Name _____ Date _____ Class _____

Ratios, Proportions, Similarity and Dilations

Quiz

Choose the best answer.

1. A thunderstorm produced 114 lightning strikes in $1\frac{1}{2}$ hours. What was the unit rate of lightning strikes?

   A 57 strikes per hour

   B 76 strikes per hour

   C 114 strikes per hour

   D 228 strikes per hour

2. If you ride your bike 30 kilometers in 2 hours, what is your average speed?

   F 15 km/h H 40 km/h

   G 30 km/h J 60 km/h

3. Which of these is a lower price than 6 for $9?

   A 4 for $7 C 7 for $10

   B 5 for $8 D 10 for $16

4. A train traveled 12 miles in 30 minutes. At this rate, how far will it travel in 45 minutes?

   F 16 miles H 27 miles

   G 18 miles J 35.5 miles

5. What is the value of a in the proportion $\frac{a}{24} = \frac{6}{16}$?

   A $a = 3$ C $a = 9$

   B $a = 8$ D $a = 64$

6. If $\frac{m}{8} = \frac{5}{20}$, what is the value of m?

   F $\frac{1}{2}$ H 4

   G 2 J 32

7. A picture that is 820 mm by 410 mm is to be reduced so that its larger dimension becomes 600 mm. What will its smaller dimension be?

   A 560 mm C 190 mm

   B 1200 mm D 300 mm

8. A common scale for do-it-yourself airplane models is 1:48. The F-117A Stealth Fighter is 63 feet, 9 inches long. To the nearest inch, how long would a model of this plane be?

   F 9 in. H 13 in.

   G 12 in. J 16 in.

9. An advertisement on a billboard measures 22 ft long and 8 ft high. If the ad is transferred to the side of a bus and is 30 in. long, how tall is the new ad, to the nearest inch?

   A 9 in. C 11 in.

   B 10 in. D 12 in.

10. A square has a side length of 2.5 feet. If the square is dilated by a factor of 2.5, what is the length of a side of the new square?

    A 3.75 C 5

    B 4.25 D 6.25

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11. A figure has vertices (–13, 13), (26, 52), (39, 39). What would be the new coordinates of the vertices to the nearest tenth if the image were reduced by a scale factor of 0.77 with the origin as the center of dilation?

F (–16.9, 16.9), (33.8, 67.6), (50.7, 50.7)

G (–10, 10), (20, 40), (30, 30)

H (10, 10), (–20, 40), (–30, 30)

J (16.9, 16.9), (33.8, 67.6), (50.7, 50.7)

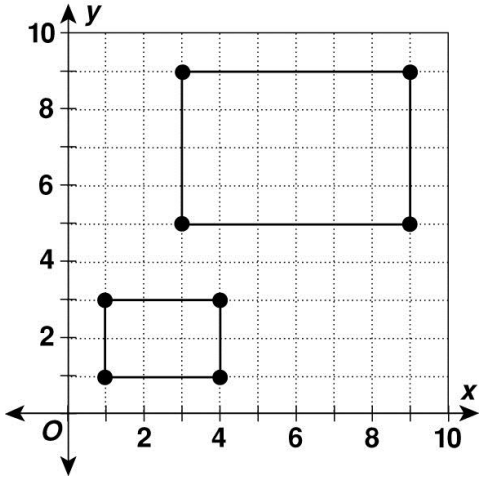
12. A square has a side length of 2.5 feet. If the square is dilated by a factor of 2.5, what is the length of a side of the new square?

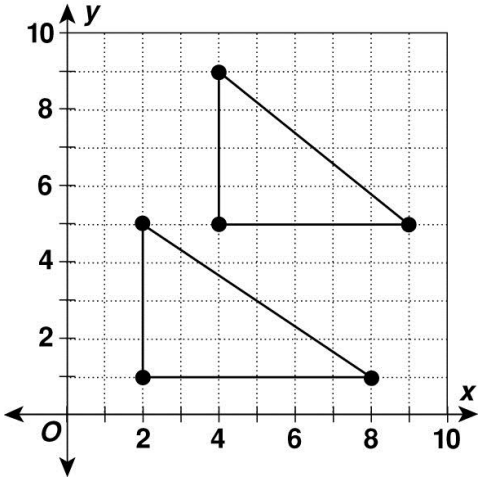
A 3.75 C 5

B 4.25 D 6.25

Tell whether each transformation is a dilation.

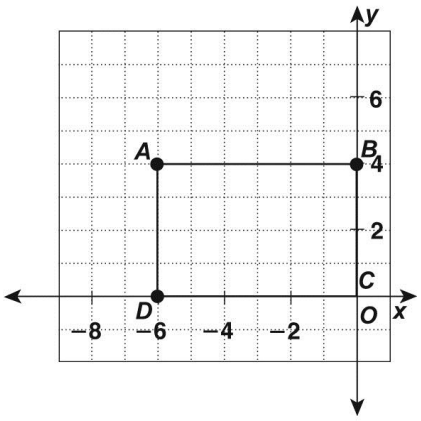
1.





Dilate each figure by the given scale factor with the origin as the center of dilation. What are the vertices of the image?

3. scale factor of $\frac{1}{2}$



4. scale factor of 3