8th Grade Math STAAR Review

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Name: _____
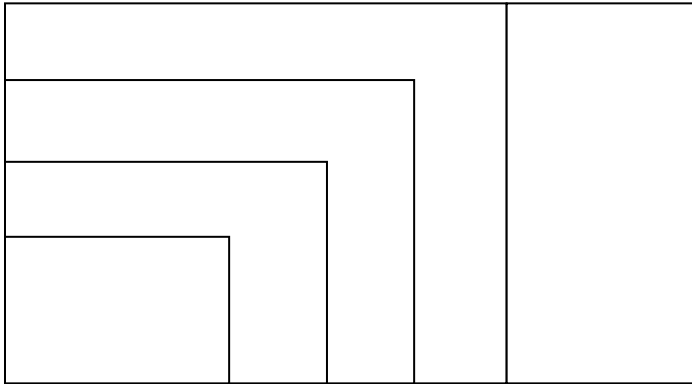
Class Period: _____

1. Fill in the diagram below with the following vocabulary words:

    Natural Numbers, Irrational Numbers, Integers, Rational Numbers, Whole Numbers

Real Number System

2. Place the following numbers in the correct subset in the diagram above.

    0   π -5   2.4   8 $\frac{2}{3}$ $\sqrt{2}$ $-\frac{1}{4}$ $\sqrt{25}$ -4.333333
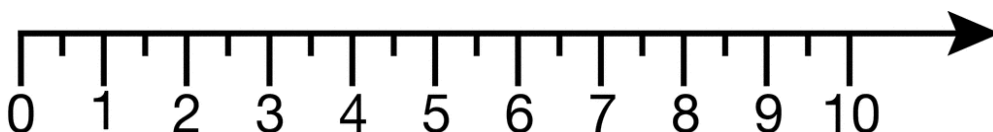
3. True or False:

    - All integers are rational: _____
    - No whole numbers are irrational: _____
    - All irrational numbers are real numbers: _____
    - No natural numbers are rational: _____

1. Place the following numbers on the number line below.

    $\sqrt{2}$ $\sqrt{4}$ π $\sqrt{40}$ $\sqrt{100}$

8.2C: Convert between standard decimal notation and scientific notation.

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1. Convert the following numbers to scientific notation.

  3, 678, 000, 000, 000   0.0000000987

  _____   _____

2. Convert the following numbers to standard decimal notation.

  5.98×10^6 4.37×10^{-5}

  _____   _____

8.2D: Order a set of real numbers arising from mathematical and real-world contexts.

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1. Place the following numbers in order from greatest to least.

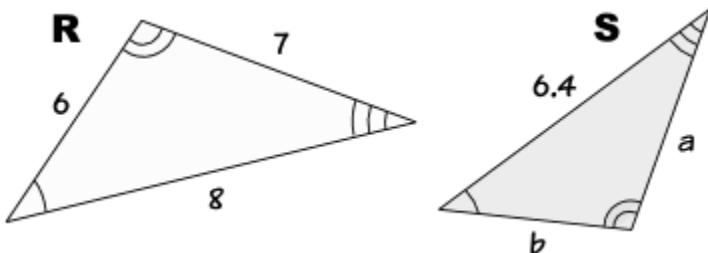 0   50%   ½   -2.3 π $\sqrt{16}$ -200%

  _____

2. Define the following vocabulary words:
    Ascending: _____
    Descending: _____

8.3A: Generalize that the ratio of corresponding sides of similar shapes are proportional, including a shape and its dilation.
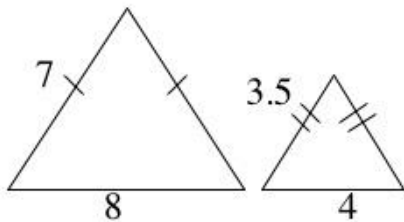
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1. Using the information given in the diagram below, write a proportion that could be used to find the missing side "a".

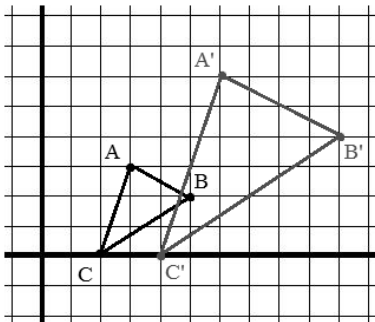2. Triangle ABC and Triangle DEC are similar. Solve for the missing variable.
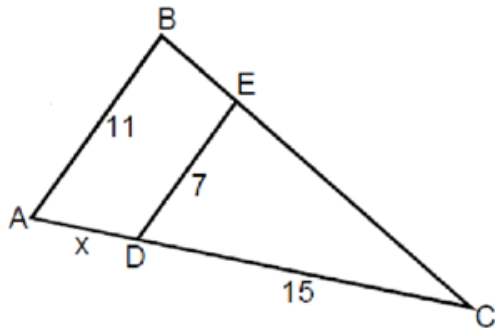
3. Determine what scale factor was used for the dilation below. Was this an enlargement or reduction?

8.3B: Compare and contrast the attributes of a shape and its dilation(s) on a coordinate plane.

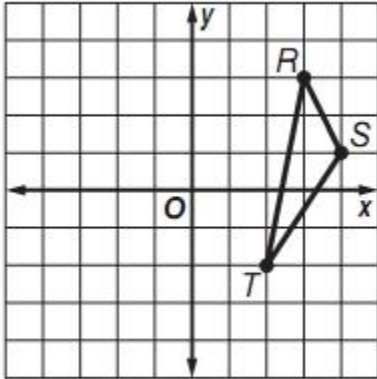1. What scale factor was used to dilate the figure below?

2. Using the figure above, what can you conclude about the side lengths of the original shape and the new shape?

3. Using the figure above, what can you conclude about the angle measures of the original shape and the new shape?

1. Triangle RST is dilated by a scale factor of ½. List the vertices of R'S'T' below.
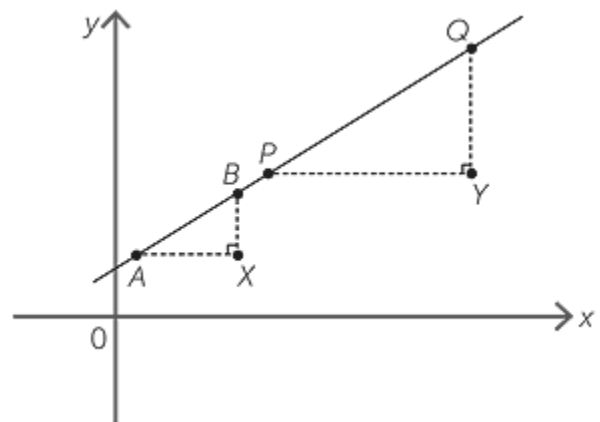
R': _____

S': _____

T': _____

2. Write an algebraic rule that represents this dilation.

Rule: _____
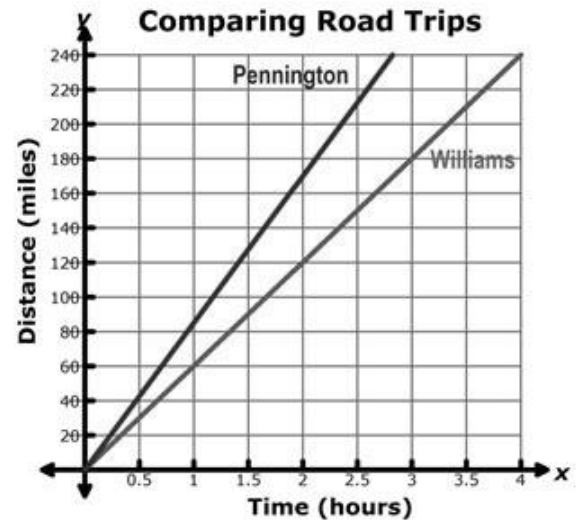
1. True or False:

- Line AB and Line PQ have the same slope. _____
- Line AX and Line QY have the same slope. _____
- Line BX and Line QY have the same slope. _____
- Line AB and Line BX have the same slope. _____

1. What is the unit rate of William's road trip?

2. What is the slope of the line that represents William's road trip?

3. What conclusion can be made about the unit rate of William's trip and the slope of the line?
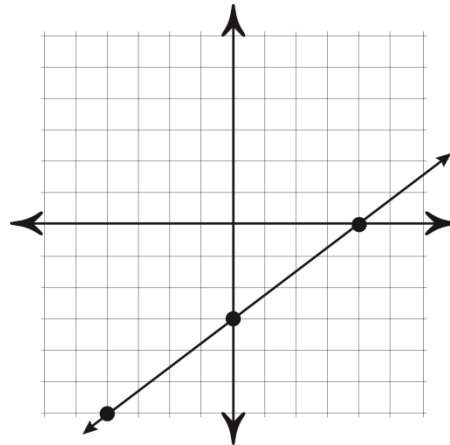
Comparing Road Trips

Pennington

Williams

Distance (miles)

Time (hours)

1. Find the slope and y-intercept of the graph below.

Slope: _____

Y-Intercept: _____

2.   The following table shows the relationship between flour and milk in a spice cake recipe. Find the rate of change of the table.
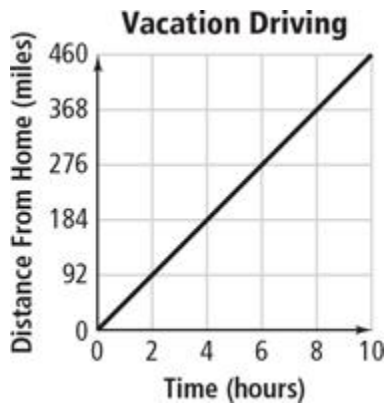
Rate of Change: _____

SPICE CAKE INGREDIENTS

Flour	Milk
5	8
7	10
9	12
11	14

1. One inch is equal to 2.54 centimeters. Create a process table below that represents this situation.

Inches	Process	Centimeters
1	1(2.54)	2.54
2		
3		
4		

2. Write an equation that represents the graph below.

Vacation Driving

3. Create a table from the graph above.

Time	Process	Distance (Miles)

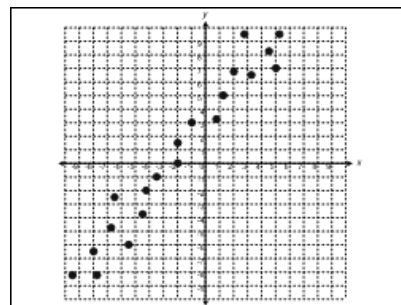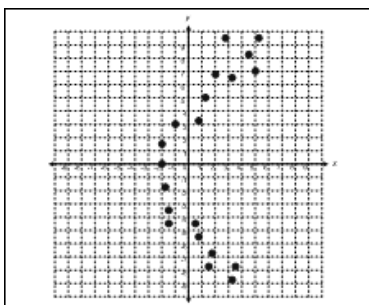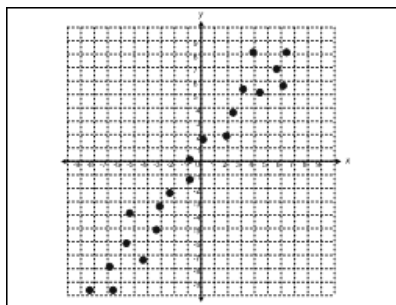1. The table below represents how long it took a turtle to walk across a classroom. Write an equation for the table.

Time (Min.)	Distance (Ft.)
0	4
2	10
4	16
6	22

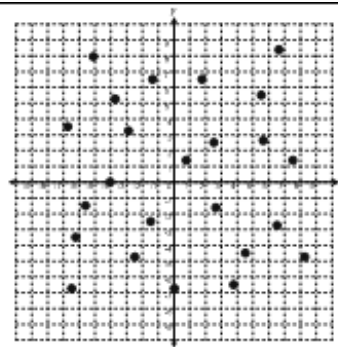2. Graph the equation from the table above on the coordinate plane. Consider how you should number each axis.
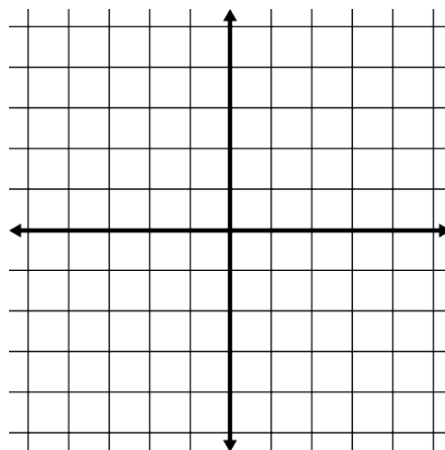
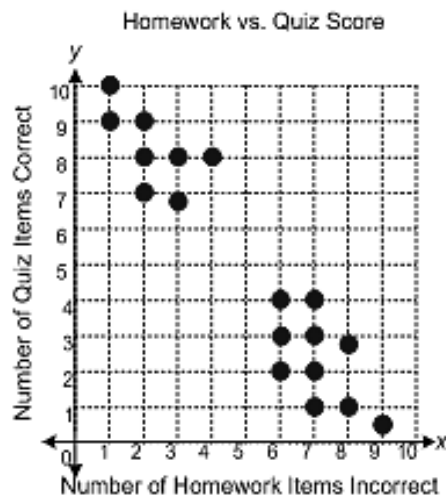1. Decide whether each graph shows a linear or non-linear relationship.

1. Name what type of trend/association each of the following graphs show.

_____   _____   _____
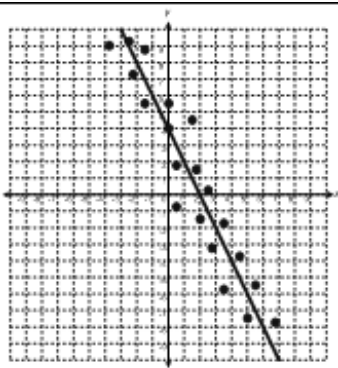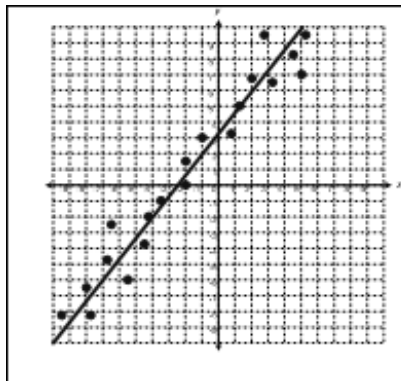
2. Create a trend line for the graph below.

3. Using the graph above, about how many quiz items would a student get correct if they got 5 homework items correct?

1. Devon's parents live in Austin, Texas, which is 780 miles from Devon's home. If Devon averages 60 miles per hour driving, how long will it take him to get from his home to his parent's home.

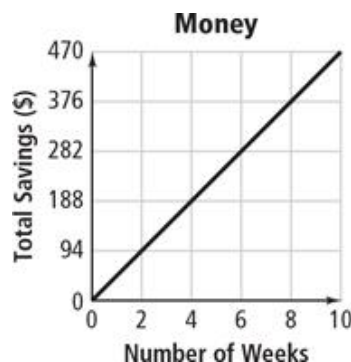Create a table for the situation above.

Time (Hours)	Distance (Miles)
1	60

2. Using the table above, write an algebraic equation for the situation.

1. Decide whether each relationship below is proportional or non-proportional.

Time in minutes (x)	Distance in miles (y)
0	10
20	27
30	35.5
60	61

Money

$y = \frac{1}{2}x$ $y = 2x + 5$

_____   _____

_____

_____

1. Decide whether each relationship below is a function or not a function.

{(5,4), (-2,6), (0,5), (1,3)}

x	−1	−2	−2
y	−1	3	4

_____   _____

_____   _____
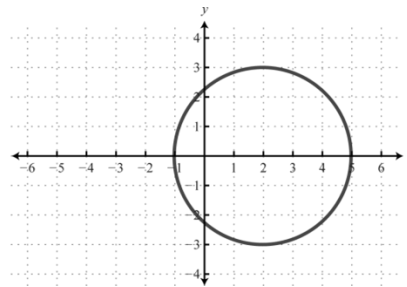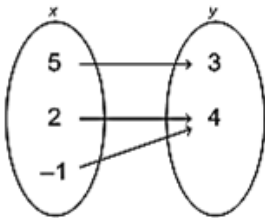
8.5H: Identify examples of proportional and non-proportional functions that arise from mathematical and real-world problems.

1. Decide whether each relationship below is a proportional or non-proportional function.

Lindsey drove from her school to her aunt's house and recorded the amount of time she drove and the distance she travelled from the school. She began at her school and drove at a constant rate of 51 miles per hour. At 20 minutes, she was 17 miles from her school, at 30 minutes she was 25.5 miles from her school, and at one hour, she was 51 miles from her school.	Lindsey drove from her school to her aunt's house and recorded the amount of time she drove and the distance she travelled from the school. She began 10 miles from her school and drove at a constant rate of 51 miles per hour. At 20 minutes, she was 27 miles from her school, at 30 minutes she was 35.5 miles from her school, and at one hour, she was 61 miles from her school.

_____   _____

x	y
−1	−0.75
2	1.5
5	3.75
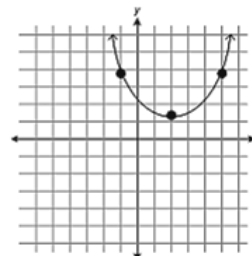
_____   _____

1. Write the equation of the line that has a slope of 5 and passes through the point (2,2).

2. Write the equation of the line from the graph below.
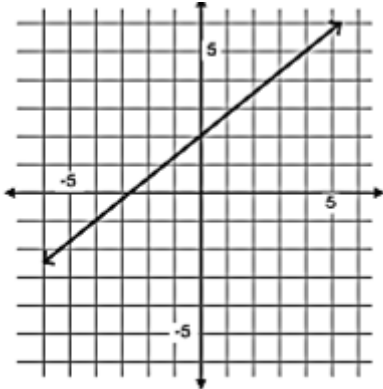
3. Write the equation of the line from the table below.

x	3	5	10
y	2.1	7.5	21

1. Label the parts of the following formula below: V = Bh

V: _____   B: _____   h: _____

2. True or False:

The volume of a cylinder is the product its base area and its height. _____

The base area of a cylinder is the quotient of its volume and its height. _____

The height of a cylinder is the quotient of its volume and its base area. _____

1. True or False:

The volume of a cylinder is 3 times the volume of a cone. _____
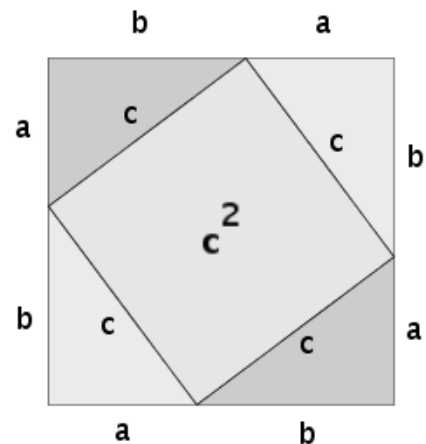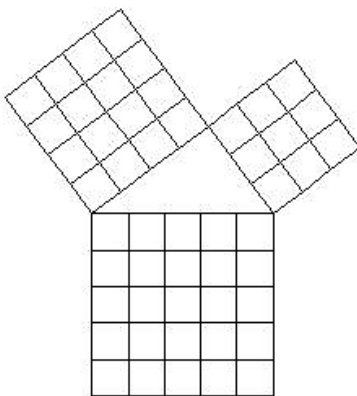
The volume of a cone is ½ the volume of a cylinder. _____

2. Describe the relationship between the formula for volume of a cone and volume of a cylinder. Use the diagram below to help you.
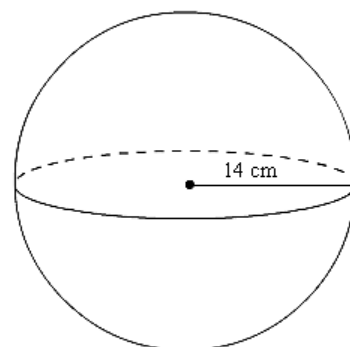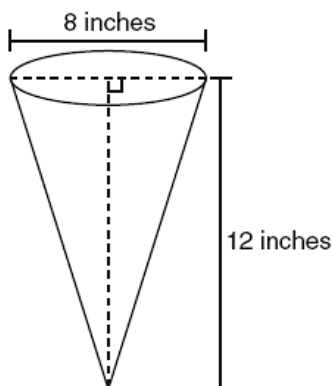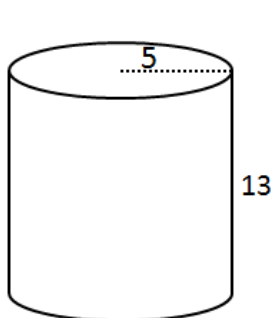
1. Explain what each the diagrams below represent.

1. Find the volume of the shapes below.

8 inches

5

13

12 inches

14 cm
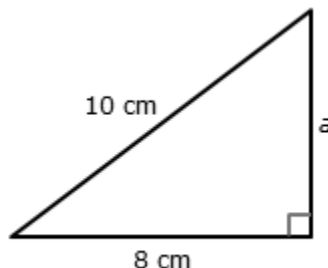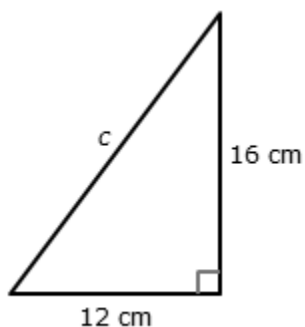
1. Explain the difference between lateral and total surface area.

2. Find the lateral and total surface area of the following shapes.

6 cm

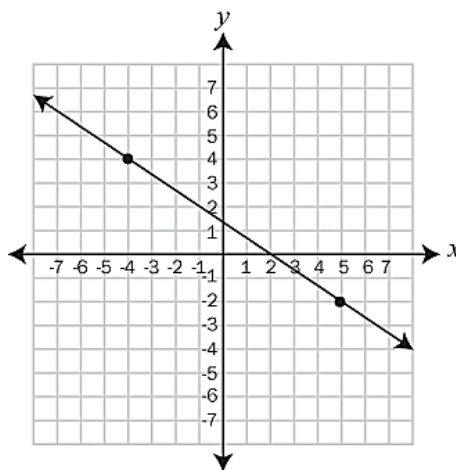5 cm

11 cm

3 cm

8 cm

12 cm

12"

16"

1. Solve for each missing side below.
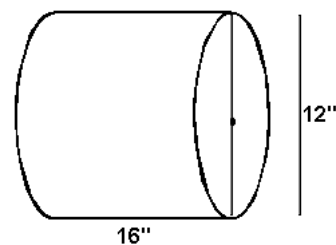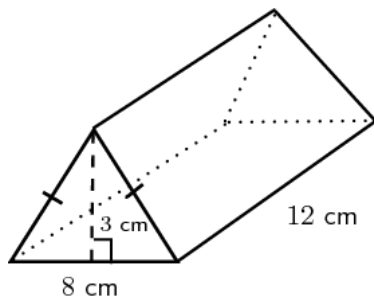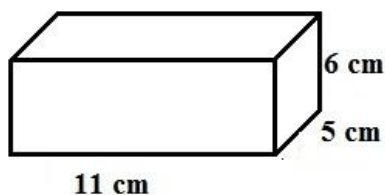
1. Determine the distance between the 2 marked points on the graph below using the Pythagorean Theorem.

1. Write an equation that represents the following situation.

Jason much choose between two job offers. Job offer A pays a flat rate of $25 plus an additional $6 per hour. Job B pays a flat rate of $5 plus an additional $15 per hour. Write an equation to find the number of hours worked, h, at which Job A will earn the same amount as Job B.

2. Write an inequality that represents the following situation.

Jake has $50 in his savings account and adds an additional $25 per month. Larry has $10 in his savings account and adds an additional $30 per month. Write an inequality to find the number of months, m, it would take for Larry to have more money in his savings account than Jake.

8.8B: Write a corresponding real-world problem when given a one-variable equation or inequality with variables on both sides of the equal sign using rational number coefficients and constants.

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1. Write a real-world problem that could be applied to the following equation.

    $5x + 10 = 2x - 5$

2. Write a real-world problem that could be applied to the following inequality.

    $8m - 3 > 5 + 12m$

8.8C: Model and solve one-variable equations with variables on both sides of the equal sign that represent mathematical and real-world problems using rational number coefficients and constants.

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1. Write an equation for the following situation and then solve.

John much choose between two job offers. Job offer A pays a flat rate of $30 plus an additional $5 per hour. Job B pays a flat rate of $4 plus an additional $12 per hour. How many hours will John have to work for Job A to pay the same amount as Job B?
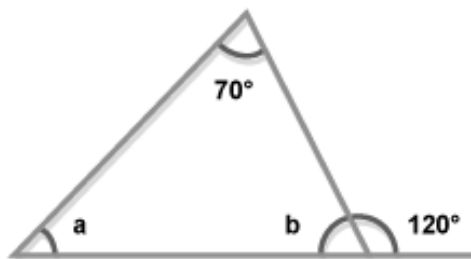
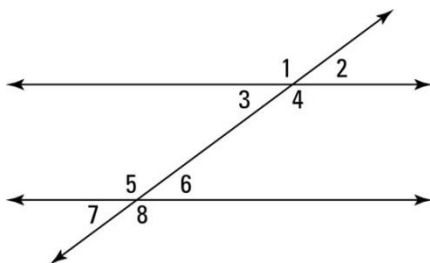2. Write and solve the following equation.
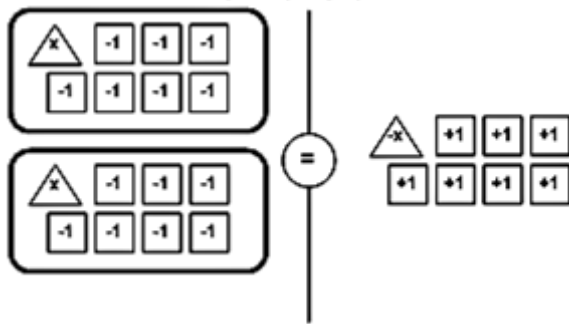
8.8D: Use informal arguments to establish facts about the angle sum and exterior angle of triangles, the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles.

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1. Find missing angles "a" and "b".

2. If <5 = 153°, solve for all remaining angles.

3. Using the figure above, list 1 pair of the following:

Corresponding Angles: _____   Alternate Interior Angles: _____
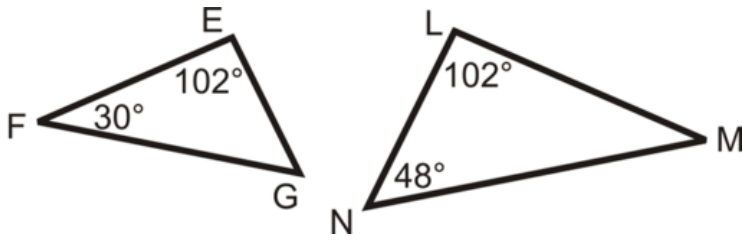
Vertical Angles: _____   Same-Side Interior Angles: _____

Alternate Exterior Angles: _____   Same-Side Exterior Angles: _____

4. Are the following triangles similar? Why or why not?

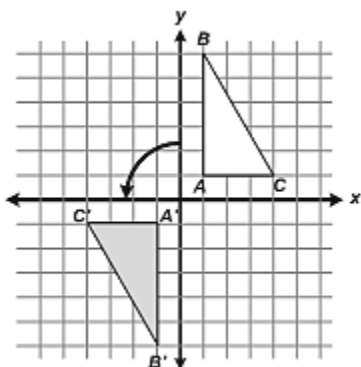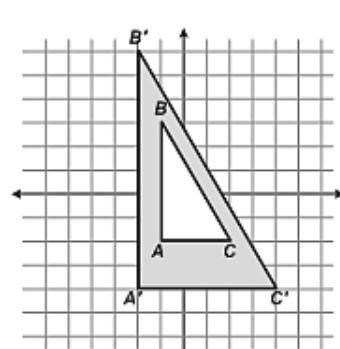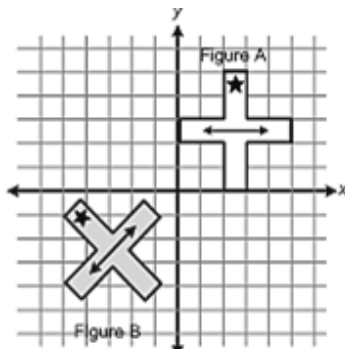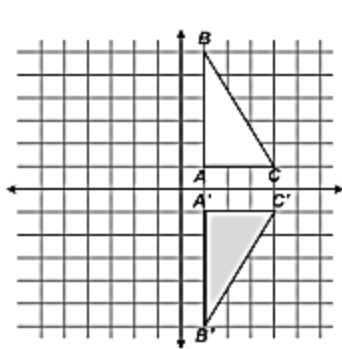1. What is the solution to the following system of equations?
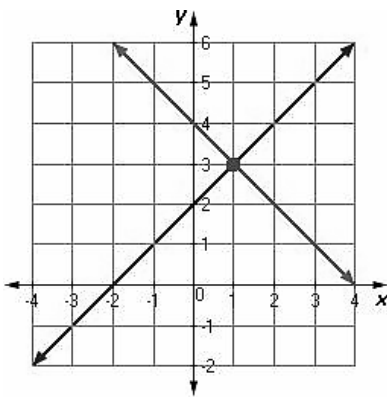
1. Tell whether each of the following transformations preserved orientation of the vertices.

_____   _____

_____   _____   _____
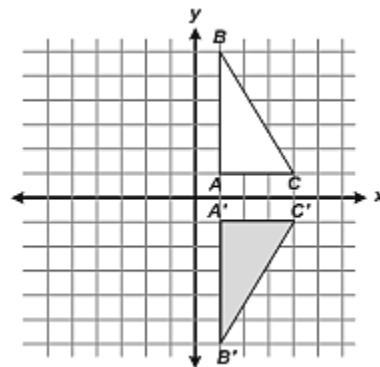
8.10B: Differentiate between transformations that preserve congruence and those that do not.

1. Which of the following transformations do NOT preserve congruence?
    A) Translations
    B) Dilations
    C) Reflections
    D) Rotations

8.10C: Explain the effect of translations, reflections over the *x*- or *y*-axis, and rotations limited to 90°, 180°, 270°, and 360° as applied to two-dimensional shapes on a coordinate plane using an algebraic representation.
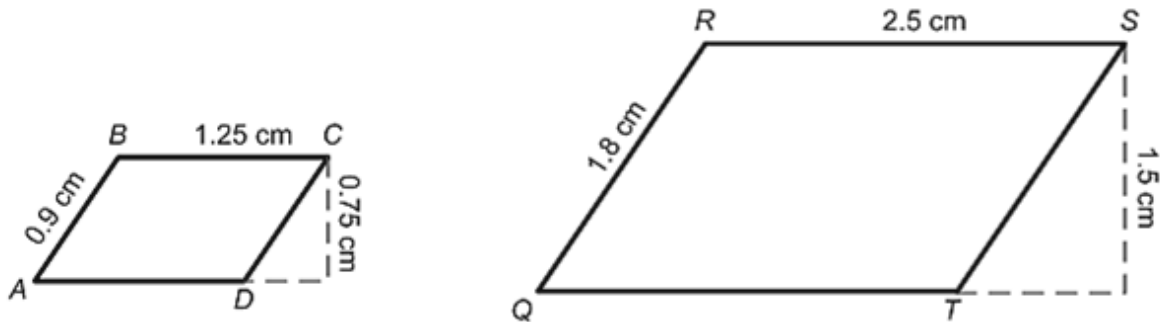
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1. Write a rule for the following transformations.

_____   _____   _____
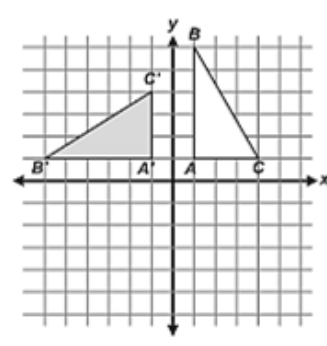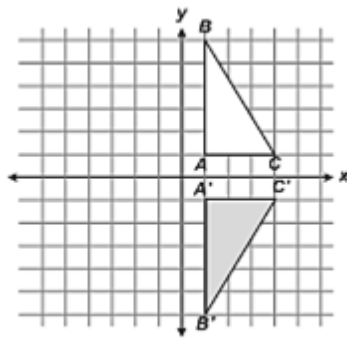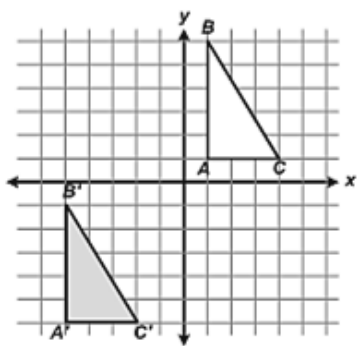
2. Apply the following rule to graph the transformation: 180° Rotation
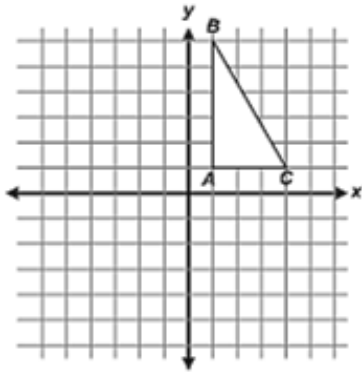
1. What is the relationship between the perimeter of figure ABCD and figure QRST?

The dimensions of QRST are twice the dimensions of ABCD.

2. What is the relationship between the area of figure ABCD and figure QRST?

1. Construct a scatterplot from the following data.

Number of Days	Number of Books Read
2	4
3	7
1	3
7	10
5	9
4	8
6	9
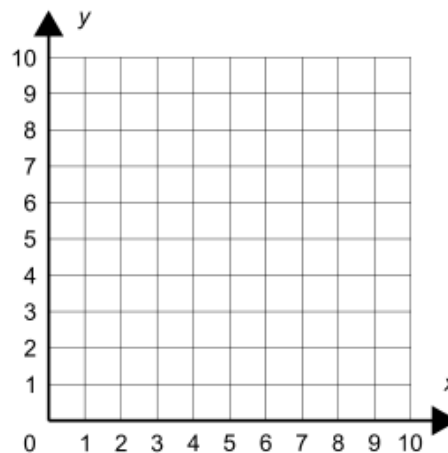
2. What type of association does the data show?

1. Find the mean absolute deviation of the following set of numbers:

4, 8, 5, 9, 0, 1, 5

2. What does the mean absolute deviation tell you about the data set?

1. Trey wants to buy a $500 video game system. Trey's parents are lending him the money. They expect him to repay the loan in 2 years with simple interest at a rate of 4%, or 3 years with simple interest at a rate of 3%. Explain what the difference would be in the interest Trey would have to pay his parents for each loan offer.

1. Explain the difference between a personal savings account and an employer retirement account such as a 401k.

1. Jenny has $4056.75 in her savings account that earns 3% interest on the principal for 5 years. What is the amount of simple interest that she will earn?

2. Mary took out a $3000 student loan for college. If she pays 5% interest compounded annually, how much will the total loan amount be in four years when she graduates?

1. Explain the advantages and disadvantages of paying with cash.

2. Explain the advantages and disadvantages of paying with a credit card.

3. Explain the advantages and disadvantages of paying with a debit card.