

## Unit 2: Scale Drawings, Similarity, and Slope

### ADVANCED

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Show your work and give each answer as an exact value — a whole number, a fraction like  $\frac{3}{4}$ , or a coordinate pair like  $(3, -4)$ . No calculators.

1. A scaled copy of a figure is made using scale factor  $\frac{5}{6}$ . Then a scaled copy of THAT new figure is made using scale factor  $\frac{9}{10}$ . What single scale factor takes the original figure directly to the final figure?

Answer: \_\_\_\_\_

2. On a map with scale 2 cm : 15 km, two towns are 9.6 cm apart. What is the actual distance between the towns, in kilometers?

Answer: \_\_\_\_\_

3. A scale drawing uses the scale 1 cm : 3.5 m. A wall in real life is 84 m long. How long, in centimeters, is that wall in the drawing?

Answer: \_\_\_\_\_

4. A polygon has area  $48 \text{ cm}^2$ . A scaled copy of it is made with scale factor  $\frac{5}{2}$ . What is the area, in  $\text{cm}^2$ , of the scaled copy?

Answer: \_\_\_\_\_

5. A scaled copy of a triangle has area  $245 \text{ in}^2$ . The scale factor used to make the copy was  $\frac{7}{3}$ . What was the area, in  $\text{in}^2$ , of the original triangle?

Answer: \_\_\_\_\_

6. A dilation centered at the origin with scale factor  $\frac{3}{2}$  is applied to the point  $(-8, 6)$ . What are the coordinates of the image point?

Answer: \_\_\_\_\_

7. A dilation is centered at the point  $(2, -1)$  with scale factor 3. What are the coordinates of the image of the point  $(5, 3)$ ?

Answer: \_\_\_\_\_

8. A dilation centered at the origin maps the point  $(6, -15)$  to the point  $(10, -25)$ . What is the scale factor of this dilation?

Answer: \_\_\_\_\_

9. Triangle DEF is similar to triangle ABC. In triangle ABC the three side lengths are 14, 20, and 24. In triangle DEF, the side that corresponds to the length-20 side of ABC is 35. What is the length in DEF of the side that corresponds to the length-24 side of ABC?

Answer: \_\_\_\_\_

10. A line passes through the origin. Reasoning with similar triangles, the point on the line at  $x = 8$  has  $y$ -value 20. What is the  $y$ -value of the point on the same line where  $x = 14$ ?

Answer: \_\_\_\_\_

11. What is the slope of the line that passes through the points  $(-4, 9)$  and  $(6, -15)$ ?

Answer: \_\_\_\_\_

12. A line has slope  $-3/4$  and passes through the point  $(8, -2)$ . What is its y-intercept (the value of  $b$  in  $y = mx + b$ )?

Answer: \_\_\_\_\_