

Unit 3: Similarity

PRACTICE

Name: _____

Date: _____

Solve each problem and give the exact short answer. Use plain-text notation (fractions like $\frac{3}{4}$, ratios like 2:3, coordinates like (3, -4)).

1. A dilation centered at the origin with scale factor 3 maps point A(2, -5) to A'. What are the coordinates of A'?

Answer: _____

3. A dilation centered at the origin maps point P(6, 9) to P'(4, 6). What is the scale factor of the dilation?

Answer: _____

5. Two triangles are similar with a scale factor (large to small) of 5:2. The area of the smaller triangle is 12 square units. What is the area of the larger triangle?

Answer: _____

7. Triangle RST is similar to triangle XYZ with scale factor RST to XYZ equal to $\frac{4}{3}$. If side XY = 9, find the length of the corresponding side RS.

Answer: _____

9. A 6-foot-tall person casts a shadow 4 feet long. At the same time, a nearby flagpole casts a shadow 30 feet long. Using similar triangles, how tall is the flagpole in feet?

Answer: _____

2. Triangle ABC is similar to triangle DEF. AB = 8 and its corresponding side DE = 12. If BC = 10, find the length of the corresponding side EF.

Answer: _____

4. In a triangle, a line parallel to one side divides the other two sides proportionally. It splits one side into segments of length 4 and 6, and splits the second side into a segment of length 8 and an unknown segment x (matching the 6). Find x.

Answer: _____

6. In triangle ABC, angle A = 50° and angle B = 65° . In triangle DEF, angle D = 50° and angle E = 65° . By the Angle-Angle criterion, are the triangles similar? Answer yes or no.

Answer: _____

8. A dilation centered at the origin with scale factor $\frac{1}{2}$ maps point B(-8, 10) to B'. What are the coordinates of B'?

Answer: _____

10. Two similar polygons have corresponding sides in the ratio 3:7. The perimeter of the smaller polygon is 24. What is the perimeter of the larger polygon?

Answer: _____

11. Segment AB has length 20. Point P lies on AB so that $AP:PB = 2:3$. Find the length of AP.

Answer: _____

12. Two similar rectangles have a scale factor of 2:5. The area of the larger rectangle is 100 square units. What is the area of the smaller rectangle?

Answer: _____