

$$y = x^2$$

$$a^2 + b^2 = c^2$$

MATH REVIEW

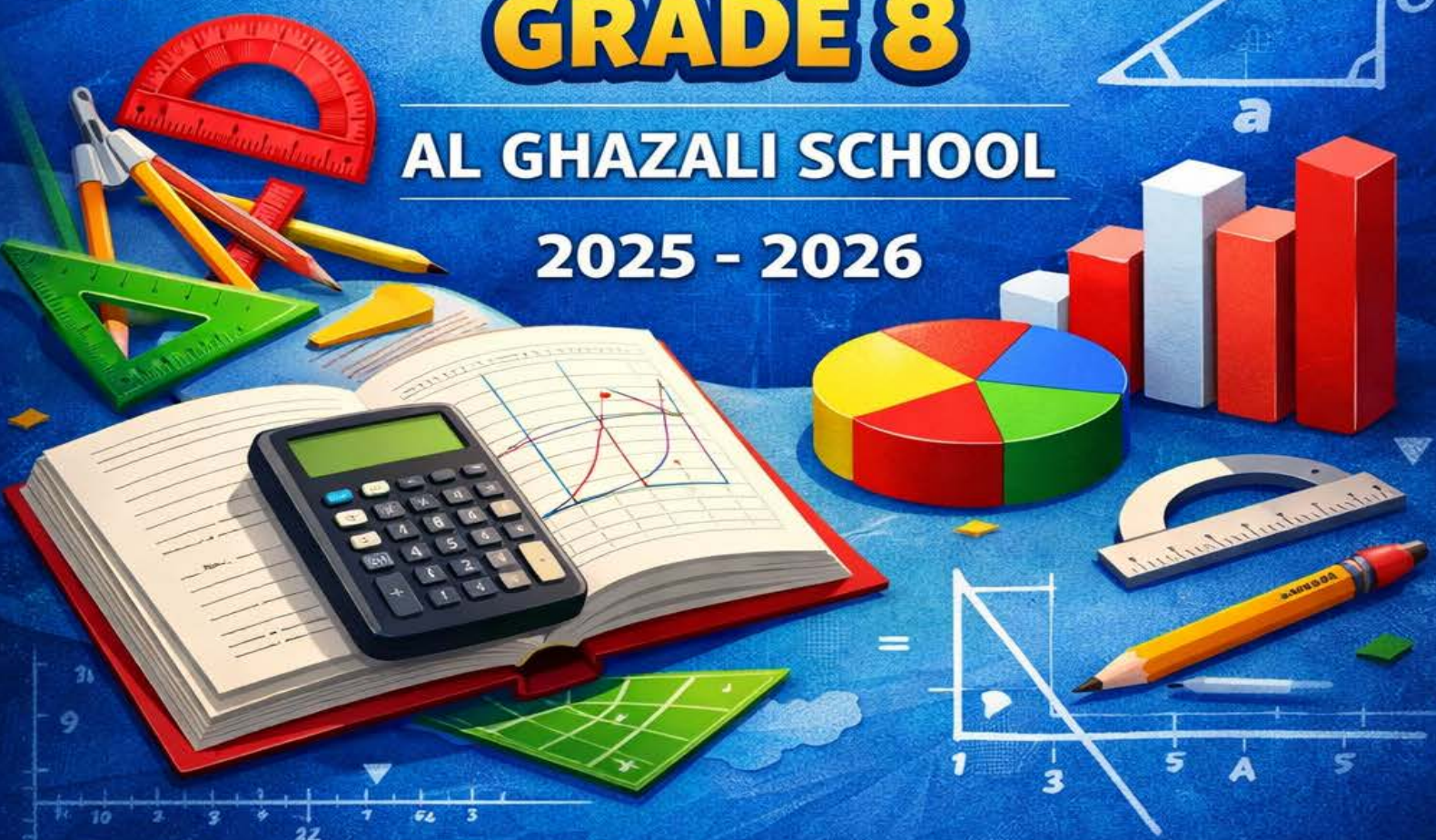
SECOND SEMESTER

CHAPTERS 5 - 6 - 7

GRADE 8

AL GHAZALI SCHOOL

2025 - 2026

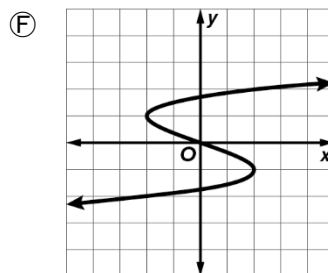
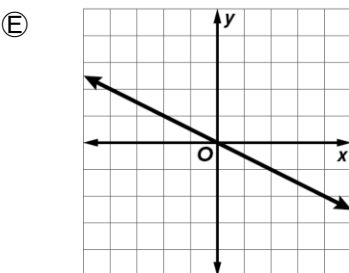
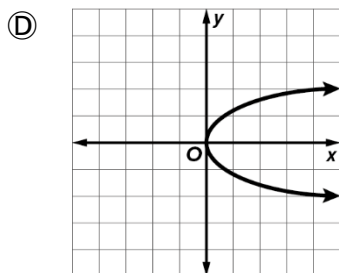
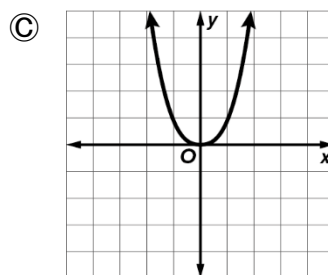
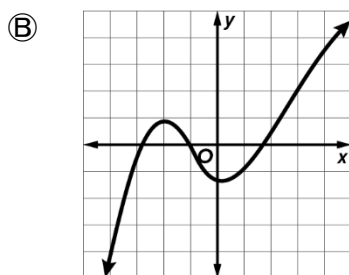
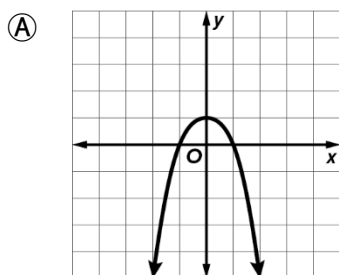


Module Test Form A3 Functions

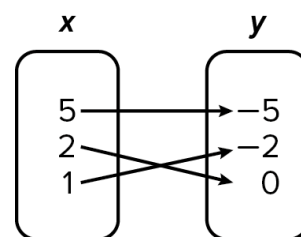
1. Which of the following does *not* represent a relation that is a function?

- Ⓐ The graph of the relation passes the vertical line test.
- Ⓑ The equation of the relation is in the form $y = mx + b$.
- Ⓒ In a table of values, each input has exactly one output.
- Ⓓ In a table of values, each input has one or more outputs.

2. Which of the following graph(s) represent a function? Select all that apply.



3. Determine whether the mapping diagram is a function. Justify your answer.



4. Use the ordered pairs from the relation shown below.

$$\{(-3, 2), (2, 3), (0, 2), (-1, 3)\}$$

Part A List the input values and output values for the relation.

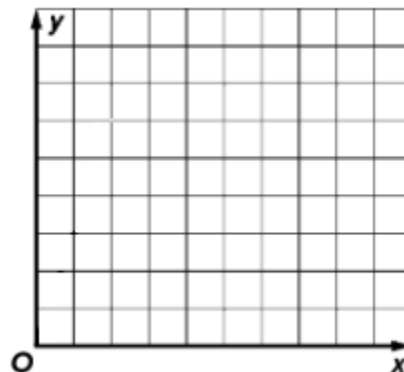
Part B Is the relation a function?

5. Daniel mows lawns in the summer. He charges \$18 for every $\frac{1}{2}$ hour of mowing. This is represented by the equation $y = 18x$, where y is the total amount Daniel charges and x is the number of $\frac{1}{2}$ -hour sessions of mowing. If Mr. Carter's lawn takes 2.5 hours to mow and Mrs. Wilson's lawn takes 4 hours to mow, how much more would Daniel charge Mrs. Wilson than Mr. Carter?

6. Complete the function table of the function $y = -2x - 5$ for the values listed.

x	y
-2	
0	
2	
4	

7. Yo-Go Yogurt sells frozen yogurt by the ounce. The total cost y for x ounces is represented by the equation $y = 0.35x$. Graph the function.



8. Which equation best describes the relationship between the corresponding values of x and y shown in the table?

x	y
-2	-12
0	-8
2	-4
4	0

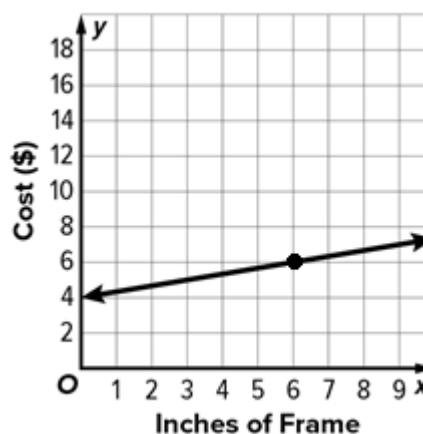
- Ⓐ $y = x - 10$
Ⓑ $y = x - 12$
Ⓒ $y = 2x - 8$
Ⓓ $y = 2x^2 - 8$

9. The amount of money, in dollars, a mail carrier earns e to deliver mail to h houses each day is modeled by the function $e = 5h + 300$.

Part A What is the rate of change and initial value of the function?

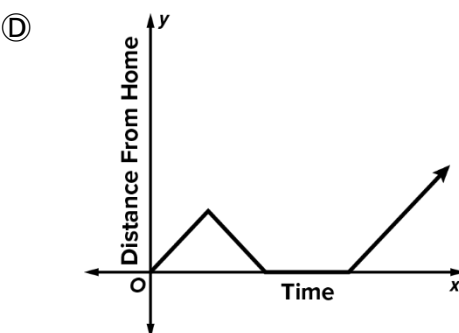
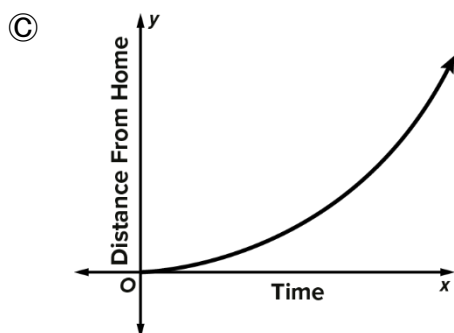
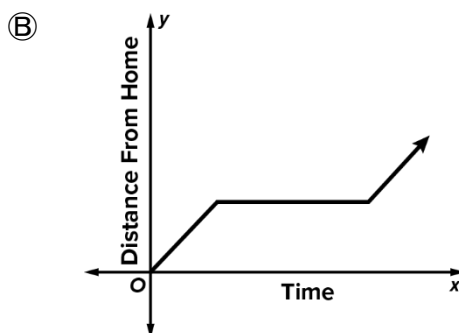
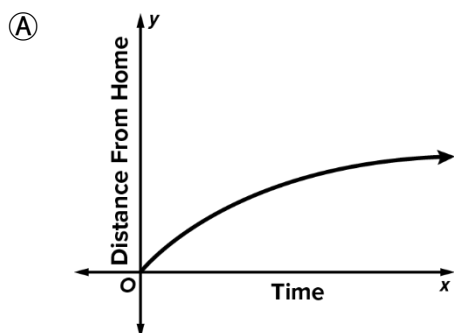
Part B Describe what the rate of change and the initial value represent.

10. The function relating the cost of framing a picture y to the number of inches of frame x is shown in the graph. Write an equation of the line in slope-intercept form that represents this situation.

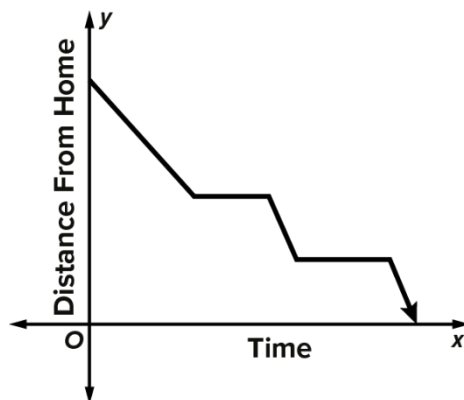


11. Keisha is saving money to visit her relatives in Florida. It costs \$1,100 for the plane ticket and \$200 per night for the hotel. Using the function that represents the cost c based on the number of nights n Keisha spends in Florida, how many nights can Keisha stay in Florida if she saves \$3,500?

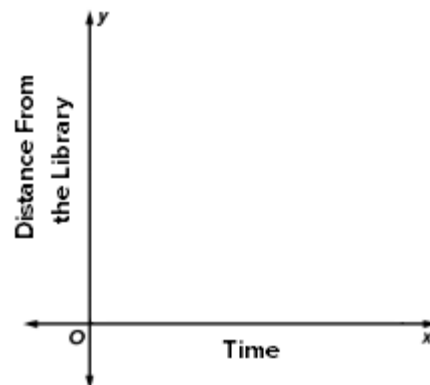
12. Dustin started slowly walking to school and then continued to increase the speed at which he walked until he finally made it to school. Which graph best represents this situation?



13. The graph describes a child walking home from the library. Describe the situation the graph represents.



14. Jill is studying at the library. Then she walks toward home and realizes she left her backpack at the library. She stops to call her mother to tell her she is returning to the library and then returns to the library. While there, she stops to talk to a friend, and then sets out again for home.

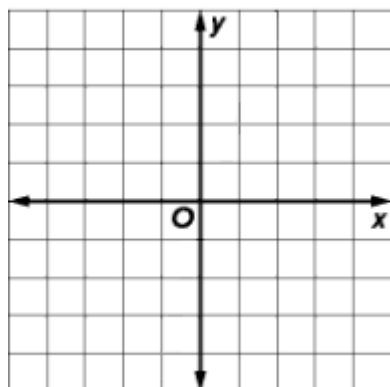


15. The table shows the relationship between the cost of monthly cell phone Plan A and the number of minutes used within a month. The equation $c = 35 + 0.05m$ describes the relationships for the cost c in dollars for minutes m used for Plan B. What is the difference, in dollars, of the total costs of the cell phone plans if a customer talks for 20 minutes?

Time (min)	Cost (\$)
0	35.00
2	35.40
4	35.80

16. Arthur and Quinn wrote two different functions that have the same rate of change. Quinn's function has a y-intercept that is 2 more than the y-intercept of Arthur's function. Arthur's function is represented by the table. Graph Quinn's function.

x	y
-2	-7
0	-1
1	2



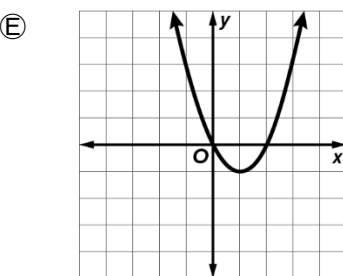
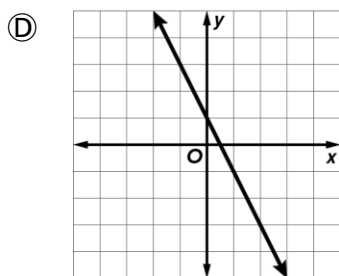
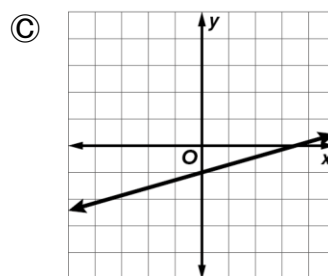
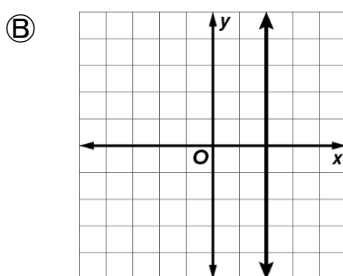
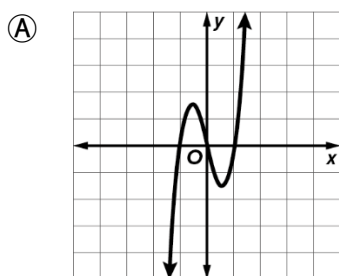
17. Determine whether the function $y = x^2 + 4x - 3$ is linear or nonlinear. Explain your reasoning.

18. Morgan owns a car dealership in which her employees earn commission for each car they sell in addition to a weekly salary. One employee sells 5 cars and makes \$1,875 that week. A second employee sells 6 cars and makes \$2,150 that week.

Part A Write an equation in slope-intercept form, for the amount of money y a salesman will make in a week given the number of cars they sell in a week x .

Part B How much will a salesman earn for selling 10 cars in one week?

19. Which of the following graph(s) represent a linear function? Select all that apply.



20. The table shows the average height, in inches, of a teenage girl at different ages. Do these data represent a linear or nonlinear function?

Age	13	14	15	16	17	18
Height (in.)	62	63	63	64	64	65

Module Test Form A3 Systems of Linear Equations

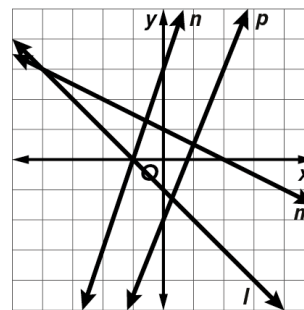
1. Which pair of lines shows the graph of the system of equations?

$$x + 2y = 2$$

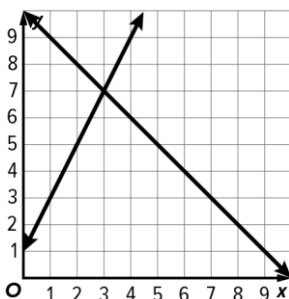
$$2x + 2y = -2$$

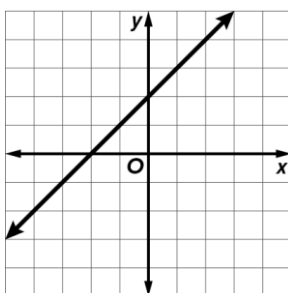
- Ⓐ n and m
 Ⓑ ℓ and m

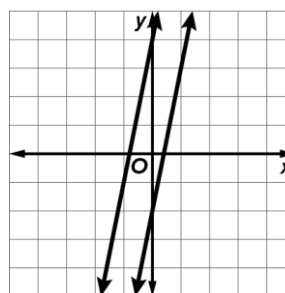
- Ⓒ ℓ and n
 Ⓓ ℓ and p



2. Describe each graph by writing the number of solutions the system of equations has.







3. The sum of two numbers is 88 and their difference is 8. Set up and solve a system of equations to find the two numbers. Show your work.

4. Consider the system of equations.

$$8x - 6y = 5$$

$$8x - 6y = 15$$

Which of the following best describes the solution of the system of equations?

- Ⓐ $(\frac{1}{2}, 0)$
 Ⓑ $(4, 0)$

- Ⓒ infinitely many solutions
 Ⓓ no solution

NAME _____ DATE _____ PERIOD _____ SCORE _____

10. At a local store, 4 bagels and 4 cups of coffee cost \$9.20. The cost of 5 bagels and 6 cups of coffee is \$12.80.

Part A Write a system of equations to represent this situation, where x is the number of bagels and y is the number of cups of coffee.

Part B Solve the system of equations by substitution and interpret its meaning.

11. Suppose you are asked to solve the following system of equations by substitution.

$$\begin{aligned}x + 3y &= 19 \\ 6x + y &= 24\end{aligned}$$

Write an expression that you can substitute for x in the second equation.

12. At an electronics store, DVDs are on sale. Some DVDs cost \$16.00 each and some cost \$14.00 each. Brittany purchased 10 DVDs and spent a total of \$148.00. Write a system of equations and solve by using substitution to determine how many \$14.00 DVDs Brittany purchased.

13. Which of the following arithmetic operations would be best used to solve the system of equations by elimination?

$$\begin{aligned}5x - 2y &= -15 \\ 3x + 2y &= 10\end{aligned}$$

- | | |
|---------------|------------------|
| Ⓐ addition | Ⓒ multiplication |
| Ⓑ subtraction | Ⓓ division |

14. Consider the system of equations.

$$\begin{aligned}4x - 5y &= -12 \\ x + 5y &= 22\end{aligned}$$

Part A What is the correct first step to solve this system of equations by elimination?

- Ⓐ Add the two equations.
- Ⓑ Subtract the two equations.
- Ⓒ Multiply the second equations by 5.
- Ⓓ Divide the first equation by 4.

Part B What is the solution?

15. Tickets to a movie cost \$9.00 for adults and \$4.50 for students. There were 225 tickets purchased for a total of \$1,642.50. The following system of equations models the situation, where a is the number of adult tickets purchased and s is the number of student tickets purchased.

$$\begin{aligned}9a + 4.5s &= 1,642.5 \\ a + s &= 225\end{aligned}$$

Part A Rewrite the second equation in the system so that the variable for the number of adult tickets purchased can be eliminated by subtraction.

Part B Solve the system of equations. How many adult and student tickets were purchased?

16. Solve the system of equations by using elimination. Write the solution as an ordered pair.

$$\begin{aligned}6x + 8y &= 8 \\ 5x + 4y &= 3\end{aligned}$$

17. Half the perimeter of a garden is 18 feet. The garden is 10 feet longer than it is wide. Let w represent the width, in feet, and ℓ represent the length, in feet.

Part A If one of the equations in the system is $\ell + w = 18$, what must be the second equation in the system?

Part B Find the length and width of the garden.

18. Tickets for a reserved seat, r , for the basketball game cost \$6 each and student tickets, s , cost \$4 each. There were 1,654 people who attended the basketball game and total of \$8,420 was earned in ticket sales. Select the two equations that represent the situation.

- Ⓐ $r + s = 8,420$
Ⓑ $r + s = 1,654$
Ⓒ $4r + 6s = 1,654$
Ⓓ $6r + s = 8,420$
Ⓔ $6r + 4s = 8,420$

19. The cost to make 2 large candles and 4 small candles is \$5.60. The cost to make 3 large candles and 5 small candles is \$7.90. How much more does it cost to make a large candle than a small candle?

20. The table shows two options for cell phone plans.

Part A Write a system of equations that represents the total cost, C , in dollars for m minutes for each cell phone plan.

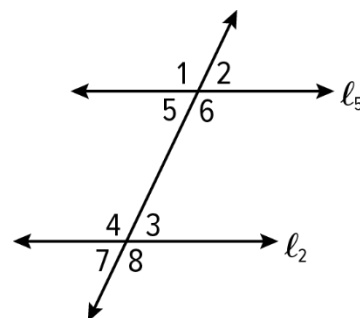
Plan Option	Monthly Fee	Price Per Minute
A	\$20	\$0.40
B	\$10	\$0.65

Part B Find the number of minutes for which the total cost is the same with both plan options.

Module Test Form A3 *Triangles and the Pythagorean Theorem*

1. Which of the following pairs of angles represent alternate exterior angles?

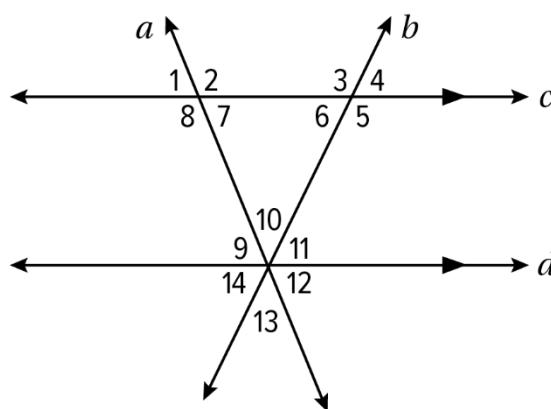
- Ⓐ $\angle 2$ and $\angle 5$
 Ⓑ $\angle 2$ and $\angle 7$
 Ⓒ $\angle 5$ and $\angle 4$
 Ⓓ $\angle 6$ and $\angle 3$



2. In the figure, line c is parallel to line d . Both of these lines are cut by transversals a and b as shown. If $m\angle 12 = 60^\circ$ and $m\angle 14 = 80^\circ$, what is the measure of the following angles?

$m\angle 4 =$ _____

$m\angle 5 =$ _____

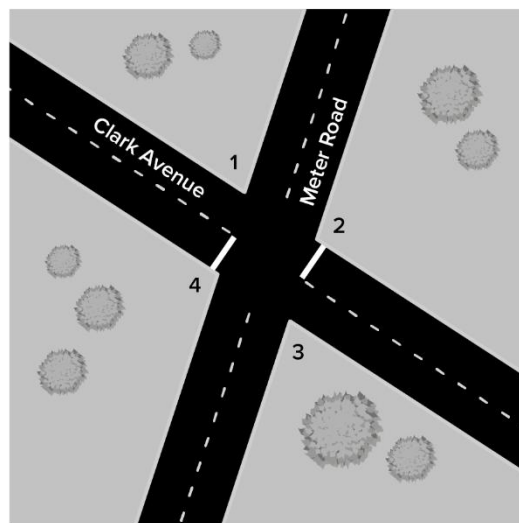


3. Mia showed Alonzo the following map.

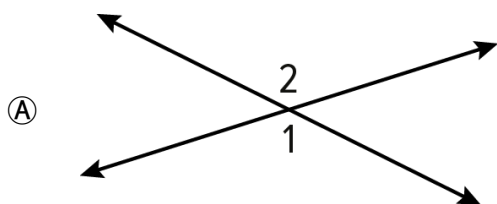
Part A Mia told Alonzo to meet her at the street corner adjacent to $\angle 1$. Alonzo went to $\angle 2$ to meet Mia. Is the following statement *true* or *false*?

$\angle 2$ is the only corner that Mia could have met Alonzo.

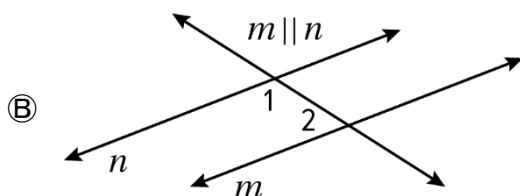
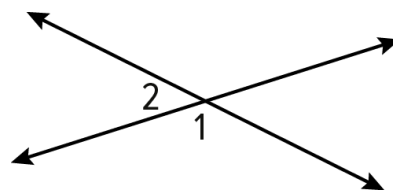
Part B Justify your answer.



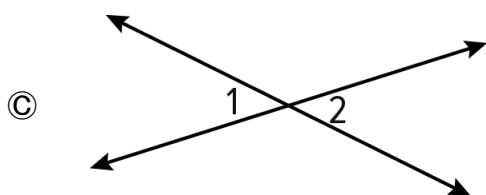
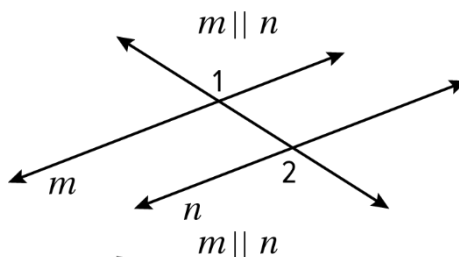
4. In which figure(s) are $\angle 1$ and $\angle 2$ congruent angles? Select all that apply.



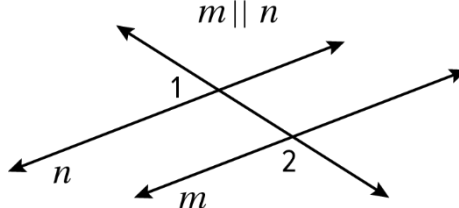
Ⓓ



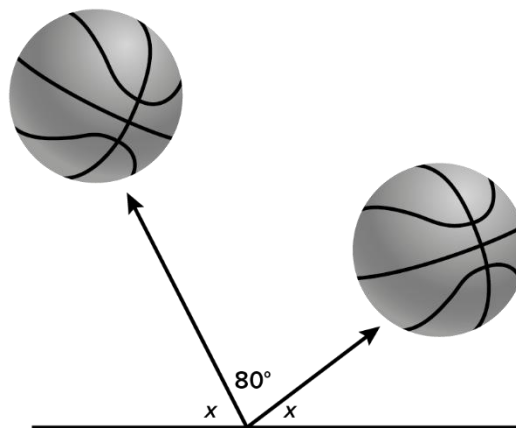
Ⓔ



Ⓕ

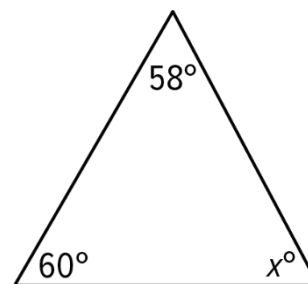


5. When a basketball hits a hard, level surface, it bounces off the floor at the same angle at which it hits the floor, as shown, What is the measure of x , the angle at which the ball hits the floor and bounces?

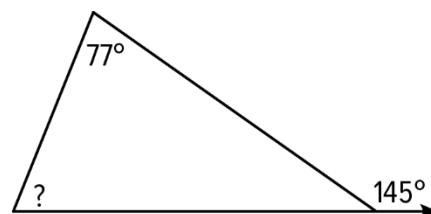


6. What is the value of x ?

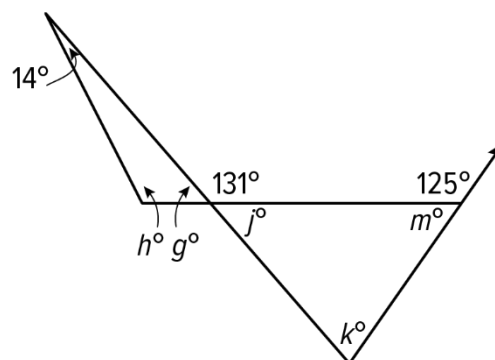
- Ⓐ 60
Ⓑ 62
Ⓒ 68
Ⓓ 90



7. Find the missing angle measure in the figure.



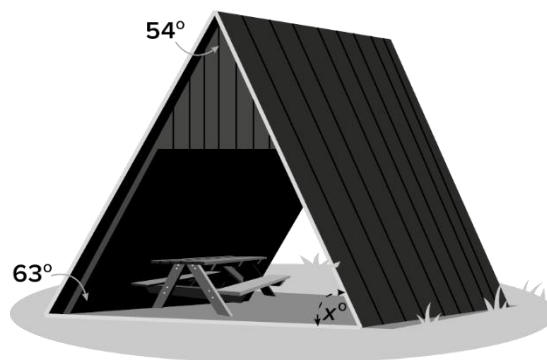
8. Find the values of h and m .



9. In $\triangle XYZ$, the measures of the angles X , Y , and Z , respectively, are in the ratio 2:4:9. Which of the following statements(s) are accurate regarding the angle measures? Select all that apply.

- (A) Angles X and Y have equal measures.
 (B) $m\angle X$ is half $m\angle Y$
 (C) $m\angle Y = 48^\circ$
 (D) $m\angle Z = 108^\circ$
 (E) The angles form an acute triangle.

10. An A-frame picnic shelter at Lewis and Clark Historic Park in Iowa is shown. What is the value of x ?

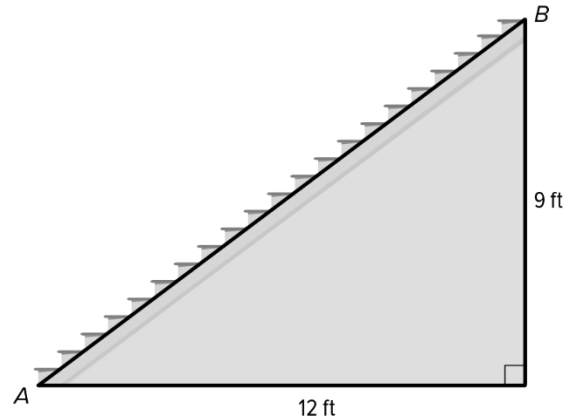


11. Which set(s) of numbers could be the measures of the sides of a right triangle? Select all that apply.

- (A) 5, 12, 13
 (B) 15, 20, 25
 (C) 21, 42, 34
 (D) 28, 195, 197
 (E) 33, 51, 60

12. Alan wants to build a banister for the staircase in his home. The height of the staircase is 9 feet, and the horizontal distance from the bottom to the top of the staircase is 12 feet.

Part A What is the length of the banister?



Part B Alan wants to extend the horizontal distance to 14 feet with a height of 11 feet. He has enough materials to make a 18-foot long banister. Does Alan have enough to extend the banister? Explain your reasoning.

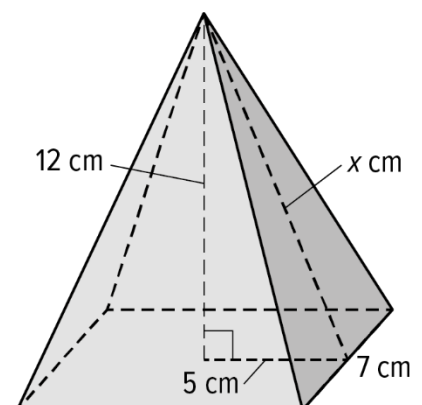
13. A triangular shaped region has side lengths of 759 miles, 938 miles, and 1,047 miles.

Part A Is the following statement *true* or *false*?

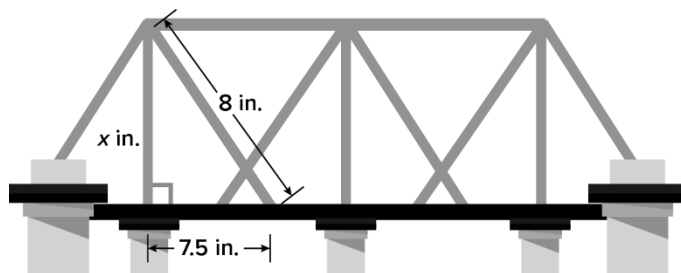
The triangular shaped region forms a right triangle.

Part B Justify your answer.

14. What is the value of the x ? Round to the nearest tenth if necessary.



15. Darryl is building a model of a bridge out of wood, as shown in the figure. He needs to cut a piece of wood for one of the vertical support beams. What length should he cut?



- Ⓐ 7.8 in.
Ⓑ 4 in.
Ⓒ 2.8 in.
Ⓓ 1.8 in.

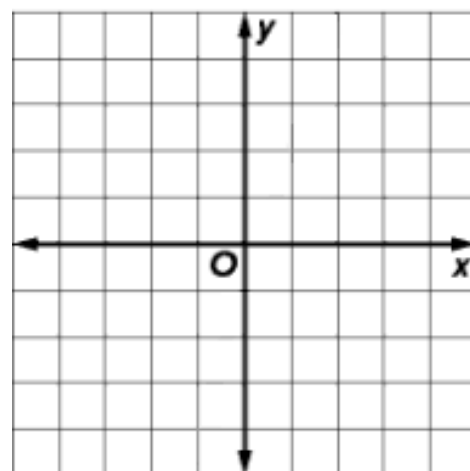
16. Place an X in the appropriate cell to indicate whether each set of side lengths would form a right triangle.

	Right Triangle	Not a Right Triangle
5, 12, 13		
7, 7, 14		
9, 12, 15		
12, 18, 26		

17. Consider the points $(0, -5)$, $(-7, 0)$, and $(-7, -5)$.

Part A Graph and connect the points on the coordinate plane.

Part B Use the Pythagorean Theorem to find the length of the hypotenuse of the right triangle. Round to the nearest tenth.

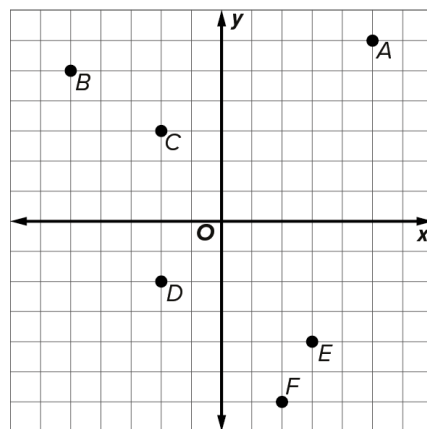


18. Amari has three pieces of string measuring 20 centimeters, 52 centimeters, and 48 centimeters. Determine whether the pieces of string can form a right triangle. Explain your reasoning.

19. Find the distance between each of the following pairs of points. Round to the nearest tenth if necessary.

distance between point B and point D = _____ units

distance between point C and point E = _____ units



20. Two boats leave an island at the same time. Boat 1 travels 24 miles south and then 18 miles west. Boat 2 travels 12 miles east and then 16 miles north. Explain how to find the distance between the two boats.

