

9-5 Study Guide and Intervention

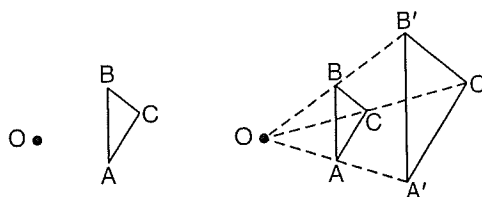
Dilations

Classify Dilations A **dilation** is a transformation in which the image may be a different size than the preimage. A dilation requires a center point and a scale factor, r .

Let r represent the scale factor of a dilation.
 If $|r| > 1$, then the dilation is an enlargement.
 If $|r| = 1$, then the dilation is a congruence transformation.
 If $0 < |r| < 1$, then the dilation is a reduction.

Example Draw the dilation image of $\triangle ABC$ with center O and $r = 2$.

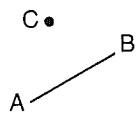
Draw \overline{OA} , \overline{OB} , and \overline{OC} . Label points A' , B' , and C' so that $OA' = 2(OA)$, $OB' = 2(OB)$, and $OC' = 2(OC)$. $\triangle A'B'C'$ is a dilation of $\triangle ABC$.



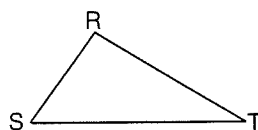
Exercises

Draw the dilation image of each figure with center C and the given scale factor. Describe each transformation as an *enlargement*, *congruence*, or *reduction*.

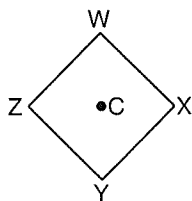
1. $r = 2$



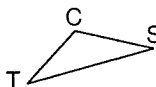
2. $r = \frac{1}{2}$



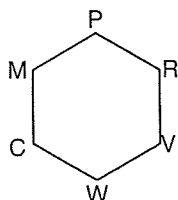
3. $r = 1$



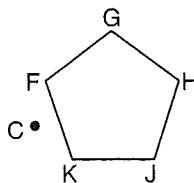
4. $r = 3$



5. $r = \frac{2}{3}$



6. $r = 1$



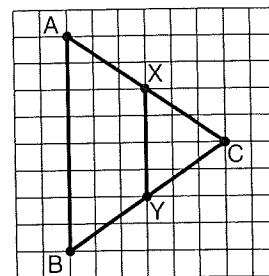
9-5 Study Guide and Intervention *(continued)*

Dilations

Identify the Scale Factor If you know corresponding measurements for a preimage and its dilation image, you can find the scale factor.

Example Determine the scale factor for the dilation of \overline{XY} to \overline{AB} . Determine whether the dilation is an *enlargement*, *reduction*, or *congruence transformation*.

$$\begin{aligned} \text{scale factor} &= \frac{\text{image length}}{\text{preimage length}} \\ &= \frac{8 \text{ units}}{4 \text{ units}} \\ &= 2 \end{aligned}$$

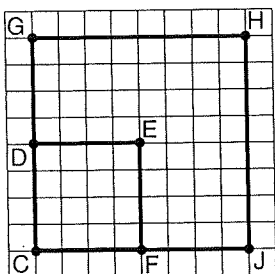


The scale factor is greater than 1, so the dilation is an enlargement.

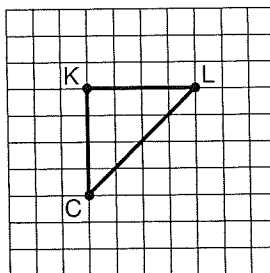
Exercises

Determine the scale factor for each dilation with center C . Determine whether the dilation is an *enlargement*, *reduction*, or *congruence transformation*.

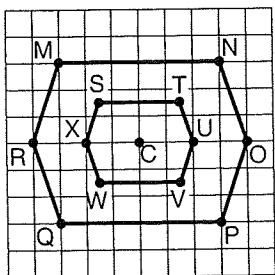
1. $CGHJ$ is a dilation image of $CDEF$.



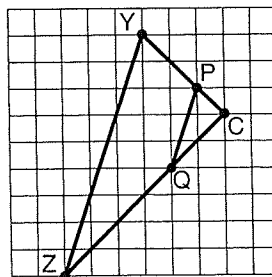
2. $\triangle CKL$ is a dilation image of $\triangle CKL$.



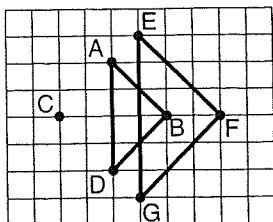
3. $STUVWX$ is a dilation image of $MNOPQR$.



4. $\triangle CPQ$ is a dilation image of $\triangle CYZ$.



5. $\triangle EFG$ is a dilation image of $\triangle ABC$.



6. $\triangle HJK$ is a dilation image of $\triangle HJK$.

