Goals:
You will draw dilations using a ruler.

You will draw dilations in the coordinate plane.

You will identify a dilation as an enlargement or reduction and find the scale factor.

9.6 Dilation

(and 7.6 similarity transformations)

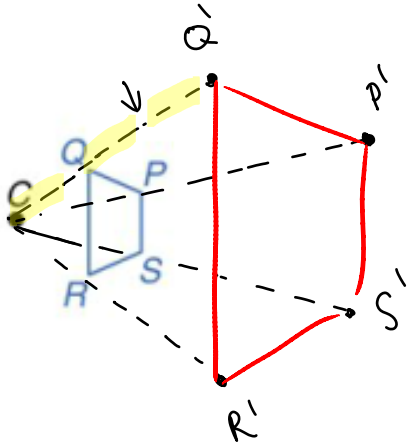
Dilation: a transformation that may change the size of a figure.

k= scale factor

enlargement, reduction, or congruent

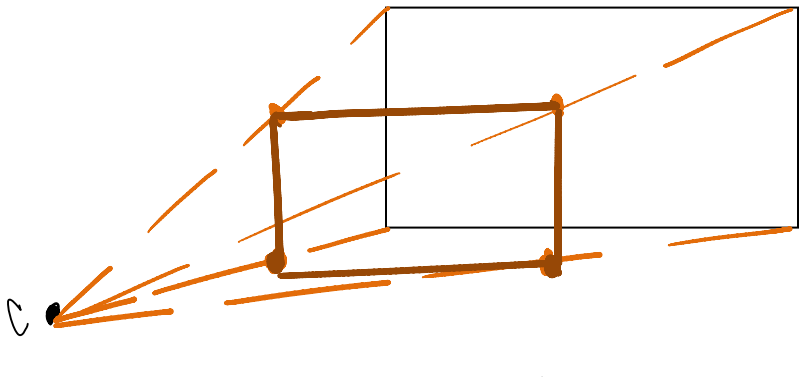
If P(x,y) is preimage, image is P′(kx, ky)

Remember how to draw a dilation:
Use a scale factor of 3.



Reduction

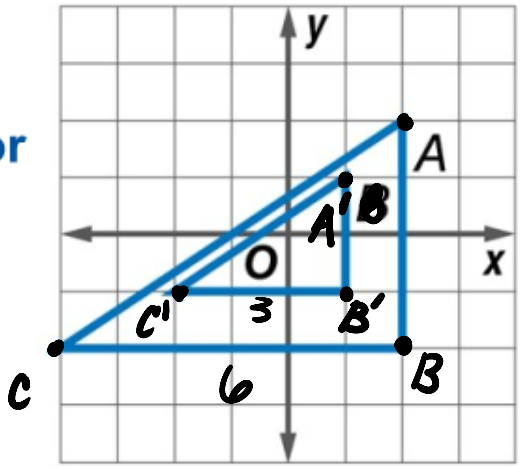
Use a scale factor of $\frac{2}{3}$.



k> 1	Enlargment
K < 1	Reduction
k= 1	Congruence Transformaton

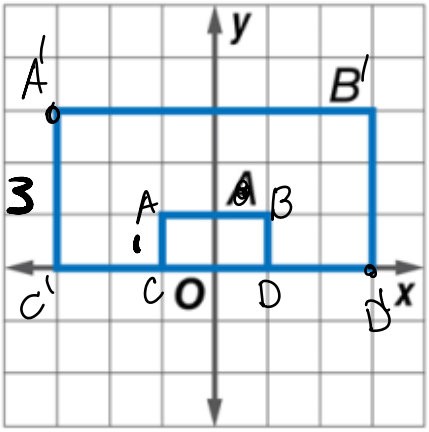
A. Determine whether the dilation ~~from Figure *A* to Figure *B*~~ is an *enlargement* or a *reduction*. Then find the scale factor of the dilation.

$\frac{3}{6} = \frac{1}{2}$



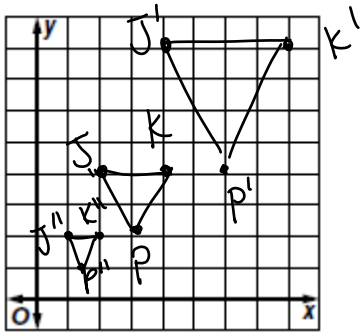
B. Determine whether the dilation ~~from Figure *A* to Figure *B*~~ is an *enlargement* or a *reduction*. Then find the scale factor of the dilation.

3



COORDINATE GEOMETRY **Find the image of each polygon, given the vertices, after a dilation centered at the origin with a scale factor of 2. Then graph a dilation centered at the origin with a scale factor of $\frac{1}{2}$.**

$J(2, 4), K(4, 4), P(3, 2)$



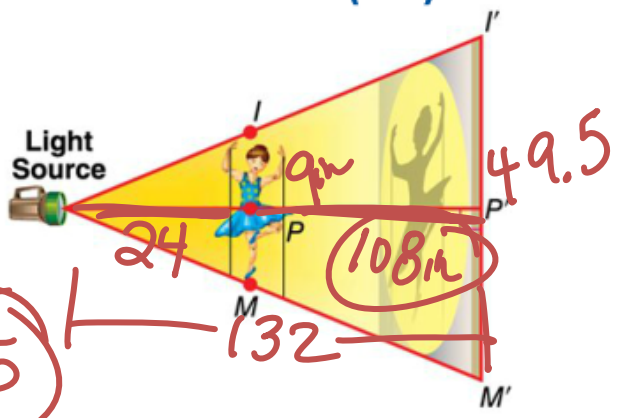
J'(4, 8) J''(1, 2)
K'(8, 8) K''(2, 2)
P'(6, 4) P''(1.5, 1)

$$A'B' = |k|(AB)$$

In other words,

$$k = \frac{image}{preimage}$$

PUPPETS **To create the illusion of a "life-sized" image, puppeteers sometimes use a light source to show an enlarged image of a puppet projected on a screen or wall. Suppose that the distance between a light source *L* and the puppet is 24 inches (*LP*). To what distance *PP'* should you place the puppet from the screen to create a 49.5-inch tall shadow (*I'M'*) from a 9-inch puppet?**



$\frac{49.5}{9} = 5.5$ k

$24 \cdot 5.5 = 132$