Grade 8 – Standard Review

NATIONAL TRAINING NETWORK

2018

Name	Know that there are numbers that are not rational, and approximate them by rational numbers.

8.NS.A.1

Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.

Question 1:

Identify the following as irrational or rational and explain your reasoning.

a.) 0.12121212…

b.) $\sqrt{8}$

c.) 0.010110111…

d.) $\sqrt{64}$

e.) $\frac{2}{3}$

Question 2:

Change the following decimal expansions into rational numbers in the form $\frac{a}{b}$. Show your work and justify your thinking.

a.) $0.1\overline{6}$

b.) $0.\overline{90}$

Name	Know that there are numbers that are not rational, and approximate them by rational numbers.

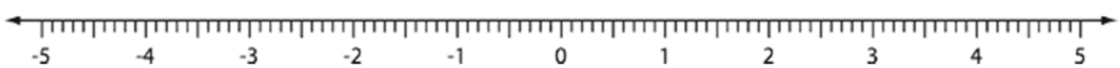
8.NS.A.2

Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π2). *For example, by truncating the decimal expansion of √2, show that √2 is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.*

Question 1:

Order the following set of numbers from least to greatest and label them on the number line below.

$^{-}\sqrt{20}$ $\quad$ $\frac{22}{7}$ $\quad$ $\sqrt{5}$ $\quad$ $^{-}3.4$ $\quad$ $\frac{38}{9}$



Question 2:

The area of a square table cloth is 18 square feet. Estimate the length of one side of the table cloth to the nearest tenth. Explain your answer using a model.

Name	Work with radicals and integer exponents.

8.EE.A.1
Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example,
$3^2 \times 3^{-5} = 3^{-3} = \frac{1}{3^3} = \frac{1}{27}$

Question 1:

Simplify and evaluate the following expressions. Show your work.

a.) $\frac{3^3}{3^5}$

b.) $4^2 \times 4^{-6} \times 4^4$

Question 2:

Simplify and evaluate the following expressions. Defend your answer by explaining your thinking.

a.) $5^4 \times 5^{-5} \times 5^7$

b.) $(2^4 \times 2^{-2})^3$

Name	Work with radicals and integer exponents.

8.EE.A.2
Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 =$ p, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.

Question 1:

Use the following example as a model to solve the equations below. Show all steps.

$$x^2 = 100$$

$$x = \sqrt{100}$$

$$x = \pm 10$$

a.) $x^2 = 81$

c.) $x^2 = 64$

b.) $x^3 = 8$

d.) $x^3 = 64$

Question 2:

Explain in your own words why $\sqrt{2}$ is classified as an irrational number.

Name	Work with radicals and integer exponents.

8.EE.A.3

Use numbers expressed in the form of a single digit times a whole-number power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. *For example, estimate the population of the United States as* 3×10^8 *and the population of the world as* 7×10^9*, and determine that the world population is more than 20 times larger.*

Question 1:

Covert the following numbers into scientific notation.

a.) 8,740,000,000 = ______________________________

b.) 15,050,000 = ______________________________

c.) 0.00000284 = ______________________________

d.) 0.00000000809 = ______________________________

Question 2:

The distance from the Earth to the sun is approximately 1.5×10^8 km. The distance from the Earth to the moon is approximately 3.8×10^5 km. About how many times larger is the distance to the sun than the distance to the moon? Show your work and explain your answer.

Name	Work with radicals and integer exponents.

8.EE.A.4
Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.

Question 1:

The three countries with the largest populations in the world are China, India and the United States. Together, the 3 countries have a total population of approximately 2.8×10^9 people. If the population of the United States is about 3.1×10^6 and the population of India is about 1.2×10^9, what is the approximate population of China? Give your answer in scientific notation and explain the process you used to determine your solution.

Question 2:

The display on a calculator reads 2.06E–14. What is this number written in scientific notation?

Name	Understand the connections between proportional relationships, lines, and linear equations.

8.EE.B.5
Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance time equation to determine which of two moving objects has greater speed.

Question 1:

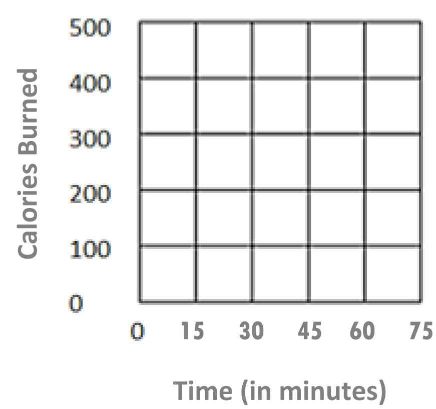
The chart below shows the number of calories burned by swimming.

Time Elapsed (in min)	0	15	30	45	60
Calories Burned Swimming	0	105	210	315	420

a.) Illustrate the data on the graph provided.

b.) What is the slope of the line that represents calories burned while swimming? Explain your answer.

c.) How many calories do you burn per minute while swimming? Show your work.

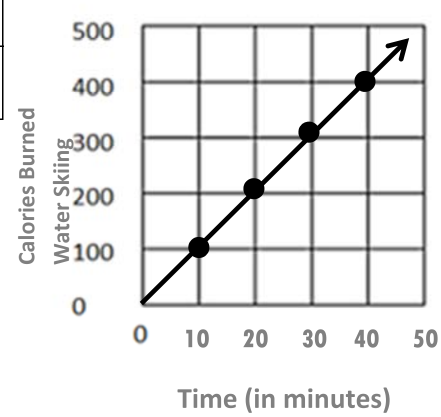


Question 2:

The table show the number of calories burned while snow skiing, while the graph show the number of calories burned while water skiing.

Time Elapsed (in min)	0	15	30	45	60
Calories Burned Snow Skiing	0	135	270	405	540

Which activity will burn more calories at 75 minutes? Explain your answer.



Name	Understand the connections between proportional relationships, lines, and linear equations.

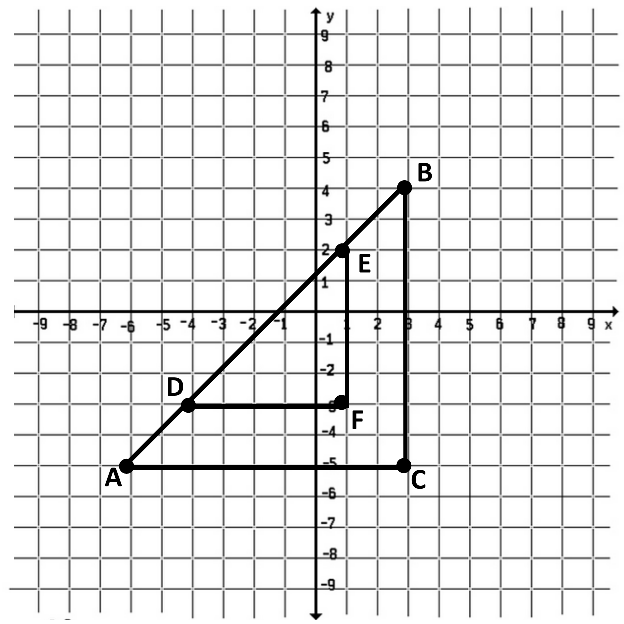
8.EE.B.6
Use similar triangles to explain why the slope *m* is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation y = mx for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at *b*.

Question 1:

a.) Find the slope of $\overline{AB}$. Explain your work.

b.) Find the slope of $\overline{DE}$. Explain how you determined your answer.

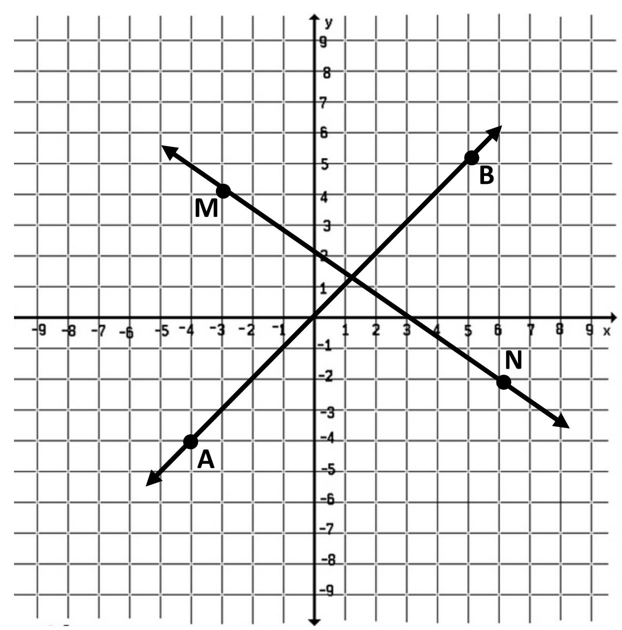
c.) What can you conclude about the slope of any 2 points located on the same line? Justify your answer.



Question 2:

a.) What is the equation of line AB? Defend your thinking.

b.) What is the equation of line MN? Explain your answer.



Name	Analyze and solve linear equations and pairs of simultaneous linear equations.

8.EE.C.7a

Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers).

Question 1:

Solve the following equations. Explain the meaning of each solution.

a.) $7x - 7 = 4x + 17$

b.) $2.6 - 6y = 3y + 4.4$

Question 2:

Solve the following equations. Show you work and explain the meaning of each solution.

a.) $3m + 15 = 8 + 3m$

b.) $2(2n - 1) + 6 = 4n + 4$

Name	Analyze and solve linear equations and pairs of simultaneous linear equations.

8.EE.C.7b
Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.

Question 1:

Solve the following equations. Explain how you solved each equation and checked each solution.

a.) $5x + 3 = 2(x + 2) - 3x$

b.) $7(2x + 3) - 8 = 15 + 6x + 14$

Question 2:

Solve the following equations. Explain how you solved each equation and checked each solution.

a.) $2(1.1\ m - 5) = 2(1.4m + 4)$

b.) $\frac{2}{3}x + 2 = \frac{1}{3}(4x + 1)$

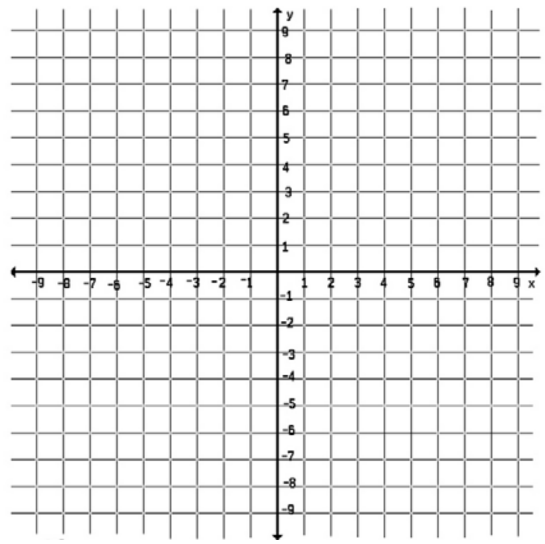
Name	Analyze and solve linear equations and pairs of simultaneous linear equations.
8.EE.C.8a Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.	

Question 1:

Solve the following system of equations by graphing. Show your work

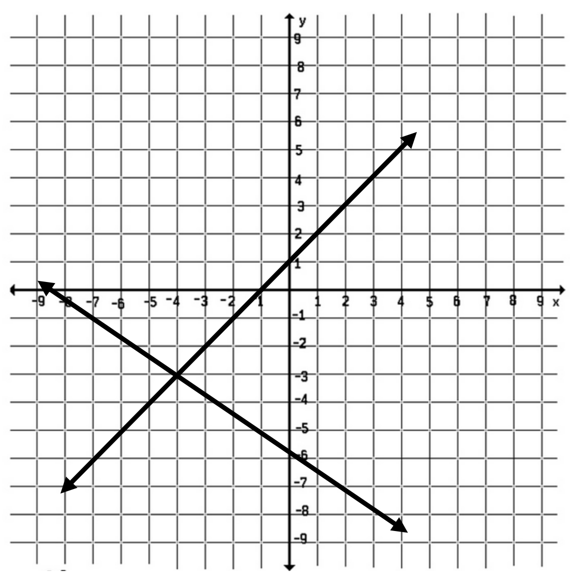
$$y = {}^{-}x + 2$$

$$y = 3x - 2$$



Question 2:

Based on this graph, what is the solution to this system of equations? Explain your answer.

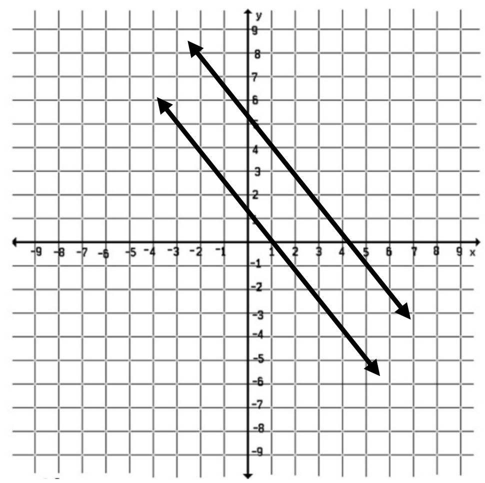


Name	Analyze and solve linear equations and pairs of simultaneous linear equations.

8.EE.C.8b
Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. *For example, $3x + 2y = 5$ and $3x + 2y = 6$ have no solution because $3x + 2y$ cannot simultaneously be 5 and 6.*

Question 1:

Jason graphed his solution to a system of equations. What does his solution mean? Justify your answer.



Question 2:

Solve the following systems of equations algebraically. Determine the solution for each system.

a.) $4x + 2y = 10$
$x - y = 13$

b.) $^{-}0.5x + y = 1.5$
$0.8x - 0.2y = 6$

Name	Analyze and solve linear equations and pairs of simultaneous linear equations.

8.EE.C.8c
Solve real-world and mathematical problems leading to two linear equations in two variables. *For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.*

Question 1:

The equations $5x + 2y = 48$ and $3x + 2y = 32$ represent the money collected from school concert tickets sales during two class periods. If x represents the cost for each adult ticket and y represents the cost for each student ticket, what is the cost for each adult ticket? Show your work.

Question 2:

Jake and Tyler decide to spend the afternoon at the fair enjoying their favorite activities, the roller coaster and the bungee jump. Jake went on the roller coaster 3 times and the bungee jump 3 times and spent a total of $17.70. Tyler went on the roller coaster 4 times, but only did the bungee jump once. He spent a total of $17.15. How much does it cost to ride the roller coaster? How much does it cost to do the bungee jump? Show your work.

Name	Define, evaluate, and compare functions.

8.F.A.1
Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.

Question 1:

The table below shows a relation.

x	3	-5	2	-8	6	2
y	-7	4	0	-1	10	5

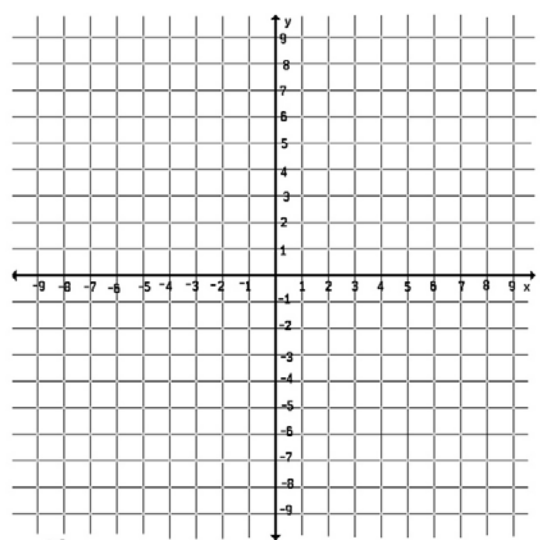
a.) Write each set of ordered pairs from the function table above.

b.) Is this relation a function? Defend your answer.

Question 2:

Completed the table of values using the function $y = 4x - 3$. Graph the function on the coordinate plane.

x	y
2	
	-3
-1	
3	
	1

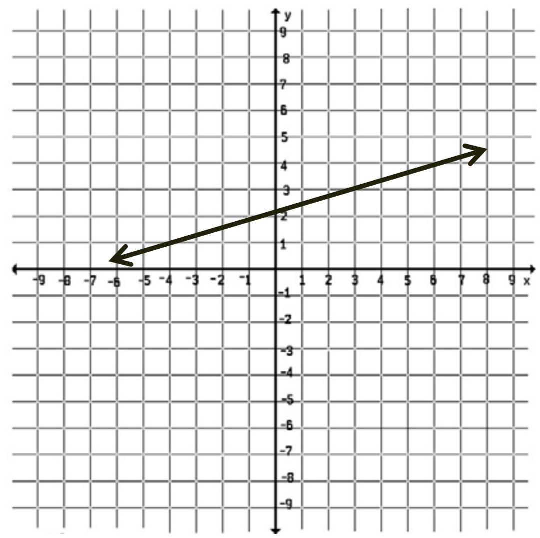


Name	Define, evaluate, and compare functions.

8.F.A.2
Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.*

Question 1:

Function A is represented by the equation $y = \frac{1}{3}x + 5$. Function B is represented by the graph. Which function has a greater rate of change? Explain your answer.



Question 2:

Nicole and Rhonda both babysit to earn extra money. The both charge a service fee plus an hourly rate. The amount of money Rhonda earns can be represented using the table below. The amount of money Nicole earns from babysitting can be represented by the equation $y = 7x + 10$. Who charges more per hour to babysit? Justify your answer.

x	y
2	21
3	29
4	37
5	45

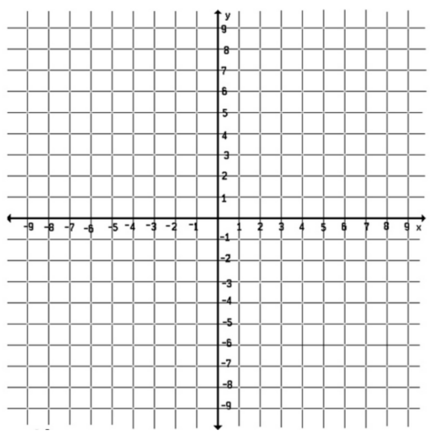
Name	Define, evaluate, and compare functions.

8.F.A.3
Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. *For example, the function $A = s^2$ giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line.*

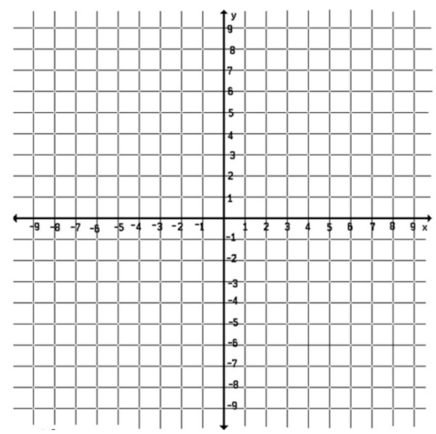
Question 1:

Graph the functions on the coordinate planes. Identify which one is a linear function.
Defend your thinking and explain your answer.

$y = x^2 - 3$

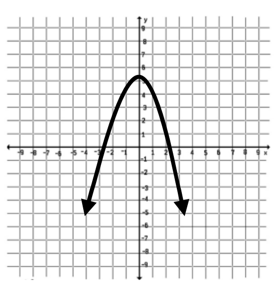
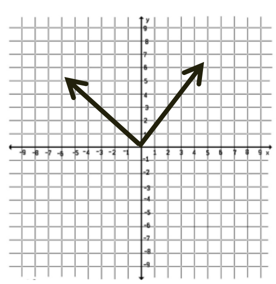
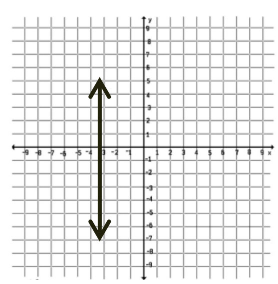
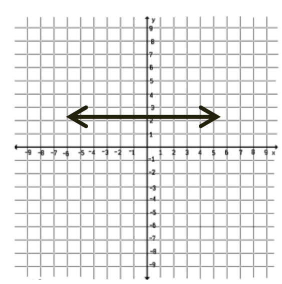


$y = {}^{-}2x + 1$



Question 2:

Identify which of the following graphs are functions. If it is a function, identify whether or not it is a linear function. Explain your answer.

Name	Use functions to model relationships between quantities.

8.F.B.4
Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.

Question 1:

A movie rental store charges a membership fee plus a certain amount per movie rented, as shown in the table below.

Number of Movies, x	Total Charges ($), y
2	18
3	22
4	26

a.) Write the equation for this function in slope-intercept form.

b.) What does the slope represent in this problem?

c.) What does the y-intercept represent in this problem?

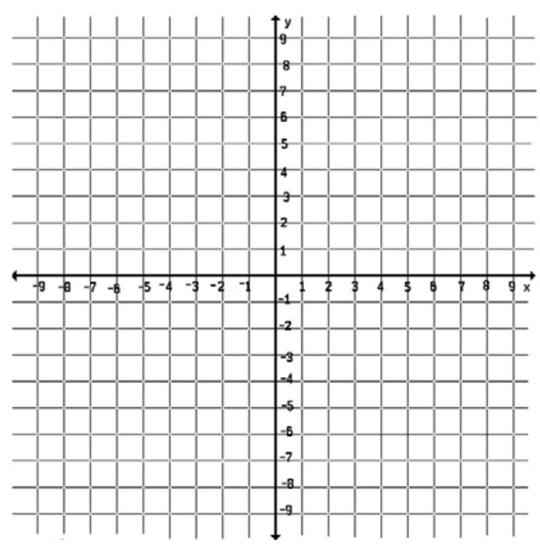
Question 2:

A line passes through the points $(^-6, 3)$ and $(^-1, ^-2)$ on the coordinate plane.

a.) What is the slope of the line?

b.) What is the y-intercept?

c.) What is the equation for this line in slope-intercept form?



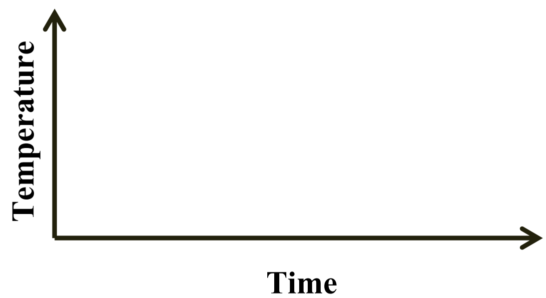
Name	Use functions to model relationships between quantities.

8.F.B.5
Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

Question 1:

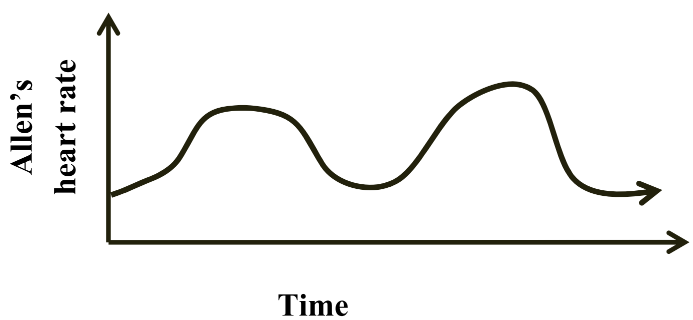
Sketch a graph that represents the following situation.

The air temperature was constant for several hours in the morning and then rose steadily. It leveled off for most of the afternoon and then dropped suddenly at sundown.



Question 2:

Look at the graph below and describe a situation that it could be representing.



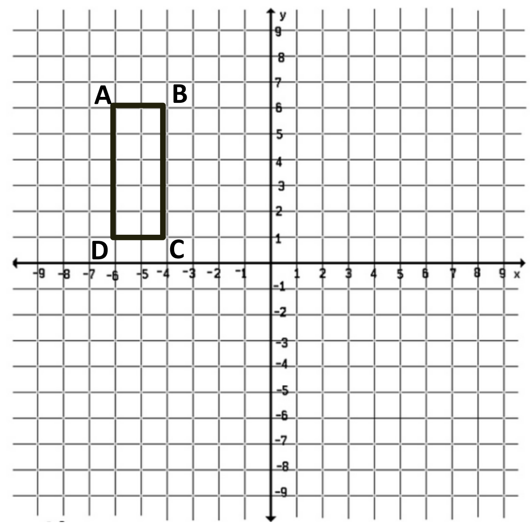
Name	Understand congruence and similarity using physical models, transparencies, or geometry software.

8.G.A.1a
Verify experimentally the properties of rotations, reflections, and translations:
Lines are taken to lines, and line segments to line segments of the same length.

Question 1:

a.) Translate rectangle *ABCD* 4 units right and 3 units down. Label the translated image ***A'B'C'D'***.

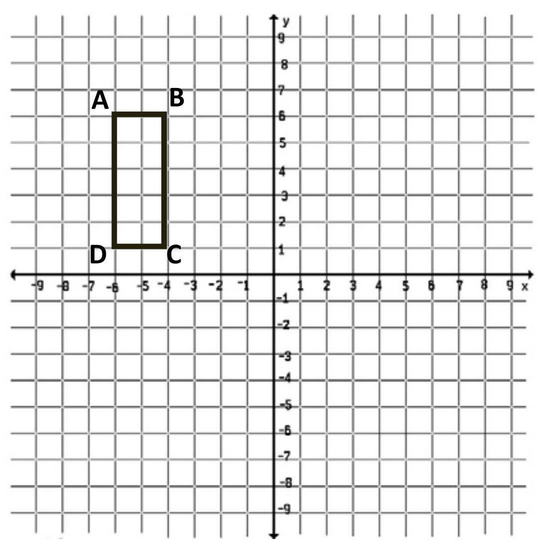
b.) What is the measure of the line segment ***A'B'***? Justify your answer.



Question 2:

a.) Rotate rectangle *ABCD* 270 degrees clockwise around the origin. Label the rotated image.

b.) What is the measure of line segment *BC* after the transformation? Defend your answer and explain your thinking.



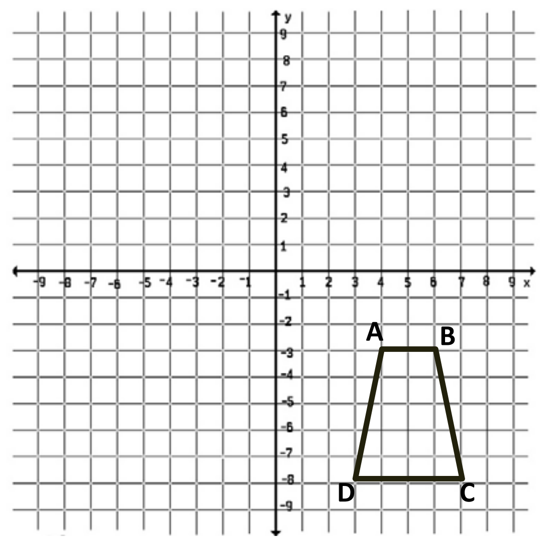
Name	Understand congruence and similarity using physical models, transparencies, or geometry software.

8.G.A.1b
Verify experimentally the properties of rotations, reflections, and translations:
Angles are taken to angles of the same measure.

Question 1:

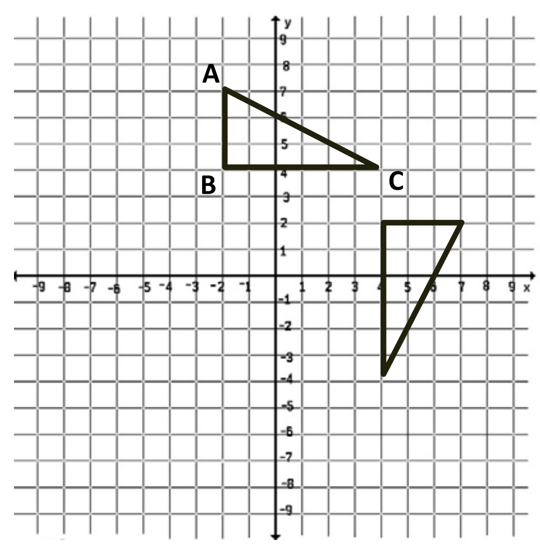
a.) Reflect figure *ABCD* over the *x*-axis. Label the reflected image.

b.) If $m\angle A = 110°$, what is $m\angle A'$? Explain your answer.



Question 2:

a.) Triangle *ABC* was rotated 90° clockwise. Label the triangle *A'B'C'*.



b.) Reflect triangle ***A'B'C'*** over the *y*-axis. Label the reflected image. What is the measure of $\angle B$? Defend your thinking.

Name	Understand congruence and similarity using physical models, transparencies, or geometry software.

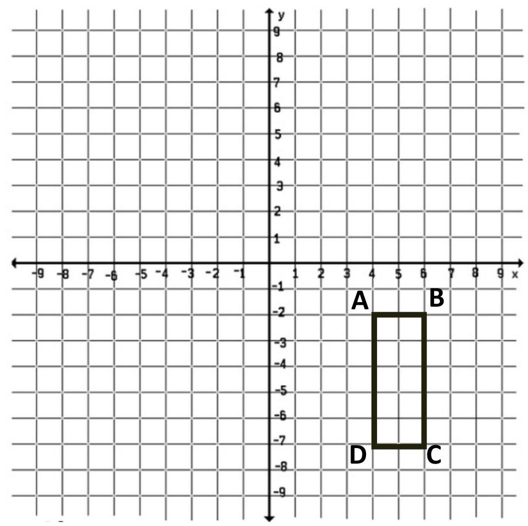
8.G.A.1c
Verify experimentally the properties of rotations, reflections, and translations:
Parallel lines are taken to parallel lines.

Question 1:

***$\overline{AB}$* is parallel to *$\overline{CD}$*.**

a.) Rectangle *ABCD* is reflected over the *y*-axis. Explain the relationship between ***$\overline{A'B'}$* and *$\overline{C'D'}$*.** Justify your answer using the properties of transformations.

a.) Rectangle *ABCD* is rotated 90° counterclockwise about the origin. Explain the relationship between ***$\overline{A'B'}$* and *$\overline{C'D'}$*.** Justify your answer using the properties of transformations.

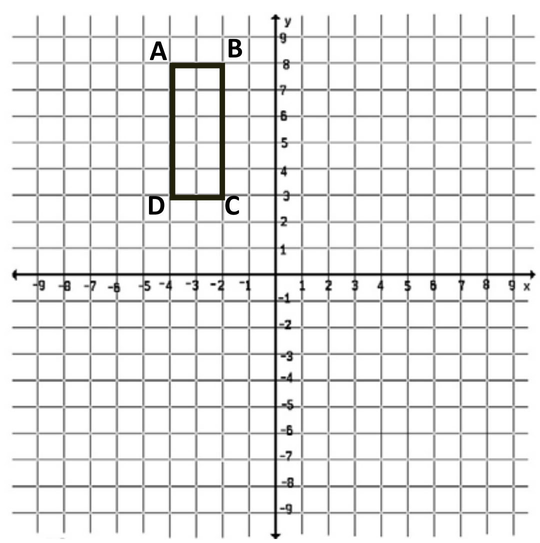


Question 2:

***$\overline{AB}$* is parallel to *$\overline{CD}$*.**

b.) Rectangle *ABCD* is reflected over the *x*-axis and then translated 3 units down. Explain the relationship between ***$\overline{A'D'}$* and *$\overline{B'C'}$*.** Justify your answer using the properties of transformations.

c.) Rectangle *ABCD* is rotated 90° counterclockwise about the origin and then reflected across the *y*-axis. Explain the relationship between ***$\overline{A'D'}$* and *$\overline{B'C'}$*.** Justify your answer using the properties of transformations.



Name	Understand congruence and similarity using physical models, transparencies, or geometry software.

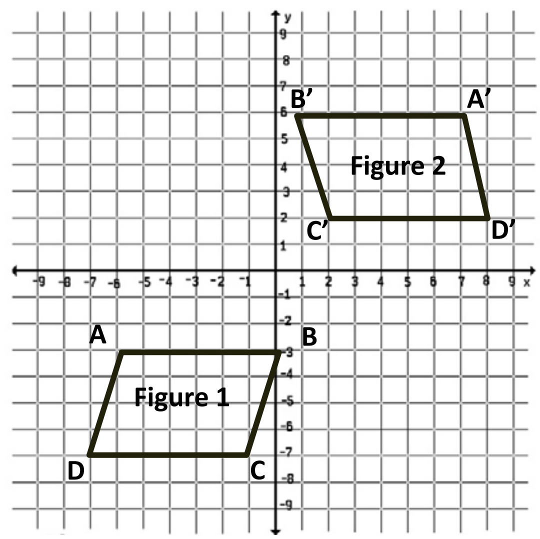
8.G.A.2
Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.

Question 1:

Figure 1 is transformed using two steps into Figure 2.

a.) Identify the steps involved in the transformations.

b.) Are the 2 figures congruent? Explain your answer.

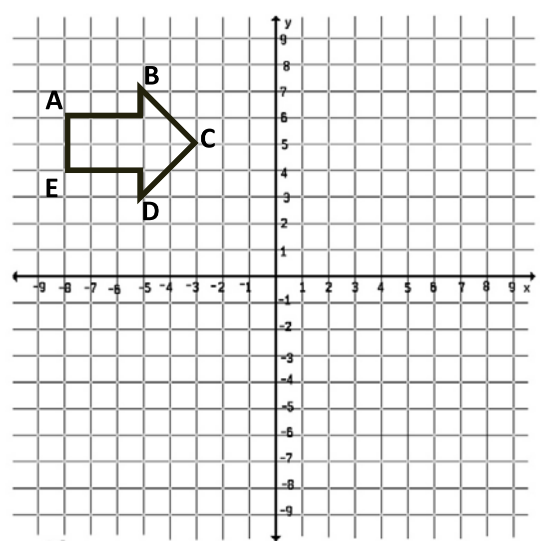


Question 2:

Transform this figure using a rotation, a reflection and a translation. Record the transformations you used.

a.) Graph and label figure ***A'B'C'D'E'***

b.) Are the two figures congruent? Explain your answer.



Name	Understand congruence and similarity using physical models, transparencies, or geometry software.

8.G.A.3

Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.

Question 1:

Using the coordinate grid, graph the triangle that has vertices of $A(^{-}6, 2)$, $B(4, ^{-}2)$, and $C(^{-}4, ^{-}8)$.

a.) Dilate the triangle by a factor of $\frac{1}{2}$

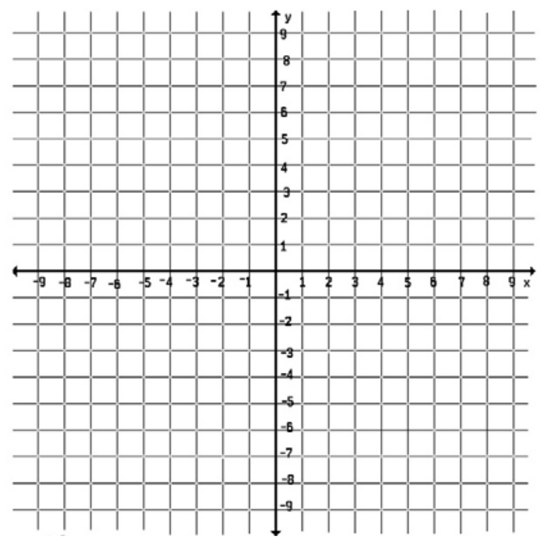
b.) Graph and label triangle ***A'B'C'***

c.) What are the coordinates of the dilated points?

A' = __________

B' = __________

C' = __________



Question 2:

Rotate triangle *ABC* 90° counter-clockwise around the origin. Dilate the rotated image by a factor of 2.

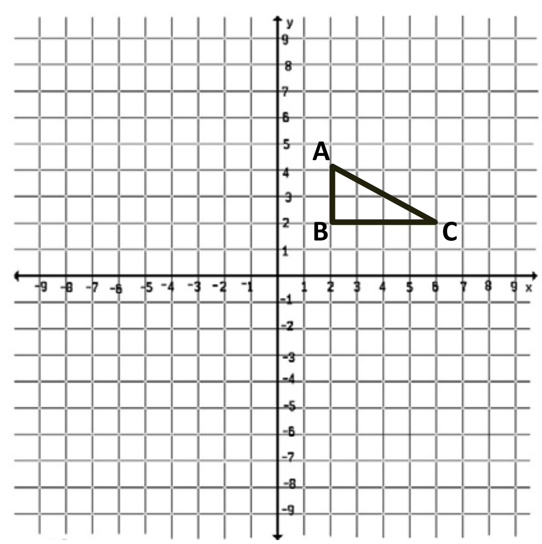
a.) Graph and label triangle ***A'B'C'***

b.) What are the coordinates of the dilated points?

A' = __________

B' = __________

C' = __________



Name	Understand congruence and similarity using physical models, transparencies, or geometry software.

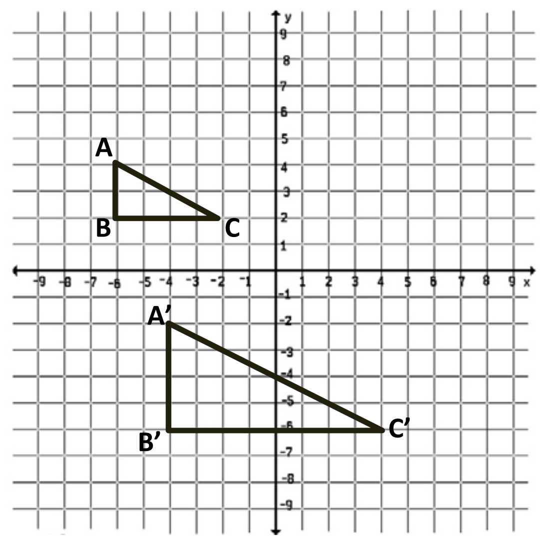
8.G.A.4
Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.

Question 1:

Triangle *ABC* has been transformed into triangle ***A'B'C'*** using two steps.

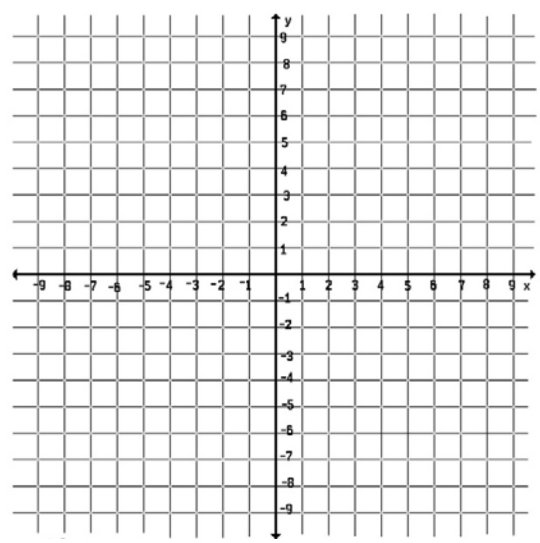
a.) Identify the two transformations that were used.

b.) Are the two figures similar? Justify your answer.



Question 2:

Triangle *ABC* has vertices of *A*($^{-}$6, 2), *B*($^{-}$4, 7) and *C*($^{-}$2, 2). Triangle *A'B'C'* has vertices of *A'*(7, $^{-}$9), *B'*(4, 3) and *C'*(0, $^{-}$9). Are these triangles similar? Draw the two triangles on the coordinate plane. Justify your answer.



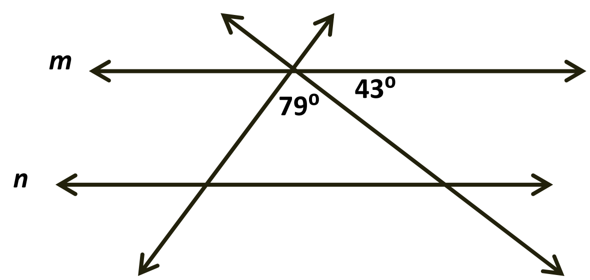
Name	Understand congruence and similarity using physical models, transparencies, or geometry software.

8.G.A.5
Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. *For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.*

Question 1:

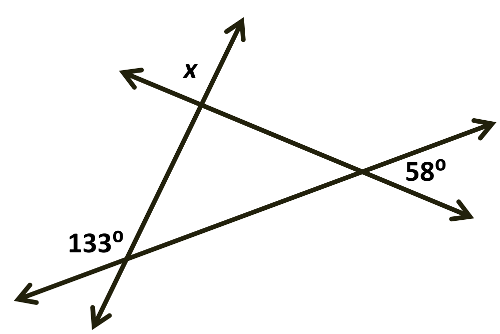
Line *m* is parallel to line *n*.

Prove that the sum of the angles in the triangle is 180°.



Question 2:

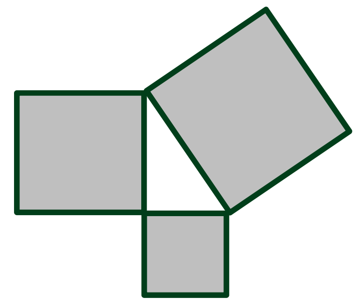
What is the measure of angle *x*? Justify your answer and explain your thinking.



Name	Understand and apply the Pythagorean Theorem.
8.G.B.6 Explain a proof of the Pythagorean Theorem and its converse.	

Question 1:

The sides of 3 squares come together to form a right triangle, as shown. The sides of the squares are 12 cm, 16 cm and 20 cm. Using these dimensions, prove the Pythagorean Theorem. Defend your answer.



Question 2:

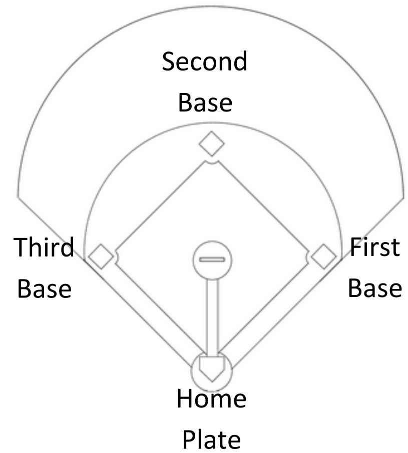
Marty has 3 sticks measuring 12 inches, 13 inches and 5 inches. He knows he can make a triangle out of these sticks, but is not sure if it is a right triangle or not. Using the Pythagorean Theorem, determine whether Marty's triangle is a right triangle. Justify your thinking.

Name	Understand and apply the Pythagorean Theorem.

8.G.B.7
Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.

Question 1:

In a major league baseball field, the distance between each of the bases is 90 feet, forming a square. To the nearest foot, what is the shortest distance between first base and third base? Explain your thinking using the model.



Question 2:

A 17 foot ladder is leaned against the side of a building so that the base of the ladder is 8 feet from the building. How high up the building does the ladder reach? Defend your answer and draw a model.

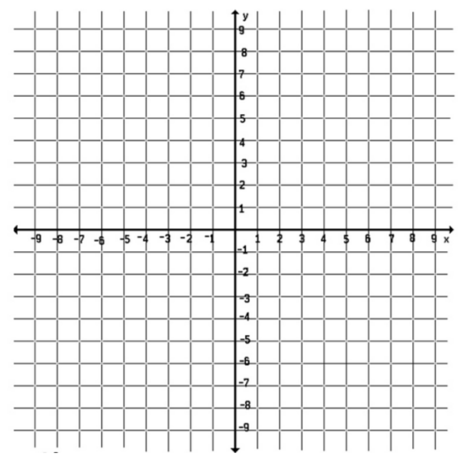
Name	Understand and apply the Pythagorean Theorem.
8.G.B.8 Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	

Question 1:

$\overline{AB}$ has endpoints of ($^-2$, $^-3$) and (6, 3).

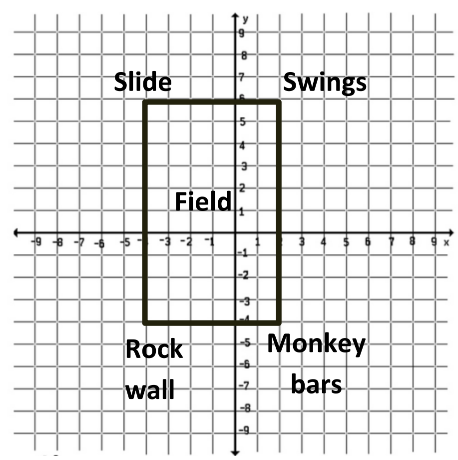
Draw $\overline{AB}$ on the coordinate plane. Line segment *AB* is the hypotenuse of a right triangle. Complete the right triangle.

Apply the Pythagorean Theorem to determine the length of $\overline{AB}$? Justify your response.



Question 2:

Bella drew a diagram of her neighborhood's park on the coordinate plane. There is a rectangular path that goes around the field. How much shorter is it to go from the slide to the monkey bars if Bella walks the diagonal line across the field rather than taking the path? Round your answer to the nearest tenth of a unit. Show your work.

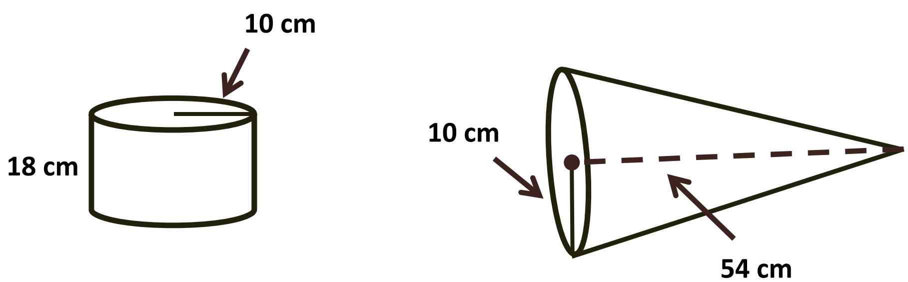


Name	Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.

8.G.C.9
Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.

Question 1:

Which has a greater volume, the cylinder or the cone? Show your work and explain your thinking.



Question 2:

A sphere has a radius of 4.5 inches. Approximately how many cubic inches of space is inside it? Round your answer the nearest tenth. Create a model and justify your answer. (Use 3.14 for the value of pi.)

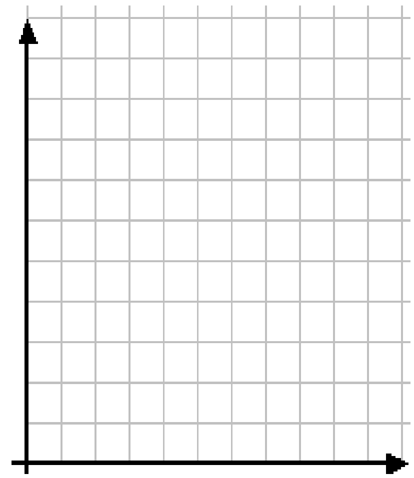
Name	Investigate patterns of association in bivariate data.

8.SP.A.1
Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.

Question 1:

Create a scatter plot for the following data.

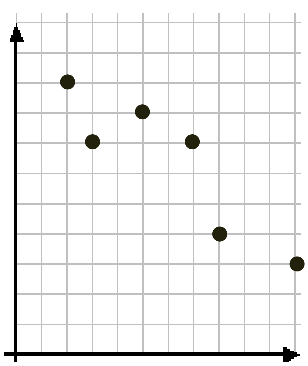
Train Arrival Time (A.M.)	6:45	7:30	8:15	9:45	10:30
Passengers	160	148	194	152	64

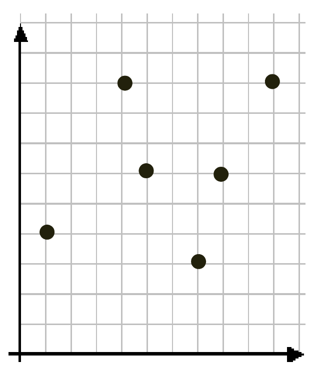


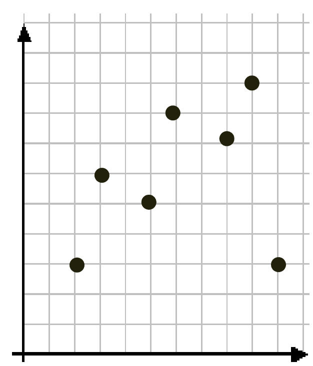
Is there a relationship between the arrival time and the number of passengers? Explain your answer.

Question 2:

Describe each scatter plot as having a positive correlation, a negative correlation or no correlation. Explain your answer.





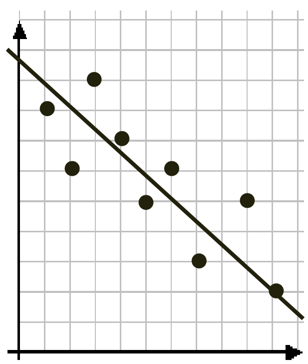


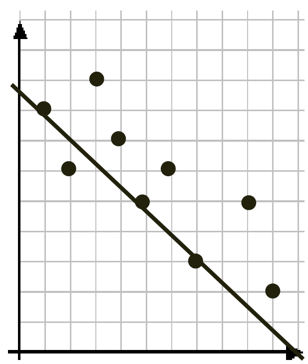
Name	Investigate patterns of association in bivariate data.

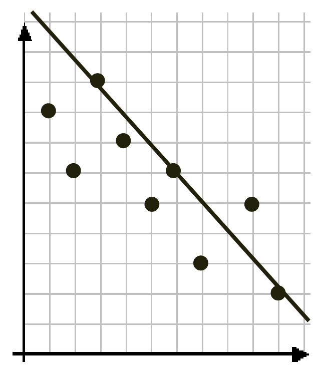
8.SP.A.2
Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.

Question 1:

Which of the following shows the most accurate line of best fit for the scatter plot? Justify your answer.



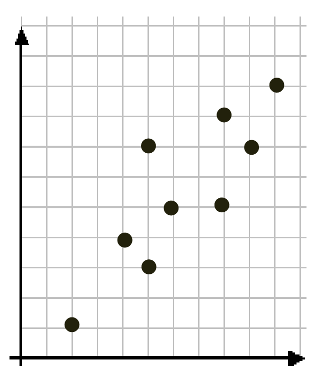




Explain your answer.

Question 2:

Draw the line of best fit on the scatter plot below. Explain the process you applied to draw the line.

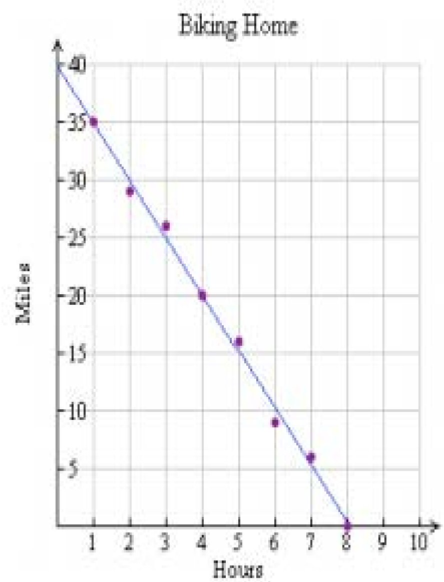


Name	Investigate patterns of association in bivariate data.

8.SP.A.3
Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. *For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.*

Question 1:

Scott graphed the relationship between the number of miles he is from home and the number of hours it takes him to ride back home. He then drew a line of best fit as shown.



a.) What is the slope of the line of best fit? Show your work.

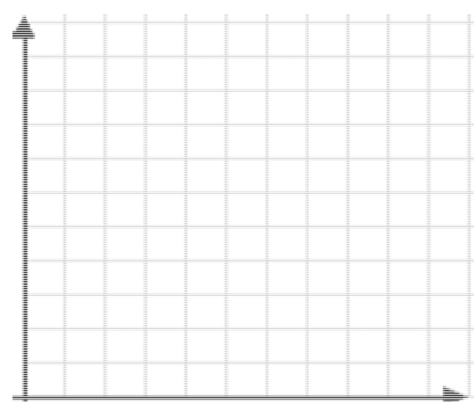
b.) What does the slope represent in this situation? Explain your answer.

c.) What is the equation of the line of best fit?

Question 2:

Use the data to make a scatter plot of the weight and height of each member of the high school basketball team.

Height (inches)	71	68	70	73	74
Weight (pounds)	170	160	175	180	192



a.) Draw a line of best fit to represent the data.

b.) What is the equation of the line of best fit?

Name	Investigate patterns of association in bivariate data.

8.SP.A.4
Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. *For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?*

Question 1:

Megan polled her classmates on whether or not they had a pet and a sibling. She displayed the data in the two way table below.

	Have a pet	Don't have a pet	Total
Have a sibling	15	5	20
Don't have a sibling	6	2	8
Total	21	7	28

Are there any trends in this data? Explain.

Is there any evidence that students who have pets don't have siblings? Explain.

Question 2:

Fifteen students were asked if they watched the Winter Olympics and the Summer Olympics. Their responses were recorded in the table below.

Winter?	Yes	No	No	Yes	No	No	Yes	Yes	Yes	No	No	Yes	No	No	Yes
Summer?	Yes	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes	Yes	No	Yes	Yes

Create a two way table to display the data

	Watch Winter	Don't Watch Winter	Total
Watch Summer			
Don't Watch Summer			
Total			

What is the relative frequency of students that watch both Summer and Winter Olympics to students who watch only the Summer Olympics?