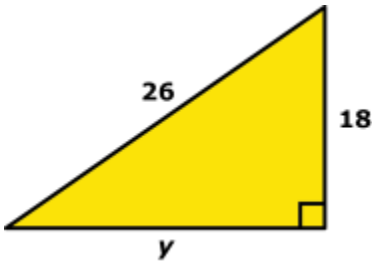


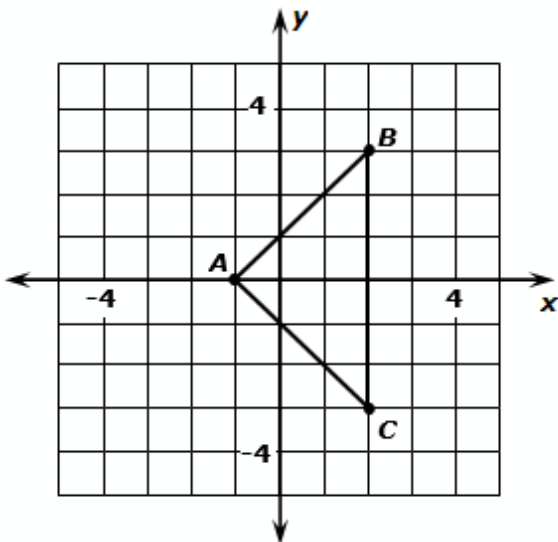
Directions: Answer the following question(s).

1 Find the value of y .



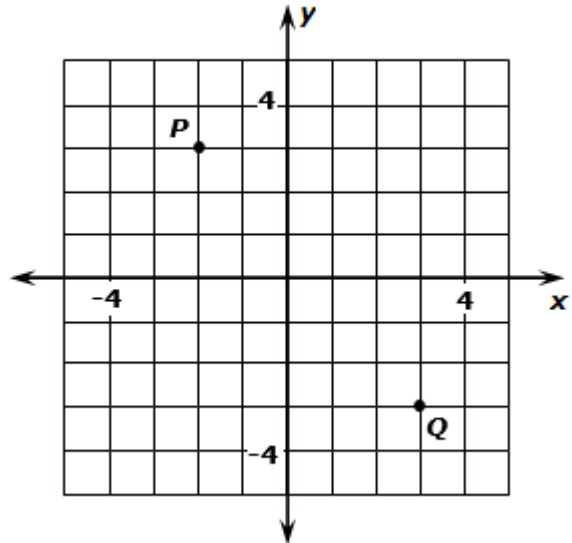
- A. 17
- B. 18.8
- C. 20
- D. 31.6

2 Triangle ABC is graphed on a coordinate plane. Find the length of leg AB .



units

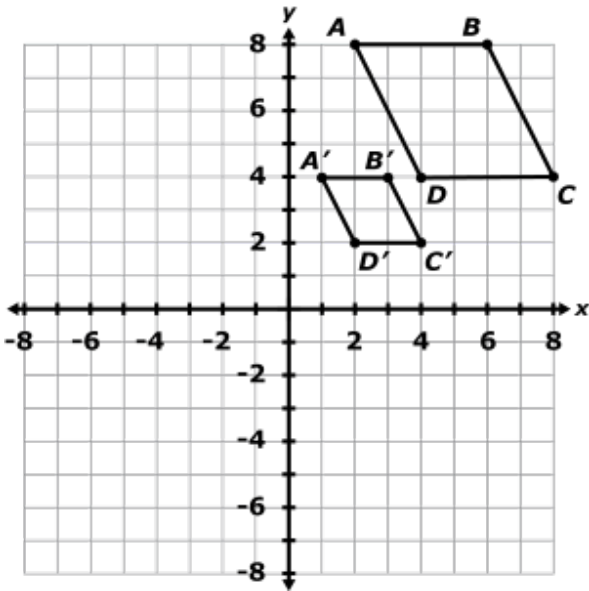
3 What is the distance between points P and Q on the coordinate plane? Round your answer to the nearest tenth.



units

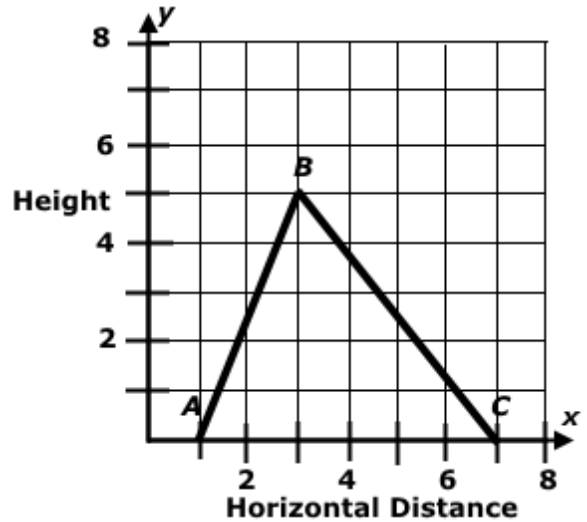
Directions: Answer the following question(s).

- 4 Which of these statements is true about the two parallelograms graphed below?



- A. They are similar, because one can be obtained by dilating the other about the origin with a scale factor of $\frac{1}{4}$.
- B. They are similar, because one can be obtained by dilating the other about the origin with a scale factor of $\frac{1}{2}$.
- C. They are not similar, because one can be obtained by dilating the other about the origin with a scale factor of $\frac{1}{4}$.
- D. They are not similar, because one can be obtained by dilating the other about the origin with a scale factor of $\frac{1}{2}$.

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

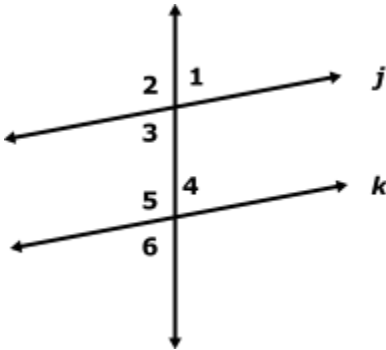


Enter the distance from point A at the bottom of the mountain to point B at the top of the mountain. Round your answer to the nearest foot.

feet

Directions: Answer the following question(s).

- 6 Lines j and k are shown in the diagram below. Some of the angles created when the lines are cut by a transversal are labeled in the diagram.



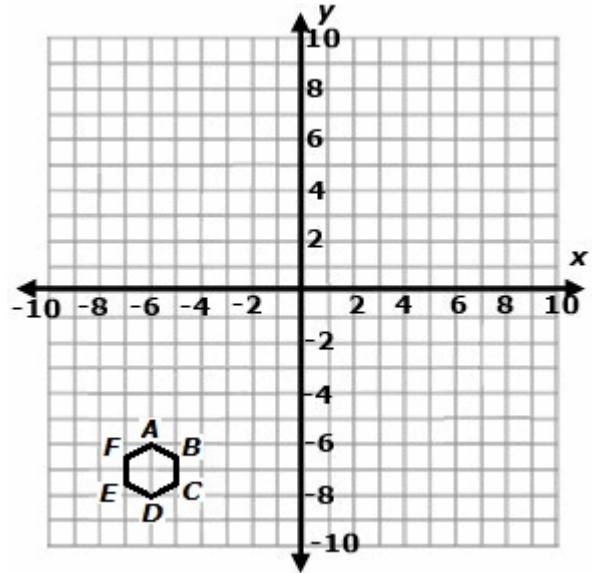
Select the claim that is true about lines j and k for all cases.

- A. If lines j and k are cut by a transversal such that $m\angle 1 = m\angle 6$, $m\angle 2 = m\angle 5$, and $m\angle 3 = m\angle 4$, then the lines must be parallel.
- B. If lines j and k are cut by a transversal such that $m\angle 1 + m\angle 6 = 180^\circ$, $m\angle 2 + m\angle 5 = 180^\circ$, and $m\angle 3 + m\angle 4 = 180^\circ$, then the lines must be parallel.
- C. If lines j and k are cut by a transversal such that $m\angle 1 = m\angle 6$, $m\angle 2 = m\angle 5$, and $m\angle 3 = m\angle 4$, then the lines must be perpendicular.
- D. If lines j and k are cut by a transversal such that $m\angle 1 + m\angle 6 = 90^\circ$, $m\angle 2 + m\angle 5 = 90^\circ$, and $m\angle 3 + m\angle 4 = 90^\circ$, then the lines must be perpendicular.

- 7 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.

- 8 An engineer is using a coordinate plane to design a new jet engine. The location of a hexagonal bolt in the jet engine, shown as Hexagon $ABCDEF$, is in the coordinate plane below.



The engineer realizes that the jet engine will run more efficiently if she uses a bolt that is similarly shaped to the original bolt with the center of dilation at the origin but has a scale factor of $\frac{1}{2}$.

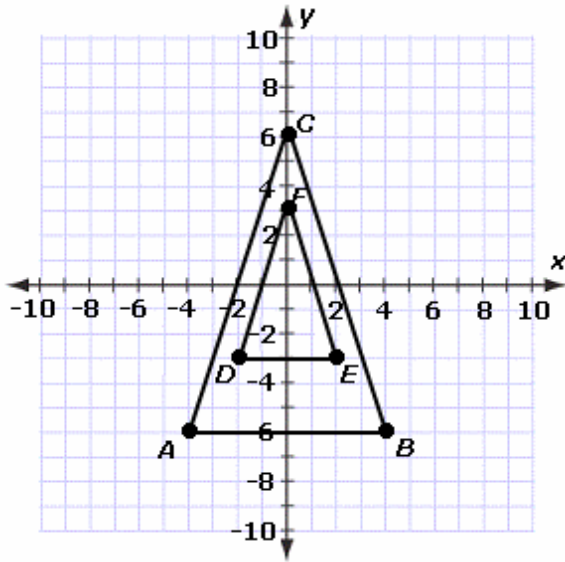
She plans to label the new bolt Hexagon $A'B'C'D'E'F'$ on the coordinate plane.

Enter the location of Point D' .

 ,

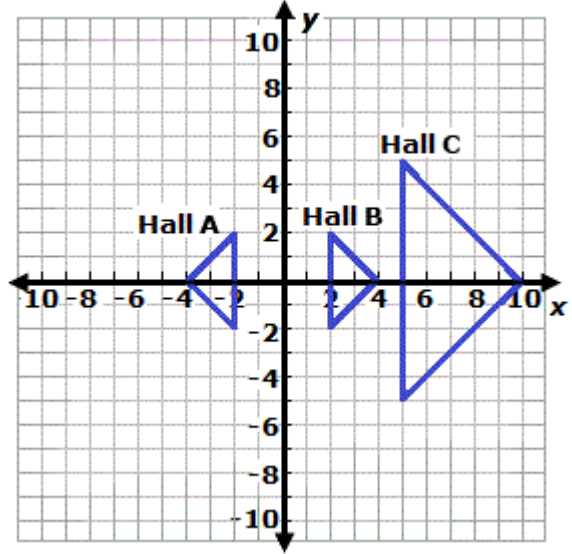
Directions: Answer the following question(s).

- 9 Triangle ABC is similar to triangle DEF by a dilation about the origin. Find the scale factor of the dilation. Enter your answer as a fraction.



- 10 An engineer is planning to construct triangular halls on a new construction site. A scale model of the engineer's triangular halls is shown below. Each unit represents 10 feet.

Triangular Halls on Construction Site

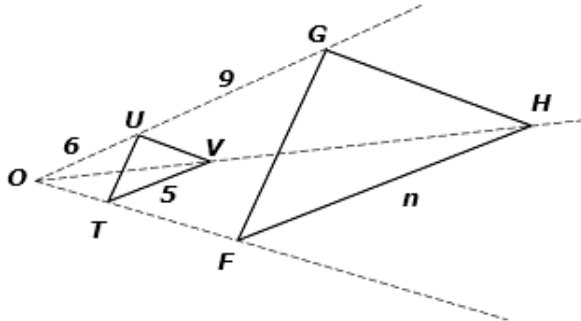


Which of the following statements are true about this scale model? Select *three* statements that apply.

- A. Hall C is similar to Hall A.
- B. Hall C is similar to Hall B.
- C. Hall C is congruent to Hall A.
- D. Hall B is congruent to Hall A.
- E. The scale factor of dilation applied to Hall B to produce Hall C is 5.

Directions: Answer the following question(s).

- 11 Triangle FGH is the image that resulted from the dilation of Triangle TUV . Complete the proportion to find the value of n in order to prove that Triangle FGH and Triangle TUV are similar.



$$\frac{5}{n} = \boxed{}$$

- 12 Which of these right triangles has a hypotenuse that is 1 unit longer than one of its legs? Select three that apply.
- A. a right triangle with a leg measuring 5 units and a hypotenuse measuring 13 units
 - B. a right triangle with a leg measuring 6 units and a hypotenuse measuring 16 units
 - C. a right triangle with a leg measuring 7 units and a hypotenuse measuring 25 units
 - D. a right triangle with a leg measuring 9 units and a hypotenuse measuring 41 units