State whether a dilation using the scale factor \( k \) results in a reduction or an enlargement of the original figure.

1. \( k = 3 \)

2. \( k = \frac{1}{3} \)

3. \( k = \frac{5}{4} \)

4. \( k = 0.93 \)

\( A \) and \( B \) are the endpoints of \( \overline{AB} \). Complete the coordinates of \( C \) and \( D \), the endpoints of the image after a dilation of scale factor \( k \).

5. \( A(1, 1), B(3, 1), \ k = 2 \)

\[(x, y) \rightarrow (2x, 2y)\] \( A(1, 1) \rightarrow C(______, ______) \) \( B(3, 1) \rightarrow D(______, ______) \)

6. \( A(4, 4), \ B(8, 12), \ k = \frac{3}{4} \)

\[(x, y) \rightarrow \left(\frac{3}{4}x, \frac{3}{4}y\right)\] \( A(4, 4) \rightarrow C(______, ______) \) \( B(8, 12) \rightarrow D(______, ______) \)

7. \( A(0, 0), B(-3, 2), \ k = 5 \)

\[(x, y) \rightarrow (5x, 5y)\] \( A(0, 0) \rightarrow C(______, ______) \) \( B(-3, 2) \rightarrow D(______, ______) \)

Use the scale factor to find the coordinates of \( A' \) and \( B' \). Then draw a dilation of the figure with the given vertices using the given scale factor \( k \).

8. \( A(2, 2), B(2, 0); \ k = 2 \)

\( A'(______,______) \ B'(______,______) \)

9. \( A(2, 4), B(6, 2); \ k = \frac{1}{2} \)

\( A'(______,______) \ B'(______,______) \)
10. \( A(-1, 1), B(1, 1), C(-1,0); k = 3 \)

\[ A'(\text{_____}, \text{_____}) \quad B'(\text{_____}, \text{_____}) \]

11. \( A(0,0), B(3,3), C(6,0), D(3, -3); k = \frac{1}{3} \)

\[ A'(\text{_____}, \text{_____}) \quad B'(\text{_____}, \text{_____}) \]

Draw a dilation of the figure using the given scale factor.

12. \( k = 2 \)

13. \( k = \frac{1}{4} \)

14. \( k = \frac{1}{2} \)

15. \( k = 1\frac{1}{2} \)
Determine whether the dilation from Figure A to Figure B is a reduction or an enlargement. Then, find the values of the variables.

16. Point A is a vertex of a polygon. Point R is the image of A after a dilation. Find the scale factor of the dilation.

17. Determine whether the dilation from Figure A to Figure B is a reduction or an enlargement.

18. 

19. 

17. 

20. A(3, 4), R(9, 12) 

21. A(9, 12), R(6, 8) 

22. A(–2, –3), R(–10, –15)

Determine whether the dilation from Figure A to Figure B is a reduction or an enlargement. Then find its scale factor.

23. 

24. 

25. 

k = _______ 

k = _______ 

k = _______
26. **Television Screens** The screen on your old television is 20 inches wide and 15 inches high. The screen on your new widescreen television is 16 inches wide and 9 inches high. Is the screen on your new TV a dilation of the screen on your old TV? Explain.

27. **Painting** You are using a photograph that is 4 inches wide and 6 inches high to paint a portrait of a friend on a canvas that is 1 foot wide and 18 inches high. Are the dimensions of the portrait a dilation of the dimensions of the photograph? If so, state the scale factor. If not, explain why not.

28. **Overhead Projectors** Your teacher draws a circle on an overhead projector. The projector then displays an enlargement of the circle on the wall. The circle drawn has a radius of 3 inches. The circle on the wall has a diameter of 4 feet. What is the scale factor of the enlargement?

29. **Posters** A poster is enlarged and then the enlargement is reduced as shown in the figure.
   a. What is the scale factor of the enlargement? the reduction?
   b. A second poster is reduced directly from size A to size C. What is the scale factor of the reduction?
   c. How are the scale factors in part (a) related to the scale factor in part (b)?