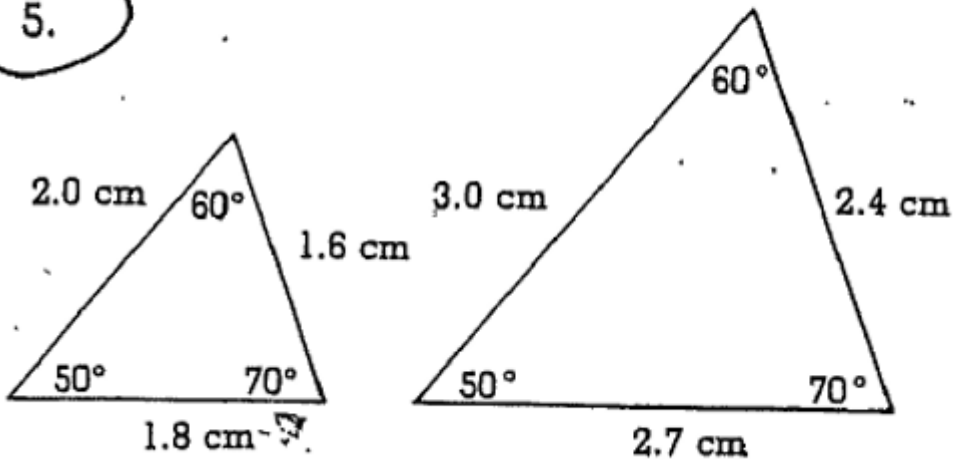


exercises

The numbers on this worksheet keep changing, because the problems are copied from various places.

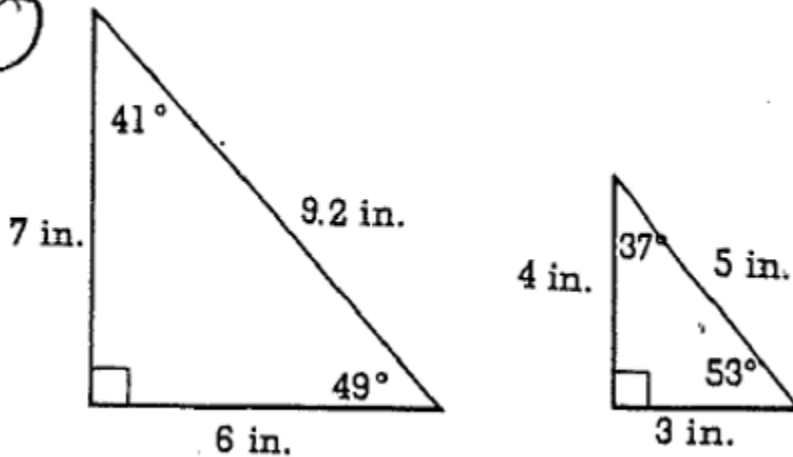
Tell whether or not the figures in each pair are similar.

5.

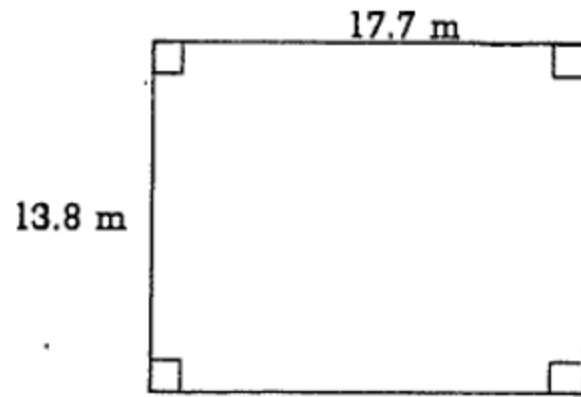
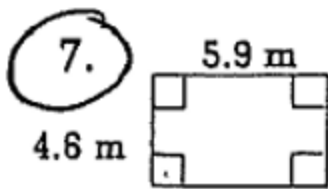


YES \rightarrow All corresponding angles are \cong , and $\frac{2.0}{3.0} = \frac{1.6}{2.4} = \frac{1.8}{2.7}$

6.

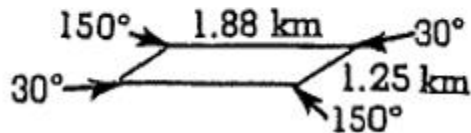
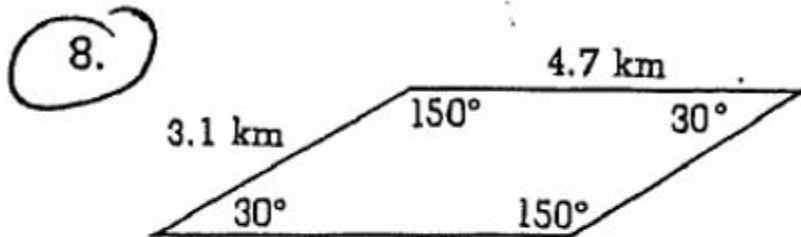


NO \rightarrow Corresponding angles AREN'T \cong



5.9/17.7
.3333333333
4.6/13.8
.3333333333

→ YES



3.1/1.25 2.48
4.7/1.88 2.5

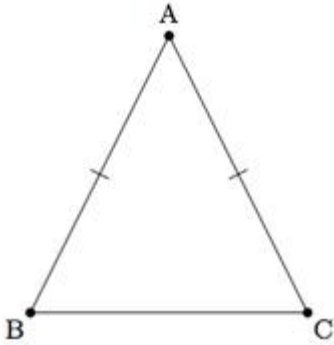
→ NO ... Corresponding sides AREN'T proportional
(They're close, but not exactly the same.)

Written For each of the following, write yes or no. Then, explain your answer.

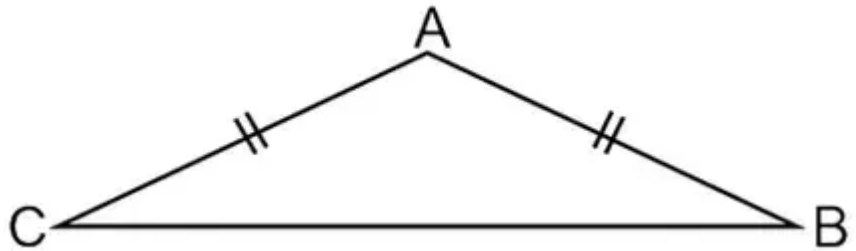
- 1. All equilateral triangles are similar.
- 3. All rectangles are similar.
- 5. All rhombuses are similar.
- 7. All trapezoids are similar.
- 9. Similar quadrilaterals are congruent.

- 2. All isosceles triangles are similar.
- 4. All regular hexagons are similar.
- 6. Congruent triangles are similar.
- 8. All parallelograms are similar.
- 10. Congruent quadrilaterals are similar.

- 1. YES
- 2. NO

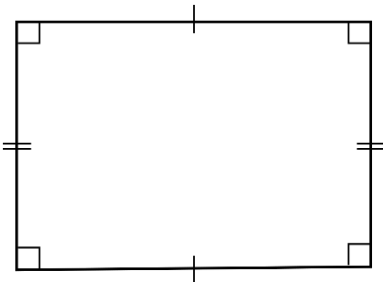


and

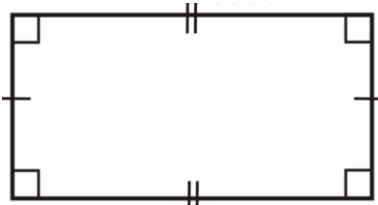


are not the same shape (corresponding angles aren't \cong)

- 3. NO



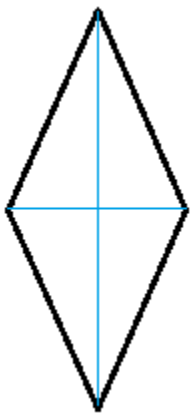
and



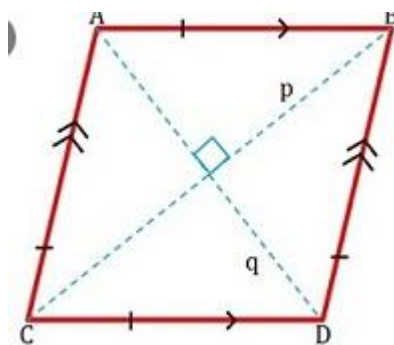
aren't the same shape because one is

"fatter" than the other.

- 4. YES
- 5. NO

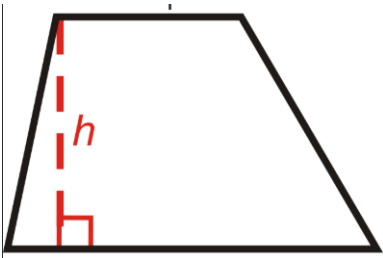


and



aren't the same shape.

- 6. YES (If it's the same size and shape, it has to be the same shape.)
- 7. NO



and aren't the same shape

- 8. NO (corresponding angles aren't necessarily congruent)
- 9. NO (They're the same shape, but not necessarily the same size.)
- 10. YES (If they're the same size & shape, they're automatically the same shape.)

$$\textcircled{1.} \frac{11}{12} = \frac{x}{24}$$

$$24 * 11 / 12 = 22$$

$$\textcircled{3.} \frac{t}{18} = \frac{5}{6}$$

$$18 * 5 / 6 = 15$$

$$\textcircled{6.} \frac{7}{12} = \frac{9.8}{m}$$

$$12 * 9.8 / 7 = 16.8$$

$$\textcircled{8.} \frac{7.29}{a} = \frac{27}{9}$$

$$9 * 7.29 / 27 = 2.43$$

$$\textcircled{9.} \frac{x}{30 - x} = \frac{2}{3}$$

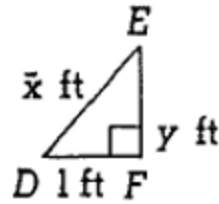
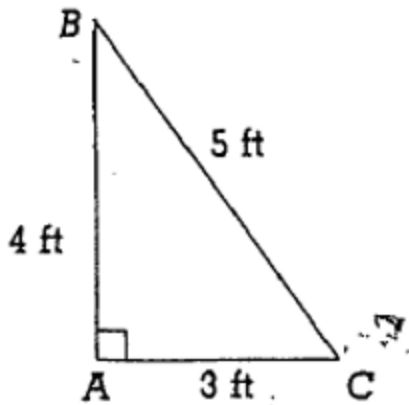
$$\begin{aligned} 9. \quad 3x &= 2(30 - x) \\ 3x &= 60 - 2x \\ 5x &= 60 \\ x &= 12 \end{aligned}$$

$$\textcircled{11.} \frac{3 - n}{n + 1} = \frac{2}{1}$$

$$\begin{aligned} 11. \quad 3 - n &= 2(n + 1) \\ 3 - n &= 2n + 2 \\ 1 &= 3n \\ \frac{1}{3} &= n \end{aligned}$$

For each of the following, find x .

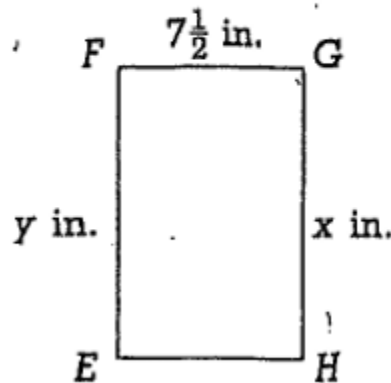
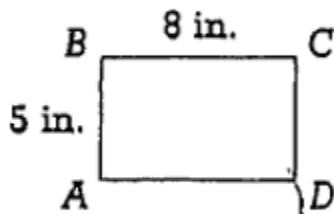
11. $\triangle ABC \sim \triangle FED$



$1 \cdot 5 / 3$
1.666666667

$\frac{3}{1} = \frac{5}{x} \rightarrow$

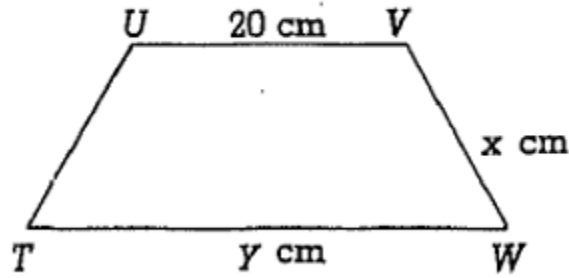
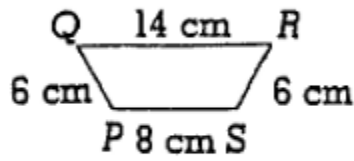
12. $\square ABCD \sim \square FGHE$



$7.5 \cdot 8 / 5$
12

$\frac{Short}{Short} = \frac{Long}{Long}$, So ... $\frac{5}{7.5} = \frac{8}{x} \rightarrow$

13. trapezoid $PQRS \sim$ trapezoid $VWTU$

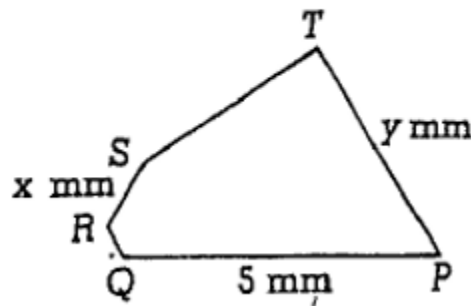
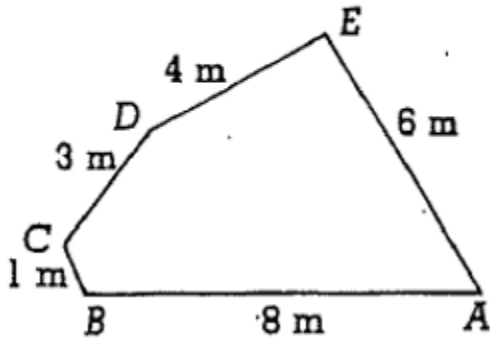


$$\frac{20 \cdot 6}{8} = 15$$

$$\frac{8}{20} = \frac{6}{x}$$



14. pentagon $ABCDE \sim$ pentagon $PQRST$

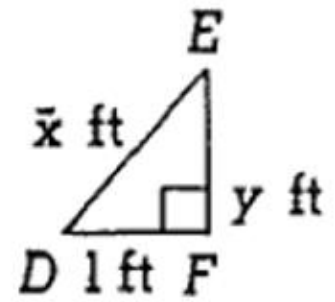
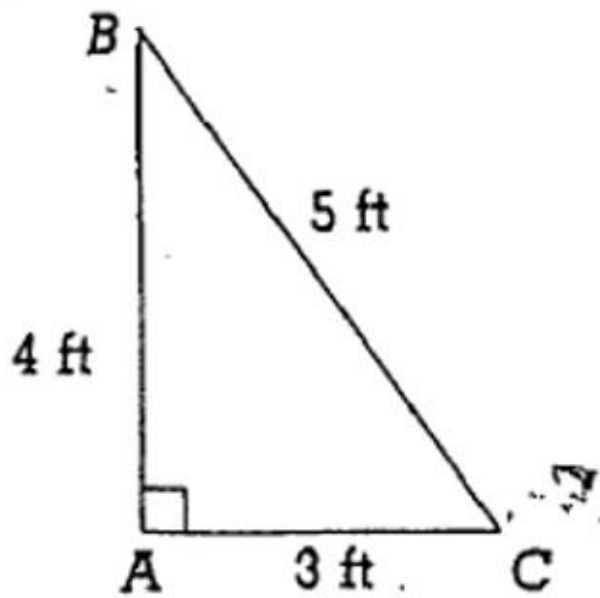


$$\frac{5 \cdot 3}{8} = 1.875$$

$$\frac{8}{5} = \frac{3}{x}$$



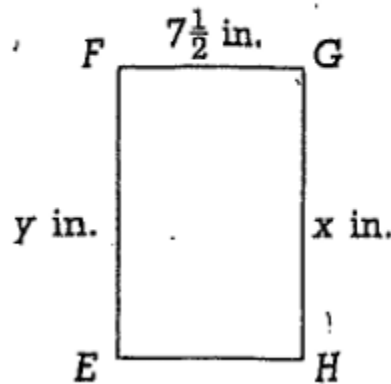
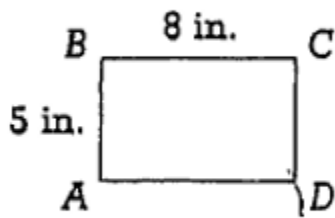
15-18. In problems 11-14, find y .



$1 \cdot \frac{4}{3}$
 1.333333333

$\frac{3}{1} = \frac{4}{y} \rightarrow$

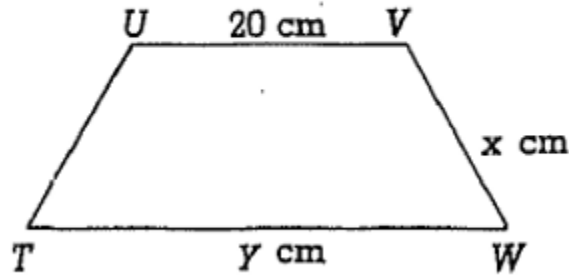
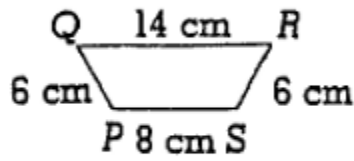
12. $\square ABCD \sim \square FGHE$



$7.5 \cdot \frac{8}{5}$
 12

$\frac{5}{7.5} = \frac{8}{y} \rightarrow$

13. trapezoid PQRS ~ trapezoid VWTU

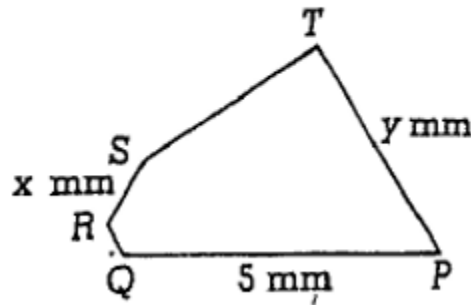
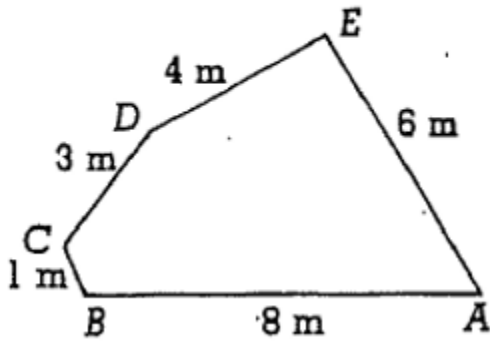


$$\frac{20 \cdot 14}{8} = 35$$

$$\frac{8}{20} = \frac{14}{y}$$



14. pentagon ABCDE ~ pentagon PQRST



$$\frac{5 \cdot 6}{8} = 3.75$$

$$\frac{8}{5} = \frac{6}{y}$$



Solve each problem.

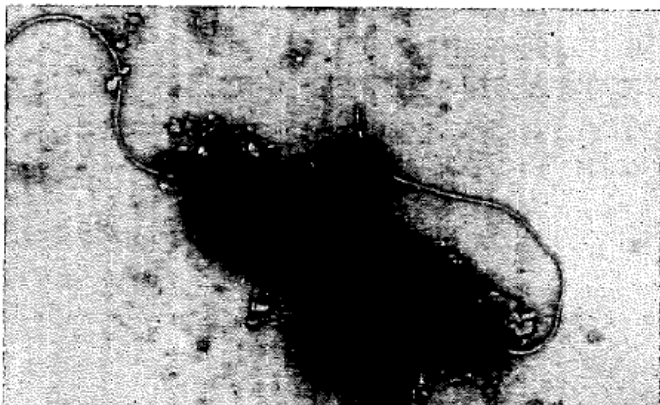
- 23) Figures in a scale drawing are similar to the actual figures. Suppose the side of a pentagon that is 12 m long corresponds to a side on a scale drawing 3 cm long. Find the length of a side that measures 2 cm on the scale drawing.



$$12 \cdot \frac{2}{3} = 8$$

$$\frac{12m}{3cm} = \frac{Xm}{2cm} \rightarrow$$

8 meters



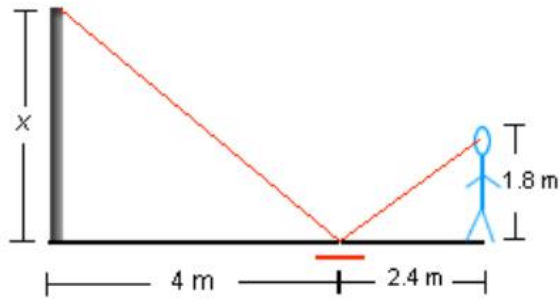
$$3.1 \cdot \frac{0.2}{2.4} = .2583333333$$

$$\frac{2.4}{3.1} = \frac{0.2}{x} \rightarrow$$

about .26 microns

- 24) The figures seen in electron microscope photographs are similar to the actual figures. Suppose the length of a cell that is 2.4 cm in a photograph corresponds to an actual cell 3.1 microns long. Find the length of a cell that is 0.2 cm in the photograph.

1. A statue, honoring Kobe Bryant, can be found in Los Angeles near the Staples Center. Use the information below to determine the unknown height of the statue.



$$4 * 1.8 / 2.4 = 3$$

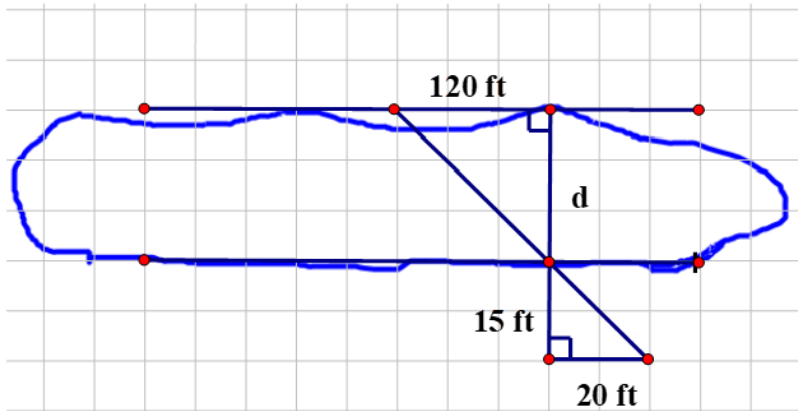
$$\frac{x}{1.8} = \frac{4}{2.4}$$



3 meters

4.

To find the distance d across a lake, you locate the points as shown. Find d . Round your answer to the nearest tenth.



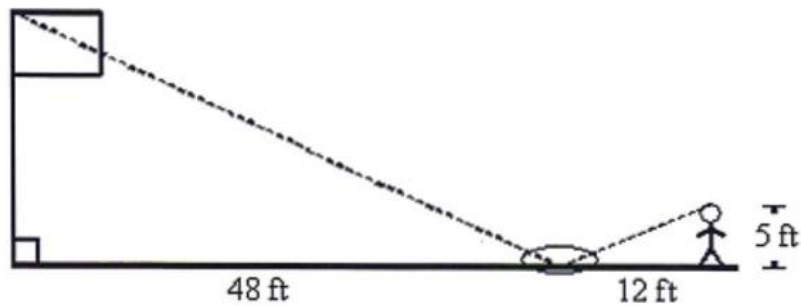
$$120 * 15 / 20 = 90$$

$$\frac{120}{20} = \frac{d}{15}$$



90 feet

7. Michele wanted to measure the height of her school's flagpole. She placed a mirror on the ground 48 feet from the flagpole, then walked backwards until she was able to see the top of the pole in the mirror. Her eyes were 5 feet above the ground and she was 12 feet from the mirror. Using similar triangles, find the height of the flagpole to the nearest tenth of a foot.



- A. 20 ft B. 38.4 ft C. 55 ft D. 25 ft

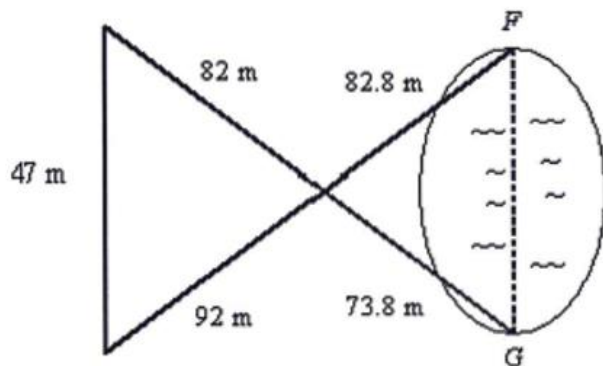
$$48 \cdot 5 / 12 = 20$$

$$\frac{48}{12} = \frac{x}{5}$$

→

20 ft – A

8. Campsites *F* and *G* are on opposite sides of a lake. A survey crew made the measurements shown on the diagram. What is the distance between the two campsites? The diagram is not to scale.

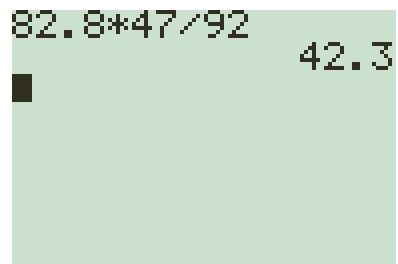


- A. 42.3 m B. 47.4 m C. 73.8 m D. 82.8 m

$$73.8 \cdot 47 / 82 = 42.3$$

$$\frac{82}{73.8} = \frac{47}{x}$$

→

A calculator screen with a light green background. The display shows the calculation $82.8 * 47 / 92$ and the result 42.3 . There is a small black square on the left side of the screen, likely a cursor or a UI element.

You could also set this up as $\frac{92}{82.8} = \frac{47}{x}$ →

It is important that you match up the shorter side of one triangle with the shorter side of the other. Either way, you get 42.3 meters, so A