{-} 1 \boxed{\times} [2 \boxed{\div} 2] = 5$

$[6 \boxed{-} 1] \boxed{\times} 2 \boxed{\div} 2 = 5$

Accelerated 2

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.

Answers will vary

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

F	1	3	5	7	9	11	13	15	17	19	21	23	25	27	29						**225**
S	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	**210**

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

There were more guests at Friday's party. I found my solution by creating the table and determining the sums for each night. I paired the least and greatest group of each night to get a quick sum and then just added groups of 30 on Friday and 21 on Saturday (for example, on Friday, 1 + 29 = 30; on Saturday, 1 + 20 = 21)

Accelerated 2

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. $-\frac{5}{8} - \frac{2}{7}$
5. $-2\frac{2}{3} - 4\frac{1}{6}$
6. $-3\frac{1}{9} - \left(-2\frac{1}{3}\right)$
7. $-7 - 3.2$
8. $6.1 - 5.8$
9. $-4.125 - (-2.8)$
10. $-12.33 - 7.21$
11. $5.67 - (-3.142)$
12. $2.567 - 6.814$

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

13. $-3\frac{1}{4}, 4\frac{1}{2}$
14. $-6.1, 8.4$
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.** $-6\frac{1}{2}$
T. 8.812	**E.** $-1\frac{1}{2}$
O. -10.2	**B.** -4.247
T. 0.3	**E.** $\frac{14}{55}$
C. $7\frac{3}{4}$	**F.** -1.325
L. $3\frac{15}{16}$	**E.** $-\frac{51}{56}$
D. 14.5	**N.** -19.54
U. $-6\frac{5}{6}$	

ON A BED OF LETTUCE

6	10		2		12	4	14		7	9		15	3	11	8	5	13	1

Accelerated 2

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. $-\frac{4}{5} \bullet \left(-\frac{5}{7}\right)$
2. $2\frac{2}{3} \bullet \left(-4\frac{1}{4}\right)$
3. $\left(-\frac{3}{4}\right)^3$
4. $0.8 \times (-2.1)$
5. $-7.5 \times (-0.3)$
6. $(-0.8)^3$

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. $0.3 \div (-1.5)$
11. $-5.415 \div (-2.85)$
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?
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?

Answers

R. 2.25	**E.** $-\frac{27}{64}$
S. $-2\frac{1}{2}$	**D.** $91\frac{3}{8}$
H. −0.512	**E.** $-5\frac{1}{4}$
B. 3.35	**I.** −0.2
L. −4.5	**W.** 1.9
E. $\frac{4}{7}$	**B.** −1.68
N. $2\frac{4}{5}$	**H.** $-11\frac{1}{3}$

WHEN HE DRIBBLES

11	6	3	9		2	8		13	5	10	14	4	12	1	7

Accelerated 2

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. $15 = 4a + 3$

5. $5y - 6 = -20$

6. $9f + 3.6 = 10.8$

7. $-4p - 5.7 = 11.1$

8. $-20.3 = 6w + 3.1$

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

13. $-\frac{1}{3} + 5e = -\frac{3}{4}$

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

15. $-5g - 13g = 54$

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	**N.** 3
S. 5	**M.** 8
E. $-2\frac{4}{5}$	**O.** 3.1
L. $-2\frac{1}{7}$	**T.** 7
N. -7	**O.** $-\frac{1}{12}$
M. -5	**I.** 4
P. $-2\frac{2}{3}$	**A.** 0.8
O. -3.9	**D.** -3
L. 60	**R.** 5.5
O. -4.2	

DON'T STOP ME I'M ON A ROLL

15	7	4	10		18	1	13	16		17	5		11	2		8	14		6		19	9	12	3

Accelerated 2

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.

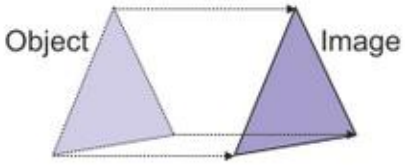
Transformations

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

Congruence Transformations

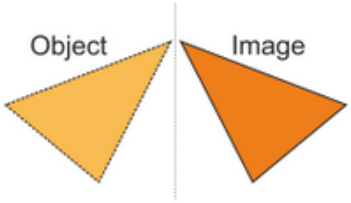
The object and image is always congruent. Side lengths and angle measures remain unchanged (equal).

Translation (Slide)



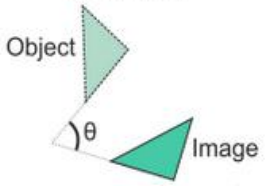
Every point moves the same distance in a given direction

Reflection



Mirror image

Rotation

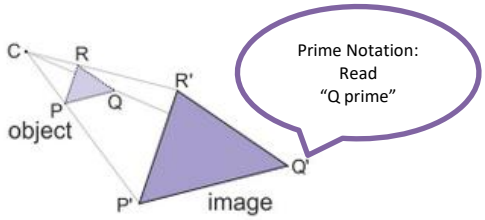


Rotating around a point O with angle θ

Similarity Transformations: Dilations

The object and image is always similar. Side lengths are proportional and angle measures are unchanged (equal).

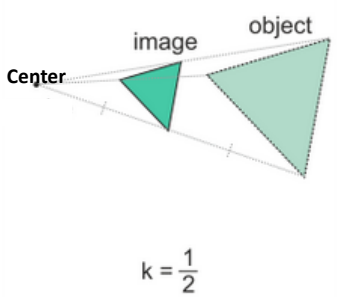
Enlargement



k = 3

The "k" is the scale factor. For an enlargement k > 1.

Reduction

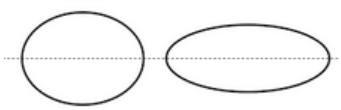


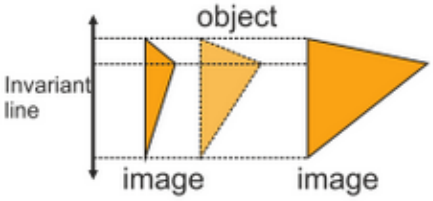
$k = \frac{1}{2}$

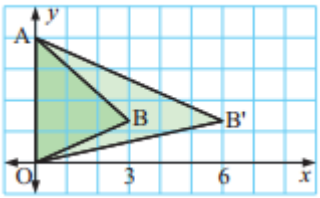
The "k" is the scale factor. For a reduction k < 1.

Non-examples of Congruence or Similarity Transformations

Stretch







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.

Accelerated 2

Strange Pictures!

Look carefully at this picture of a playing card:

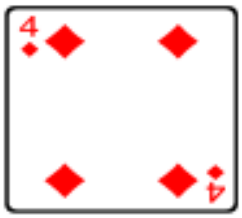
What has happened to these cards? In each case describe the changes.

A.

B.

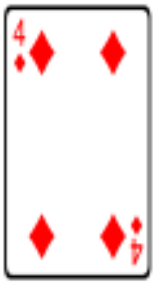
C.

D.



E.

F.



G.

H.

K.

M.

A - Enlargement

B – Rotation 45° clockwise

C - Reflection

D – Horizontal stretch

E – Rotation 90° clockwise and reduction

F – Vertical stretch

G – Enlargement and horizontal stretch

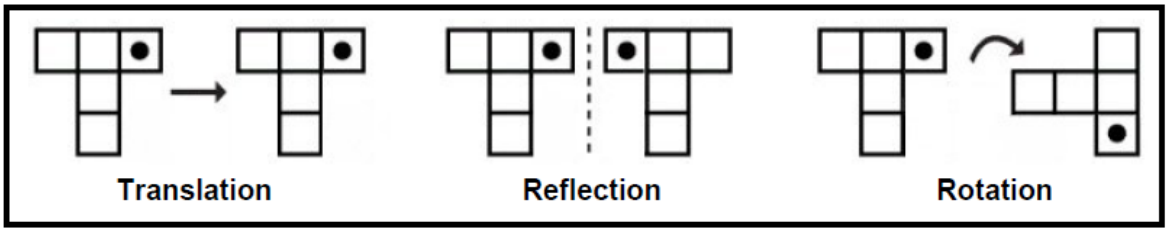
H – Rotation ≈ 45° counterclockwise

K – Rotation 90° clockwise

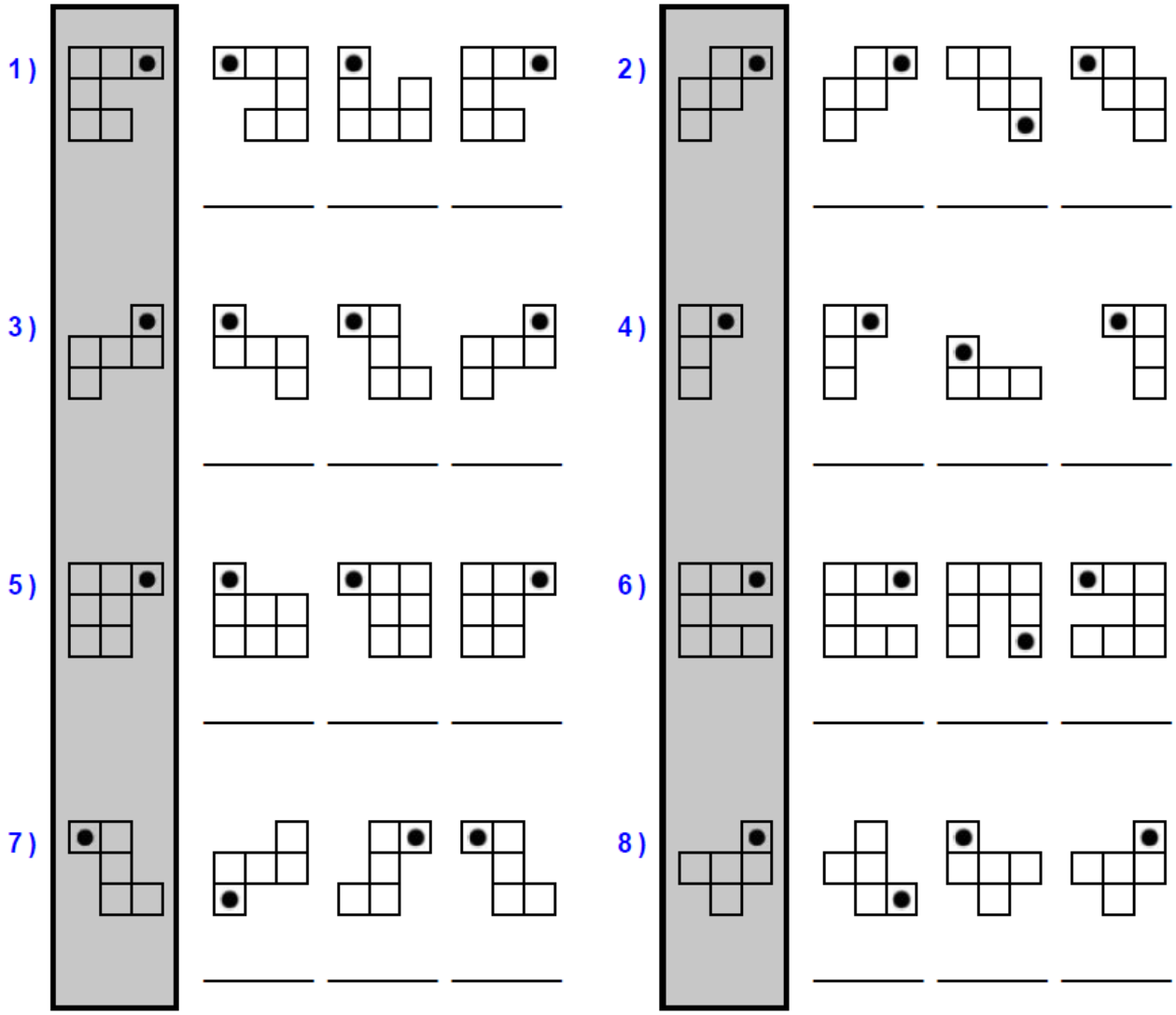
M – No change

Accelerated 2

Translation, Rotation, and Reflection



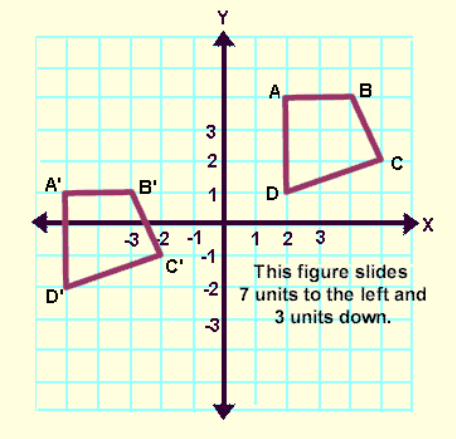
Identify each shape as translation, rotation, and reflection.



1) reflection, rotation, translation
2) translation, rotation, reflection
3) reflection, rotation, translation
4) translation, rotation, reflection
5) rotation, reflection, translation
6) translation, rotation, reflection
7) rotation, reflection, translation
8) rotation, reflection, translation

Accelerated 2

Translations in the Coordinate Plane



Description:

7 units to the left and 3 units down.

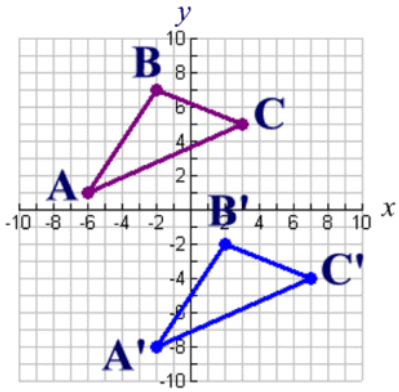
Mapping Rule:

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

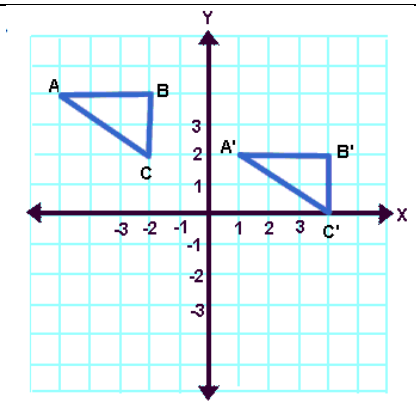
(*This is read: "the x and y coordinates will be translated into x-7 and y-3.*
Notice that adding a negative value (subtraction), moves the image left and/or down, while adding a positive value moves the image right and/or up.)

Notation: $T_{(-7,-3)}$

(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.)

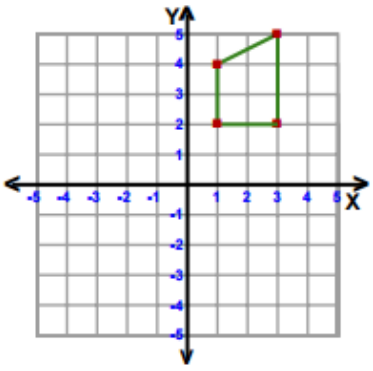


Describe the translation that will move triangle ***ABC*** onto triangle ***A'B'C'.*** Name the corresponding parts. 5 units right and 9 units down. AB ≅ A'B', BC ≅ B'C', CA ≅ C'A'



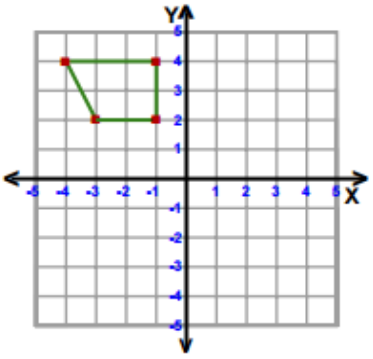
Give the mapping rule for the translation that will move triangle ***ABC*** onto triangle ***A'B'C'.***
(x, y) → (x + 6, y – 2)

Translation: 4 left and 3 down



Graph the image of the figure using the given translation. Provide the notation of the translation.
See student graph. **T** (-4, -3)

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.
See student graph. **T** (3, -4) (x, y) → (x + 3, y – 4)

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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

A (–10, –9) → A'(-10, 9)

B (–6, –8) → B'(-6 , 8)

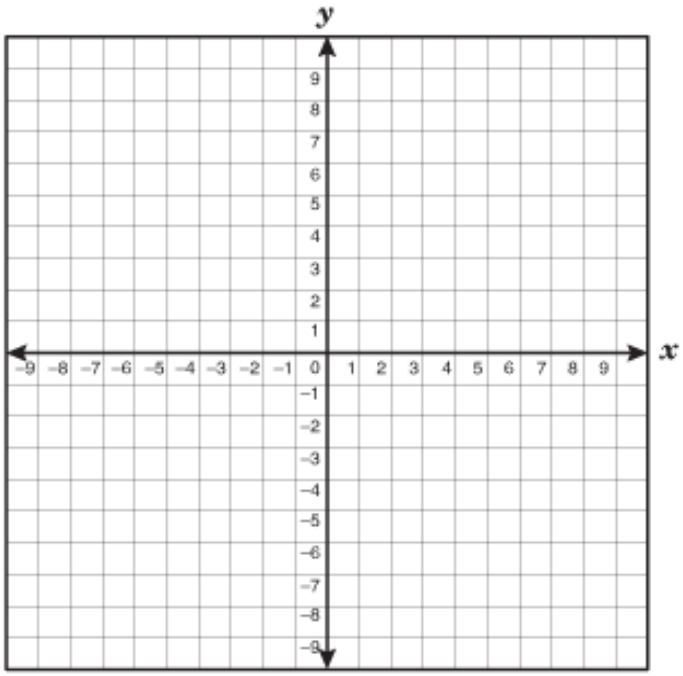
C (–4, –10) → C'(-4 , 10)

2. Reflect figure DEF over the y axis

D (–5, –3) → D'(5 , -3)

E (–1, –1) → E'(1 , -1)

F (–2, –6) → F'(2 , -6)



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

When reflecting a figure over the x-axis …

*just give the opposite sign to the y-coordinates of each of the points.*_____

When reflecting a figure over the y-axis …

*just give the opposite sign to the x-coordinates of each of the points.*_____

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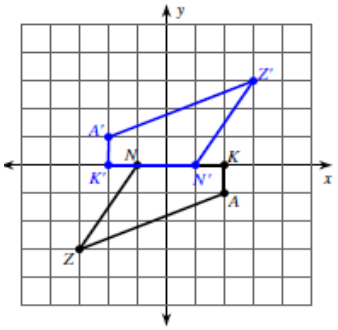
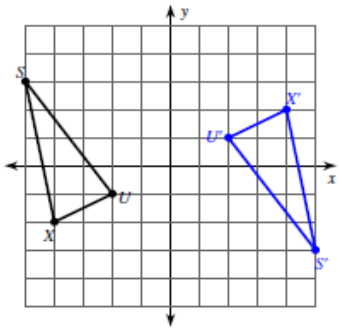
Rotations Made Easy!

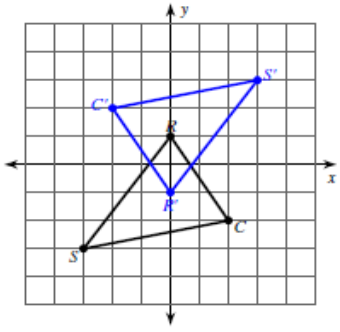
Look at the images of the figures below after their rotations 180º about the origin. The coordinates are given in the table. Fill in the coordinates of the images after the rotations. Then examine the pairs of coordinates and determine the coordinate mapping rule. Use the coordinate mapping rule to determine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



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



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



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

What is the shortcut for rotating figures 180º?

Give the opposite sign to both the x- and the y-coordinate in order to get the correct new coordinate.

Provide a congruency statement for the rotation of Triangle CRS.

CRS ≅C'R'S' Corresponding points must be on the same position on each side of the ≅

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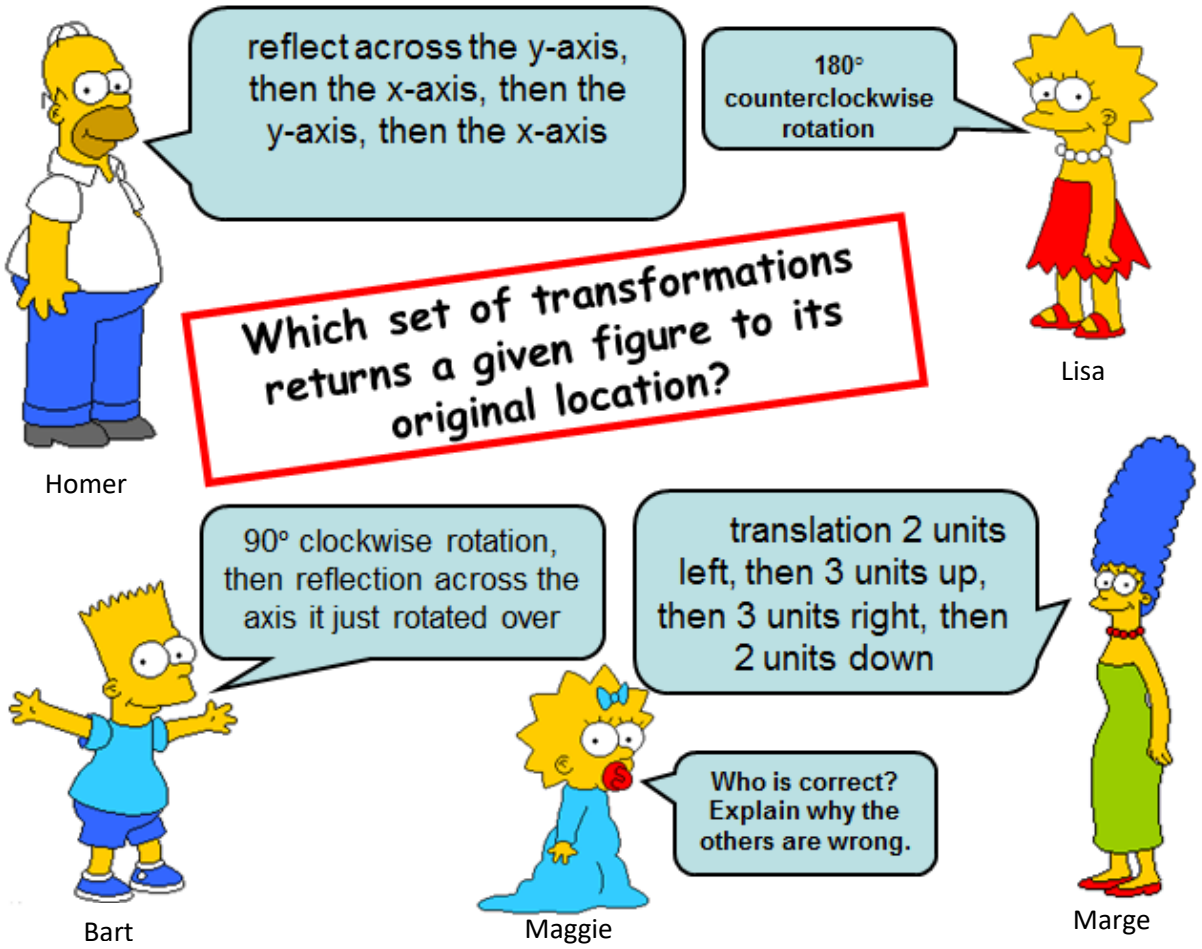
Reasoning with Transformations



Use the space provided to write a note to Maggie.

- Homer is correct. Two reflections over each of the axes will return the figure to its original location.
- Maggie is not correct. A 180-degree rotation would essentially put the figure upside down in the diagonally opposite quadrant.
- Marge is not correct. Since the first two translations are 2 units left and 3 units up, then the next two translations would have to include 2 units right and 3 units down to return the figure to its original position.
- Bart's transformations would return squares or circles to their original location, but not other figures, which would return to the same quadrant they started in but would not be facing in the same direction.

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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. $(4x, 4y)$
The figure would enlarge by a scale factor of 4. The distance from the origin to the object would increase by a scale factor of 4.

b. $(0.25x, 0.25y)$
The figure would reduce by a scale factor of 0.25. The distance from the origin to the object would decrease by a scale factor of 0.25.

c. $(2x, y)$

The figure would increase on one dimension by a scale factor of 2; the other dimension would stay the same.

d. $(3x, 3y + 5)$
The figure would grow by a scale factor of 3 and move up 5 units.

e. $(x + 5, y – 5)$
The figure would move right five units and down five units.

f. $(\frac{1}{2}x , \frac{1}{2}y)$
The figure would reduce by a scale factor of ½.

g. Will any of the transformed figures be similar to the original figure? Explain.
Figures a, b, d, e, and f will be similar to the original figure. Both dimensions increase by the same scale factor. Figure e will be congruent to the original figure because the side lengths and shape do not change. The ratio of the lengths of the corresponding sides will be 1:1 and the measures of the corresponding angles will be equal. Note that congruence is a special case of similarity. [Figure e is congruent to the original figure.]

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?
The figures would not be similar. Adding a constant amount to each side will distort the figure. The ratio of the lengths of the corresponding sides will not be constant.

i. Write a general rule for transformations in the plane that produce similar figures.
(nx + a, ny + b)

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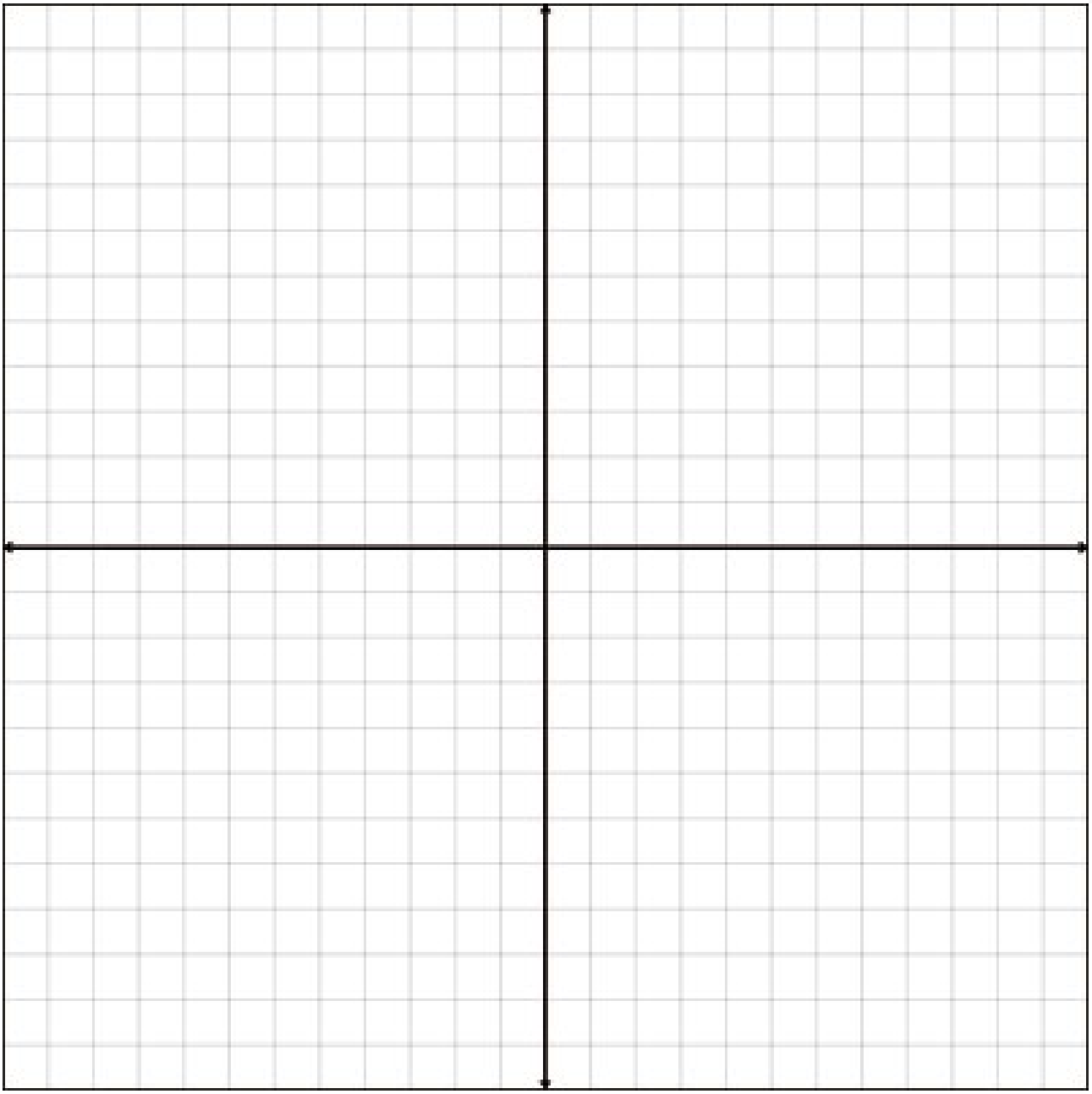
Changing Shape



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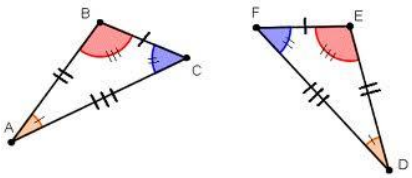
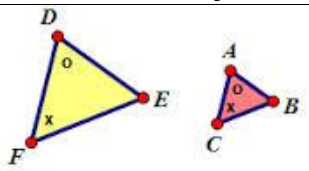
Summing It Up … TRANSFORMATIONS!

Complete this graphic organizer.

<table>
<tr><th>Congruence</th><th>Similarity</th></tr>
<tr><td> 

$\Delta ABC \cong \Delta DEF$</td><td> 

$\Delta DEF \sim \Delta ABC$</td></tr>
<tr><td>Imprecise Language (avoid)
The same, equal, “same shape and same size”</td><td>Imprecise Language (avoid)
Stretch, scaled, resized, shrink, expand, “same shape”</td></tr>
<tr><td>Precise Academic Language (use)
"corresponding angles equal and corresponding line segments equal"</td><td>Precise Academic Language (use)
"corresponding angles equal and corresponding line segments proportional"</td></tr>
<tr><td>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.</td><td>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.</td></tr>
<tr><td>Properties
Congruency Statement: $\Delta ABC \cong \Delta DEF$
<table><tr><th>Corresponding Angles</th><th>Corresponding Sides</th></tr><tr><td>$\angle A \cong \angle D$</td><td>$AB \cong DE$</td></tr><tr><td>$\angle B \cong \angle E$</td><td>$BC \cong EF$</td></tr><tr><td>$\angle C \cong \angle F$</td><td>$AC \cong DF$</td></tr></table></td><td>Properties
Similarity Statement: $\Delta ABC \sim \Delta DEF$
<table><tr><th>Corresponding Angles</th><th>Corresponding Sides</th></tr><tr><td>$\angle A \cong \angle D$</td><td rowspan="3">$\frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF}$</td></tr><tr><td>$\angle B \cong \angle E$</td></tr><tr><td>$\angle C \cong \angle F$</td></tr></table></td></tr>
<tr><td>Examples

Answers will vary</td><td>Examples

Answers will vary</td></tr>
<tr><td>Non-examples

Answers will vary</td><td>Non-examples

Answers will vary</td></tr>
</table>

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Complete the table.

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

TRANSFORMATIONS from A to Z

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

Angles and sides	**Justify with congruence and similarity statements**	**Similarity**
Both x- and y-coordinate have sign changes for 180° rotation	**K = scale factor**	**Translations**
Congruence	**Left or right**	**Up or down**
Dilation	**Mapping Rule**	**Vertical Movement with y**
Enlargement	**Notation**	**Work backwards**
Figure	**Orientation**	**X-coordinates**
Graph	**Proportional**	**Y-coordinates**
Horizontal Movement with x	**Quadrant**	**Zero, zero (origin)**
Invariant line	**Rotation**	