

Math 7 Test
SOL 7.6—Similarity

Name: _____

Place words from the box into the blanks to make the statements true. Words may be used more than once.

size	similar	congruent	ratio	shape	proportional
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1. Corresponding angles are _____ on similar figures, and the lengths of corresponding sides are _____ on similar figures.
2. Congruent polygons have the same _____ and _____.
3. Similar polygons have the same _____ but a different _____.
4. Congruent polygons are _____ polygons for which the _____ of the corresponding sides is 1 : 1.

Follow directions and answer the questions below. Show all work in the space provided.

5. Given the statement $\triangle JKL \sim \triangle MNO$, sketch and label the vertices of the triangles in the space below. Complete the similarity statements.

$\triangle JKL$ (sketch & label below)

$\triangle MNO$ (sketch & label below)

$\angle J$ corresponds to _____

\overline{MN} corresponds to _____

$\angle O$ corresponds to _____

\overline{JL} corresponds to _____

$\angle K$ corresponds to _____

\overline{NO} corresponds to _____

6. Rectangular note cards come in the sizes 4 inches by 5 inches, 3 inches by 6 inches, and 6 inches by $7\frac{1}{2}$ inches. Which two sizes are similar rectangles? What is the scale factor? (hint—draw and label pictures)

Scale factor: _____

7. Given $\square BCDE \sim \square PQRS$, draw and label figures to represent the parallelograms and complete the similarity statements.

$\square BCDE$ (sketch & label below)

$\square PQRS$ (sketch & label below)

$\angle D$ corresponds to _____

\overline{QR} corresponds to _____

$\angle S$ corresponds to _____

\overline{BE} corresponds to _____

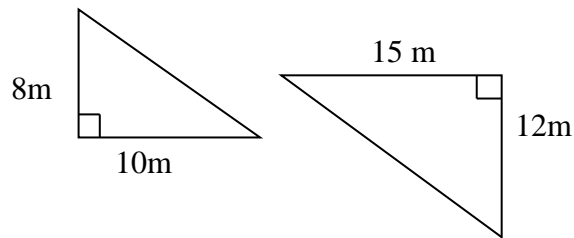
$\angle Q$ corresponds to _____

\overline{DE} corresponds to _____

8. Given $\square ABCD \sim \square EFGH$ complete the proportion statements.

a) $\frac{\overline{CD}}{\overline{GH}} = \frac{\overline{DA}}{\square}$ b) $\frac{\overline{AB}}{\overline{EF}} = \frac{\overline{BC}}{\square}$ c) $\frac{\square}{\overline{CB}} = \frac{\overline{GH}}{\overline{CD}}$

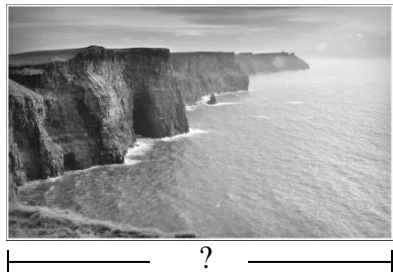
9. Write a proportion for corresponding sides to prove the two triangles below are similar.



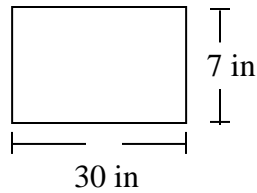
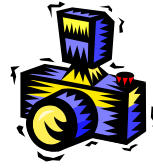
Work space:

10. At noon, a streetlight casts a 12 foot shadow. A 6-foot person casts a shadow of 3 feet. The triangles formed by the light and its shadow and the person and his shadow are similar. Sketch a picture to represent this situation and write and solve a proportion to find the height of the streetlight.

11. The picture below is Sarah's favorite vacation picture.

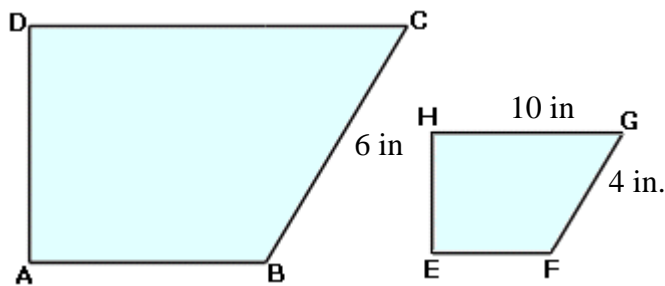


21 in



Sarah had a reduced copy of the picture made as a gift for her father. If the reduced picture was similar to the original and the height of the reduced picture was 7 inches, what was the width of the original picture? Show all work to the right of the pictures above.

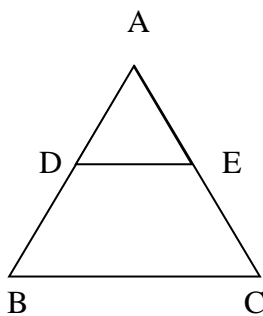
12. Trapezoid ABCD is similar to trapezoid EFGH.



What is the length of \overline{DC} ? Show all work in the space at right. _____

Name the corresponding sides for the similar triangles below.

13.

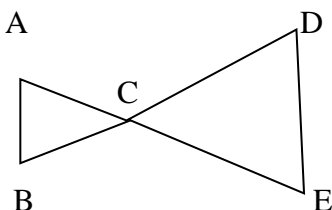


\overline{BC} corresponds to _____

\overline{AB} corresponds to _____

\overline{AC} corresponds to _____

14.



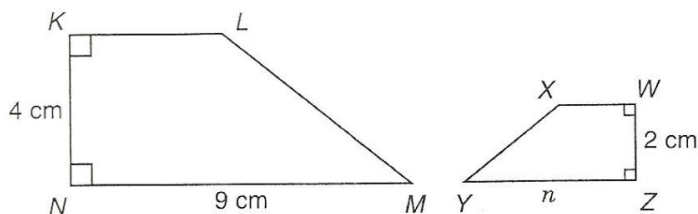
\overline{BC} and _____

\overline{DE} and _____

\overline{AC} and _____

Select the correct answer. Show all work. Place answers in blanks.

_____ 15. In the diagram below, figure KLMN is similar to figure WXYZ.



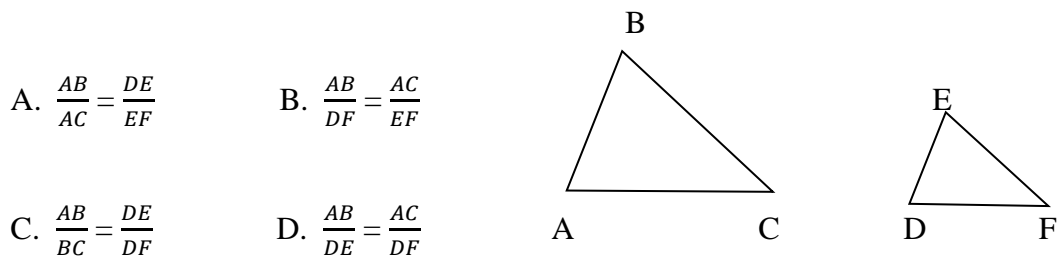
Which of the following proportions can be used to find the value of n ?

- A. $\frac{4}{n} = \frac{2}{9}$ B. $\frac{2}{n} = \frac{9}{4}$ C. $\frac{13}{n} = \frac{2}{4}$ D. $\frac{4}{2} = \frac{9}{n}$

_____ 16. If the corresponding angles of two polygons are congruent and the lengths of the corresponding sides of the polygons are proportional, the polygons are—
 A. regular B. congruent C. symmetric D. similar

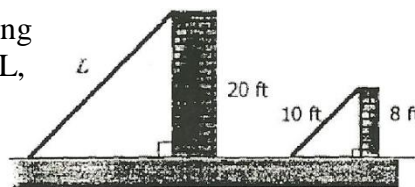
_____ 17. Which of the following is *not* true about similar figures?
 A. Similar figures always have the same shape.
 B. Similar figures always have the same size.
 C. Similar figures always have corresponding angles that are congruent.
 D. Similar figures always have corresponding sides that are proportional.

_____ 18. If $\triangle ABC$ is similar to $\triangle DEF$, which of the following must be true?

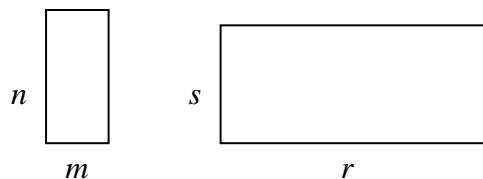


_____ 19. The two ladders shown in the drawing are each leaning against a wall at the same angle. What is the length, L , of the longer ladder?

- A. 4 ft. B. 16 ft.
 C. 25 ft. D. 28 ft.



_____ 20. Which would show that these two rectangles are similar?



- A. $\frac{m}{n} = \frac{s}{r}$ B. $\frac{n}{r} = \frac{s}{m}$ C. $\frac{m}{s} = \frac{n}{r}$ D. $\frac{n}{s} = \frac{r}{m}$

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Answer Key

1. Congruent; proportional
2. Size; shape (order can be switched)
3. Shape; size (order must match)
4. Similar; ratio
5. Sketches may vary; $\angle J$ and $\angle M$; $\angle O$ and $\angle L$; $\angle K$ and $\angle N$; \overline{MN} and \overline{JK} ; \overline{JL} and \overline{MO} ; \overline{NO} and \overline{KL}
6. 4 x 5 and 6 x 7.5 are similar; scale factor either 1.5 (increasing) or 0.75 (decreasing)
7. Sketches may vary; $\angle D$ and $\angle R$; $\angle S$ and $\angle E$; $\angle Q$ and $\angle C$; \overline{QR} and \overline{CD} ; \overline{BE} and \overline{PS} ; \overline{DE} and \overline{RS}
8. a) \overline{HE}
b) \overline{FG}
c) \overline{GF}
9. Answers will vary
10. Drawings will vary; 24 feet
11. 90 in.
12. 15 in.
13. \overline{DE} ; \overline{AD} ; \overline{AC}
14. \overline{DC} ; \overline{BA} ; \overline{EC}
15. D
16. D
17. B
18. D
19. C
20. C