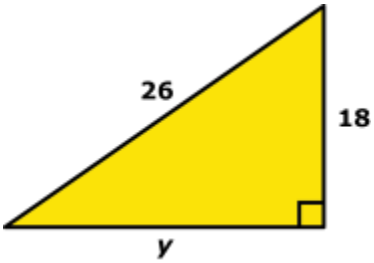
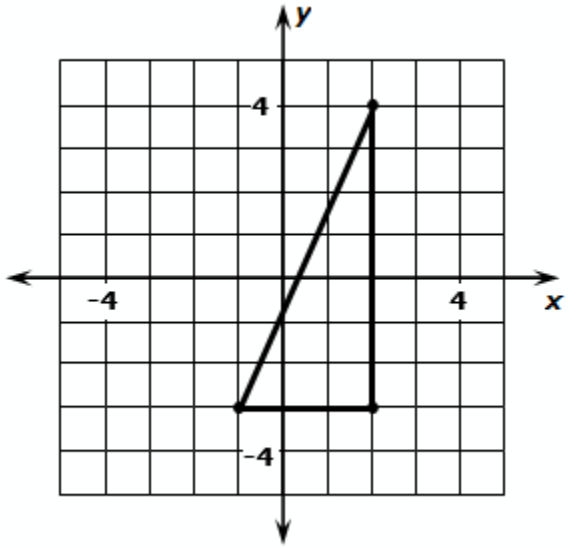
Directions: Answer the following question(s).

1 **Find the value of *y*.**



A. 17 B. 18.8 C. 20 D. 31.6

2 **A right triangle is graphed on a coordinate plane. Find the length of the hypotenuse. Round your answer to the nearest tenth.**

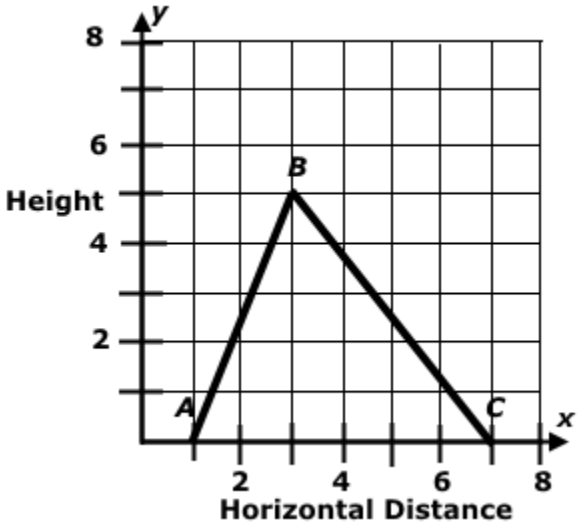


3 **An artist is creating tiles to use in a project. Each tile is to be in the shape of a right triangle. The shortest side of a tile is to be 4 inches long. The next shortest side is to be *x* inches long.**

Enter an expression in terms of *x* that models the longest side of a tile.

Directions: Answer the following question(s).

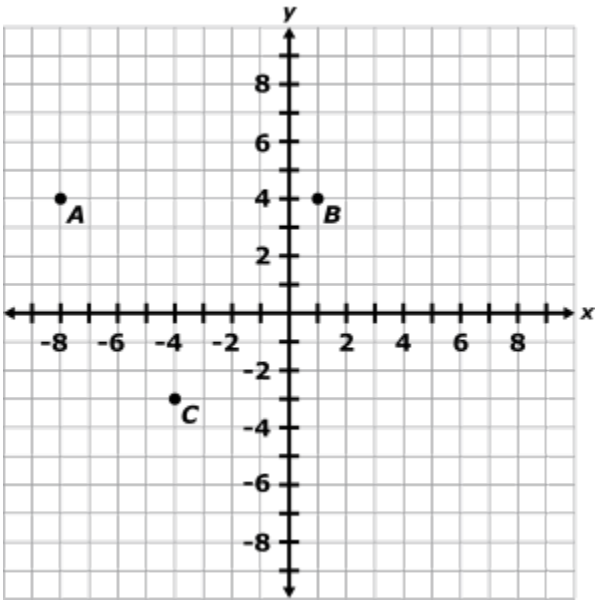
4 **A mountain's approximate shape is modeled on the coordinate plane below, with each unit on the plane representing 1000 feet.**



Enter the distance from point *A* at the bottom of the mountain to point *B* at the top of the mountain. Round your answer to the nearest foot.

_____ **feet**

5 **A coordinate plane with three points is given.**

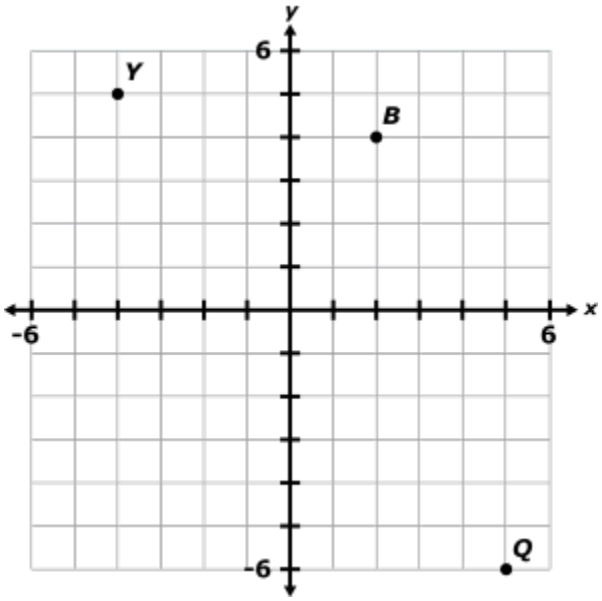


Part A: What is the distance between point *A* and point *B*?

Part B: What is the distance between point *A* and point *C*? Round your answer to the nearest tenth of a unit.

Directions: Answer the following question(s).

6 **Points *Y*, *B*, and *Q* are shown on the coordinate plane.**



Part A:

If *Y*, *B*, and *Q* are the vertices of a triangle, what is the perimeter, to the nearest tenth of a unit, of triangle *YBQ*? Show all work.

Part B:

Let point *C* be located at (1, –6). How much greater, to the nearest tenth of a unit, is the perimeter of quadrilateral *CYBQ* than the perimeter of triangle *YBQ*? Show all work.

7 **A rancher needs to travel from a location on his ranch represented by the point (12, 4) on a coordinate plane to the point (9, 2).**

Part A:

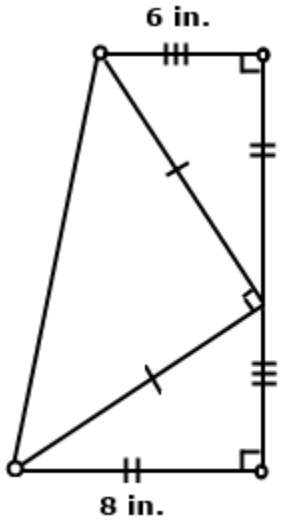
Assume that each unit on the plane represents one mile. What is the shortest distance between the two points (rounded to the nearest tenth of a mile)?

Part B:

It takes the rancher 10 minutes to travel one mile on horseback. How long will it take him to travel the entire distance between the two points (rounded to the nearest minute)?

Directions: Answer the following question(s).

8 **Julianne began her proof of the Pythagorean Theorem by dividing a right trapezoid into three triangles. If the bases of the right trapezoid measure 6 in. and 8 in., which of these is an area of one of the three triangles? Select *all* that apply.**



A. $24\ in^2$ B. $30\ in^2$ C. $50\ in^2$

9 **Find the point of intersection of the lines:**

***y* = 4*x* + 1 and *y* = –2*x* + 4**

A. (2 , 9) B. $\left(\frac{1}{2}, 3\right)$ C. (1 , 2) D. $\left(\frac{1}{4}, 2\right)$

10 **Solve the following system for *y*:**

2*x* – 15*y* = –10
–4*x* + 5*y* = –30

A. 2 B. 10 C. 2*x* – 40 D. –2

11 **Mr. Beecher and Mrs. Carter are teachers at the same school. They leave their houses at the same time in the morning to get to school.**

Mr. Beecher lives 8 miles away from school and rides his bicycle to work. Every minute, he gets $\frac{1}{6}$ of a mile closer to school.

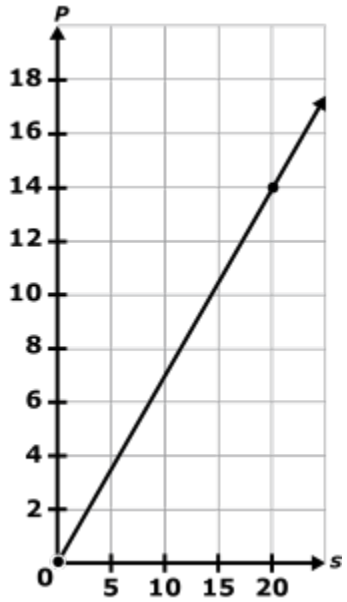
Mrs. Carter lives 20 miles away from school and drives her car to work. Every minute, she gets $\frac{1}{2}$ of a mile closer to school.

After how many minutes will Mr. Beecher and Mrs. Carter first be the same distance away from school?

_____ **minutes**

Directions: Answer the following question(s).

12 **Kailee wants to buy flooring for a bedroom. The graph shows the price of carpet at a local carpet store. Let *s* represent the number of square feet of flooring and let *P* represent the price, in dollars.**



Which of the following types of flooring is more expensive per square foot than the carpet at the local carpet store? Select *all* that apply.

A. Flooring Type A

s	0	10	22
P	0.00	8.00	17.60

B. Flooring Type B

s	2	4	15
P	1.20	2.40	9.00

C. Flooring Type C

s	3	10	21
P	1.50	5.00	10.50

D. Flooring Type D

s	5	9	25
P	2.50	4.50	12.50

E. Flooring Type E

s	8	15	28
P	12.00	22.50	42.00

13 **Select *all* possible values for x in the equation $x^2 = 48$.**

A. $\sqrt{48}$ B. $24\sqrt{2}$ C. $-4\sqrt{3}$ D. $-16\sqrt{3}$

14 **$8.0 \times 10^5 + 6.0 \times 10^7 =$**

A. 14,000,000,000,000 B. 140,000,000 C. 60,800,000 D. 68,000,000

15 **Which of the following has the same value as $\frac{5^{-3}}{5^{-2}}$?**

A. $\frac{-15}{-10}$ B. $\frac{-125}{-25}$ C. $\frac{5}{1}$ D. $\frac{25}{125}$

Directions: Answer the following question(s).

16 **Simplify:**

$3(8)^0 \cdot (3)^{-2}$

A. $\frac{24}{9}$ B. –27 C. $\frac{1}{3}$ D. –216

17 **Enter a fraction equivalent to $0.\overline{5}$ using only whole numbers for the numerator and denominator.**