

1

4

A) 4
B) 5
C) 8
D) 10

In the figure shown, right triangle ABC is similar to right triangle EDC , where $\angle ACB$ is congruent to $\angle CED$ and $AE=15$. What is the length of \overline{CE} ?

2

4

Triangle ABC above is isosceles with $AB = AC$ and $BC = 48$. The ratio of DE to DF is 5 : 7. What is the length of \overline{DC} ?

A) 12
B) 20
C) 24
D) 28

Note: Figure not drawn to scale.

3

5

In the figure above, $\triangle ABC$ is similar to $\triangle EDC$, with $\angle BAC$ corresponding to $\angle CED$ and $\angle ABC$ corresponding to $\angle CDE$. Which of the following must be true?

A) $\overline{AE} \parallel \overline{BD}$
B) $\overline{AE} \perp \overline{BD}$
C) $\overline{AB} \parallel \overline{DE}$
D) $\overline{AB} \perp \overline{DE}$

Note: Figure not drawn to scale.

4

8

Which of the following pieces of information is sufficient to prove that triangle ABC is an isosceles triangle?

I. \overline{AB} is congruent to \overline{BC}
II. $\angle A$ is congruent to $\angle C$

A) I is sufficient, but II is not.
B) II is sufficient, but I is not.
C) Either I or II is sufficient.
D) Neither I nor II is sufficient.

5

9

In triangle ABC , the measure of angle A is 23° and the measure of angle B is 97° . In triangle DEF , the measure of angle D is 23° and the measure of angle E is 97° . Which of the following additional pieces of information is needed to determine whether triangle ABC is similar to triangle DEF ?

A) The measure of angle C
B) The measure of angle F
C) The measure of angle C and the measure of angle F
D) No additional information is needed.

6

9

Triangle ABC and triangle DEF each have two angles measuring 35° , as shown. Which of the following additional pieces of information is sufficient to prove that triangle ABC is congruent to triangle DEF ?

A) the measures of $\angle ACB$ and $\angle DFE$ are equal.
B) The lengths of \overline{BC} and \overline{EF} are equal.
C) The lengths of \overline{AC} and \overline{DE} are equal.
D) No additional information is necessary to prove that the two triangles are congruent.

7

10

A) (3,-6)
 B) (4,-10)
 C) (6,-7)
 D) (6,-1)

In the xy -plane above, if point F (not shown) is placed so that triangle ABC is similar to triangle DFE , which of the following could be the coordinates of the point F ?

8

10

An architect drew the sketch below while designing a house roof. The dimensions shown are for the interior of the triangle.

Note: Figure not drawn to scale.

What is the value of $\cos x$?

9

11

Note: Figure not drawn to scale.

In the right triangle above, $x = 60$. What is the length of side \overline{AB} ?

A) 7
 B) 8
 C) 9
 D) It cannot be determined from the information given.

10

11

A) $\frac{BD}{DC}$
 B) $\frac{BC}{AC}$
 C) $\frac{AD}{BD}$
 D) $\frac{DC}{BC}$

In the figure above, which of the following ratios has the same value as $\frac{AB}{BC}$?

11

13

Triangles ABC and DEF each have a corresponding angle measuring 40° . Which additional piece of information is sufficient to determine whether these two triangles are similar?

A) The length of line segment AC
 B) The length of line segment DE
 C) The measure of another pair of corresponding angles in the two triangles.
 D) The lengths of one pair of corresponding sides in the two triangles.

12

16

Triangles ABC and DEF are shown above. Which of the following is equal to the ratio $\frac{BC}{AB}$?

A) $\frac{DE}{DF}$ C) $\frac{DF}{EF}$
 B) $\frac{DF}{DE}$ D) $\frac{EF}{DE}$

13

16

A) 1
B) 2
C) 4
D) 8

Triangles ABC and DEF above are similar. How much longer than segment EF is segment DE ?

14

16

Jim has a triangular shelf system that attaches to his showerhead. The total height of the system is 18 inches, and there are three parallel shelves as shown above. What is the maximum height, in inches, of a shampoo bottle that can stand upright on the middle shelf?

15

17

A summer camp counselor wants to find a length, x , in feet, across a lake as represented in the sketch above. The lengths represented by AB , EB , BD , and CD on the sketch were determined to be 1800 feet, 1400 feet, 700 feet, and 800 feet, respectively. Segments AC and DE intersect at B , and $\angle AEB$ and $\angle CDB$ have the same measure. What is the value of x ?

16

18

In the figure above, $\overline{AE} \parallel \overline{CD}$ and segment AD intersects segment CE at B . What is the length of segment CF ?

17

18

In the figure above, \overline{BD} is parallel to \overline{AE} . What is the length of \overline{CE} ?

18

22

The area, in square inches, of a certain right triangle is given by the equation $A = \frac{1}{2}b(2b)$, where b is the length, in inches, of one of the legs of the triangle. Which expression represents the length, in inches, of the shortest leg of the triangle?

A) $\frac{1}{2}b$ C) $2b$
B) b D) $2b^2$

19

22

Triangle ABC and Triangle DEF each have an angle measuring 29° and an angle measuring 54° , as shown above. Which of the following statements is sufficient to prove triangle ABC is congruent to triangle DEF ?

A) The length of \overline{EF} is 10.
 B) The measure of angle EDF is 97° .
 C) The length of \overline{BC} is equal to the length of \overline{EF} .
 D) The measure of angle BAC is equal to the measure of angle EDF .

20

24

In the figure shown, \overline{GE} and \overline{DH} intersect at point F . Which of the following additional statements is (are) sufficient to prove that triangle DEF is similar to triangle HGF ?

I. The length of \overline{DE} is $\frac{1}{3}$ the length of \overline{HG}
 II. DE is parallel to HG

A) I is sufficient, but II is not.
 B) II is sufficient, but I is not.
 C) I is sufficient, and II is sufficient.
 D) Neither I nor II is sufficient.

21

33

The figure above is the floor plan drawn by an architect for a small concert hall. The stage has depth 8 meters (m) and two walls each of length 10 m. If the seating portion of the hall has an area of 180 square meters, what is the value of x ?

22

33

Triangle ABC is similar to triangle DEF , where angle A corresponds to angle D . What is the value of $\cos F$?

- 1 D
- 2 D
- 3 C
- 4 C
- 5 D
- 6 B

- 7 B
- 8 $\frac{2}{3} \cdot 66$
- 9 B
- 10 A
- 11 C
- 12 B
- 13 B
- 14 9
- 15 1600
- 16 12
- 17 30
- 18 B

- 19 C
- 20 B
- 21 15
- 22 $\frac{4}{5} \cdot 8$