Coach C's Notes

PAP Geometry Notes

6.1 Dilating Triangles to Create Similar Triangles

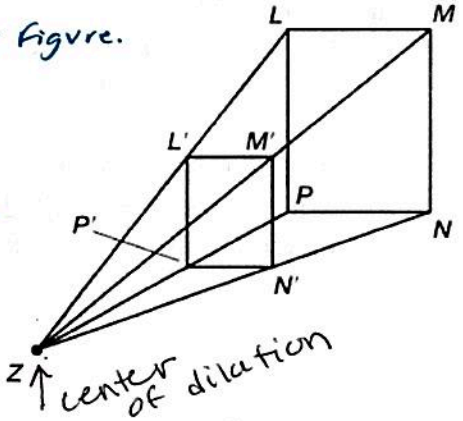
Dilation: Transformation that produces a similar figure.

Center of Dilation:

A fixed point about where all points are expanded or contracted.

Pre-image vs. image:

Original vs. new



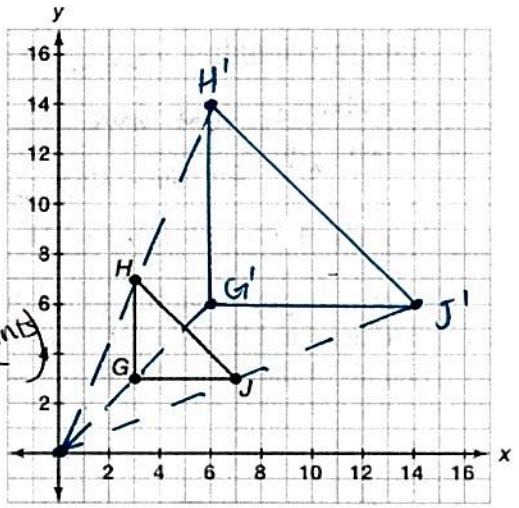
Rectangle L'M'N'P' is a dilation of Rectangle LMNP

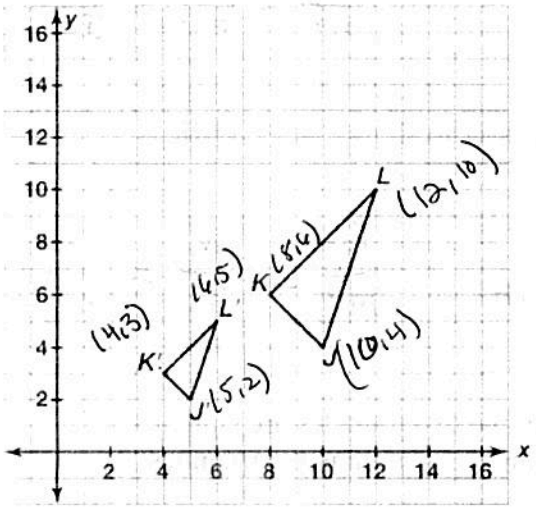
How does the image compare to the pre-image when:

- the scale factor is greater than 1?
  image is larger than pre-image
- the scale factor is less than 1?
  image is smaller than pre-image

Dilate triangle GHJ by using the origin as the center and using a scale factor of 2. (multiply original point by 2)

G'(6,6) H'(6,14) J'(14,6)





Triangle J'K'L' is a dilation of triangle JKL. The center of dilation is the origin.

What is the scale factor of the dilation?

1/2 - distance to image is half of distance to pre-image from origin.

How do you think you can use the scale factor to determine the coordinates of the vertices of an image?

multiplying coordinates of pre-image by scale factor

What would the coordinates of the image be if the scale factor was 6?

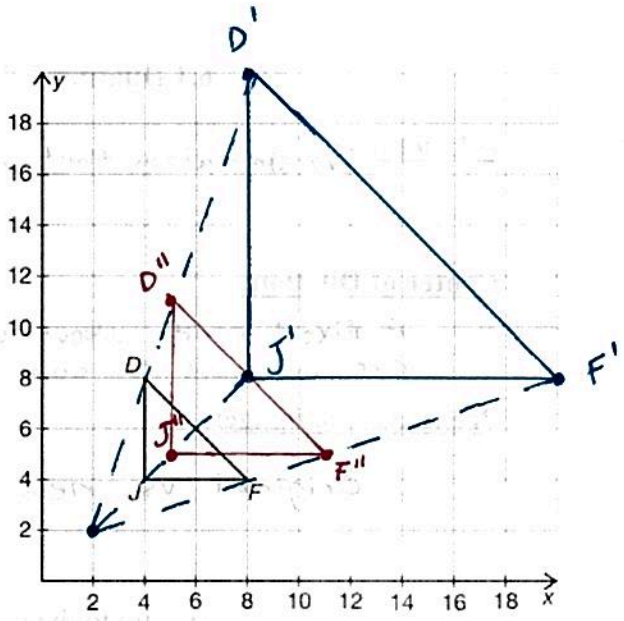
K(8,6) L(12,10) J(10,4)

K'(48,36) L'(72,60) J'(60,24)

Consider ΔJDF on the coordinate plane shown.

a. Show a dilation of ΔJDF by a factor of 3, using the point (2, 2) as the center of dilation. Label the image as ΔJ'D'F'.

b. Show a dilation of ΔJ'D'F' by a factor of $\frac{1}{2}$, using the same point (2, 2) as the enter of dilation. Label the new image as ΔJ"D"F".

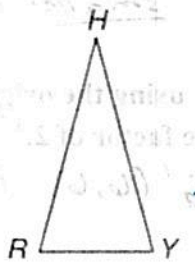


Similar Triangles: Definition pg. 528

triangles that have all pairs of corresponding angles congruent
all all corresponding sides are proportional. Same shape not always same size.

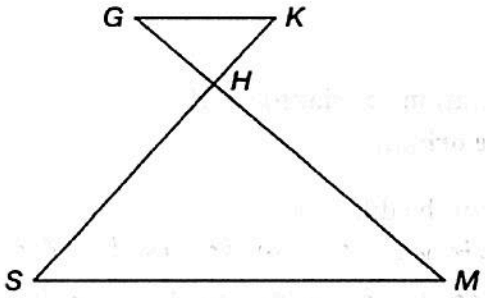
Triangle HRY ~ Triangle JPT

Draw a diagram that illustrates this similarity statement and list all of the pairs of congruent angles and all of the proportional sides.



$\angle H \cong \angle J$
$\angle R \cong \angle P$
$\angle Y \cong \angle T$

$\frac{HK}{JP} = \frac{RY}{PT} = \frac{HY}{JT}$



What conditions are necessary to show triangle GHK is similar to triangle MHS?

$\angle G \cong \angle M$
$\angle GHK \cong \angle MHS$
$\angle K \cong \angle S$

$\frac{GH}{MH} = \frac{HK}{HS} = \frac{GK}{MS}$

Suppose 4GH = HM.

Determine whether this given information is enough to prove that the two triangles are similar. Explain why you think they are similar or provide a counter-example if you think the triangles are not similar.

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