Dilations

dilation: a transformation that

similarity transformation: when a transformation produces a

center of dilation: in which dilations are performed in respect to; unless otherwise stated,

scale factor of a dilation:

isometry dilation: a dilation with a

*similarity theorems can be used to verify a dilation produces a similar triangle
7.6 9.6 Dilations - Notes

**enlargement:**
a dilation with a scale factor greater than 1

*the preimage is blue, the image is green
*center of dilation: point C

**reduction:**
a dilation with a scale factor between 0 and 1

*the preimage is blue, the image is green
*center of dilation: point C

*the distance from the center of dilation \( C \) and the image point \( P' \)
is found by

\[ k \cdot CP \]

\( \triangle LN'P' \) is the image of \( \triangle LNP \) under a dilation with
center \( C \) and scale factor 2.5.
To draw dilations:

1. Draw rays from the center of dilation through each vertex of the figure.
2. Using a ruler, find the distance from the center to the preimage point.
3. Multiply the scale factor by the distance and use that value to find the location for the image point.
4. Connect the image points to draw the dilated figure.

Copy \(\triangle ABC\) and point \(D\). Then use a ruler to draw the image of \(\triangle ABC\) under a dilation with center \(D\) and scale factor \(\frac{1}{2}\).

To draw dilations in the coordinate plane:

Multiply the \(x\) & \(y\) coordinates by the scale factor \((x, y) \rightarrow (kx, ky)\)
**Standardized Test Practice**

**SHORT RESPONSE** What is the scale factor of the dilation shown below?

![Dilation Diagram]

**EXTENDED RESPONSE** Quadrilateral $PQRS$ was dilated to form quadrilateral $WXYZ$.

a. Is the dilation from $PQRS$ to $WXYZ$ an enlargement or reduction?

b. Which number best represents the scale factor for this dilation?

Tionna wants to replicate a painting in an art museum. The painting is 3 feet wide and 6 feet long. She decides on a dilation reduction factor of 0.25. What size paper should she use?

- F 4 in. $\times$ 8 in.
- H 8 in. $\times$ 16 in.
- G 6 in. $\times$ 12 in.
- J 10 in. $\times$ 20 in.
**Examples**

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

1. ![Diag1](image1.png)

2. ![Diag2](image2.png)

Verify that the dilation is a similarity transformation.

3. ![Diag3](image3.png)

4. ![Diag4](image4.png)