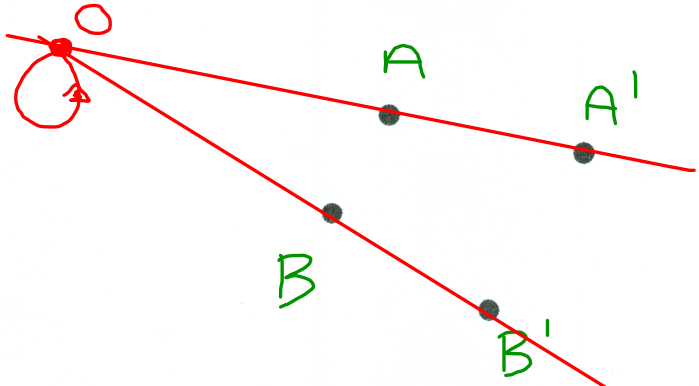
Lesson 24 - Finding the Center of Dilatation page 138

Draw a line through a point and its image. Do the same for another point.

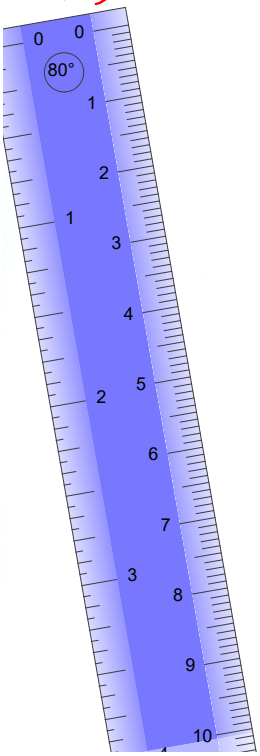


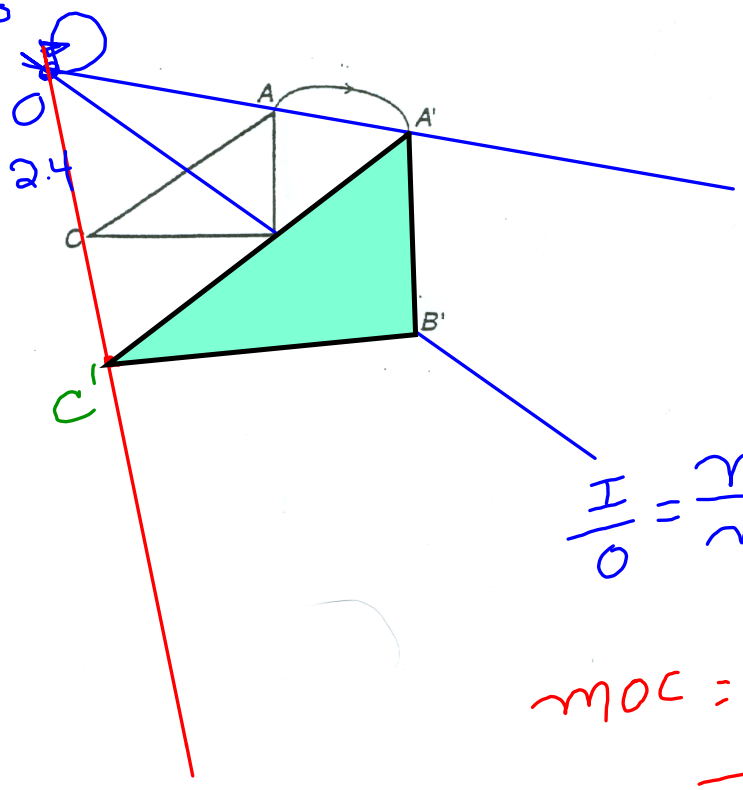
Where the two lines intersect is the CENTER OF DILATATION

Example

Find the center of similarity. Find the SF. Transform ΔABC.

Do you have:
- Center No
- SF No
- Figure ✓





$\frac{I}{O} = \frac{m\overline{OA'}}{m\overline{OA}} = \frac{5.5}{3.3}$

1.67

$mOC = 2.4 \times 1.7$

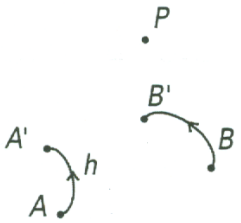
4.1

WORKSHEET 6

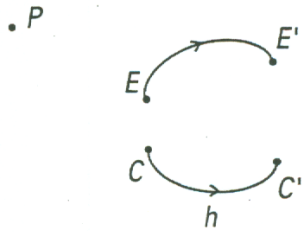
Lessa. 24

5 In each of the following, two arrows show the similarity transformation. Use a ruler to find the centre and the ratio.

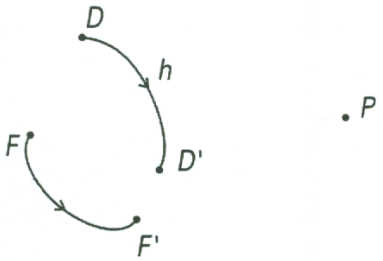
a)



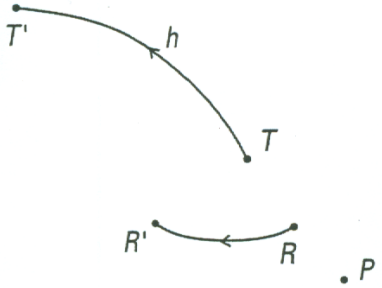
b)



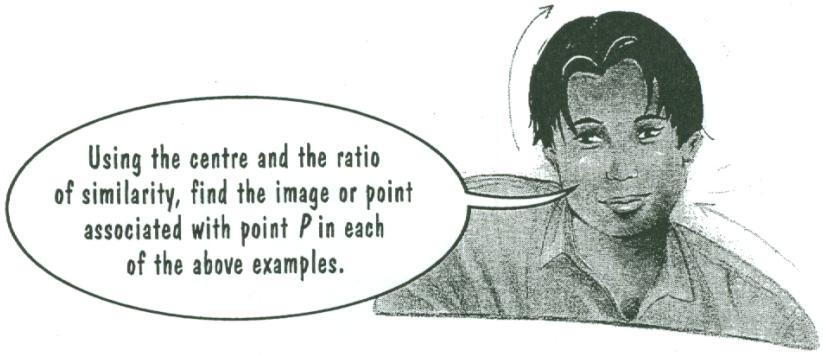
c)



d)



6



WORKSHEET 7

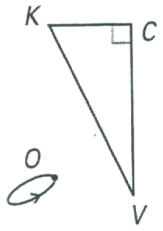
TRAVEL LOG

A similarity transformation is defined when the following are given:

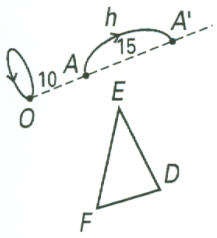
1. the centre and the ratio; or
2. the centre, plus one point and its image; or
3. two points and the image of each.

7 Draw the image of the triangle resulting from the described similarity transformation.

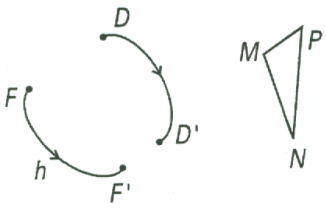
a) Similarity transformation with centre O and a ratio of $\frac{3}{2}$.



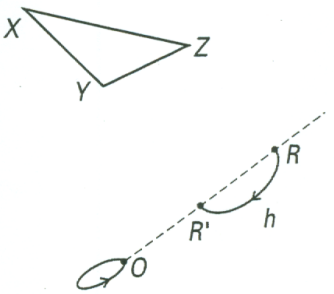
b)



c)



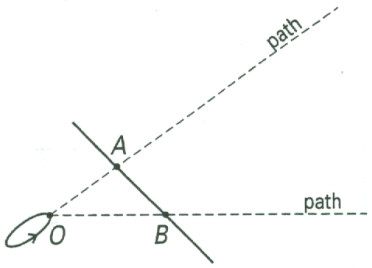
d)



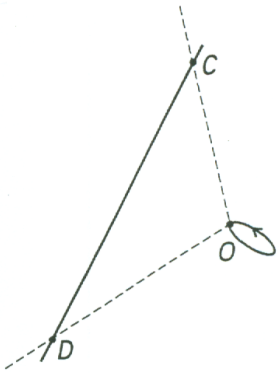
WORKSHEET 8

8 In each of the following examples, draw the image of the line segment or line segments resulting from the given similarity transformation.

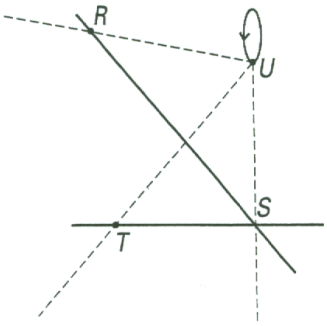
a) Similarity transformation with centre O and a ratio of $2 : 1$.



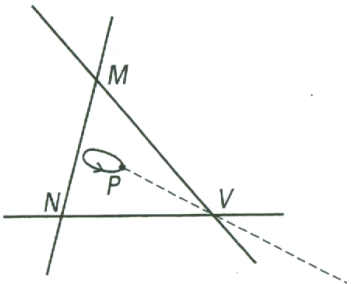
b) Similarity transformation with centre O and a ratio of $\frac{1}{2}$.



c) Similarity transformation with centre U and a ratio of $\frac{1}{4}$.



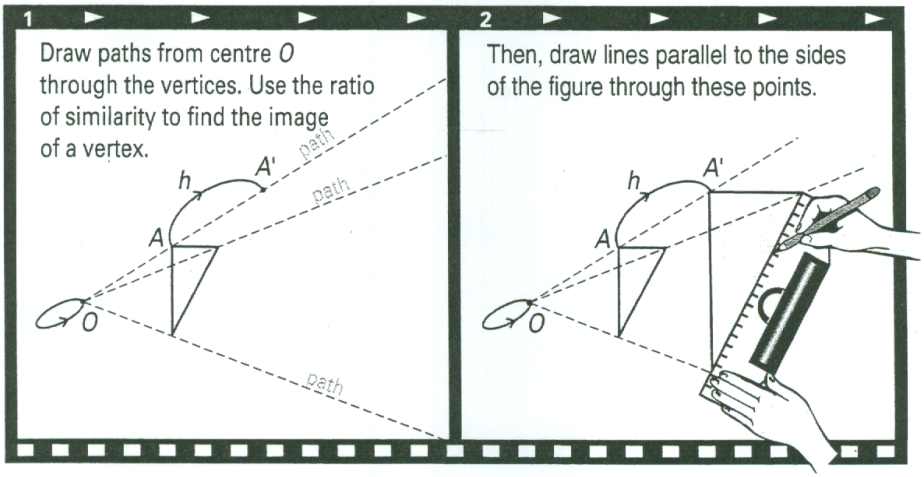
d) Similarity transformation with centre P and a ratio of $3 : 2$.



9 Based on the exercises you have just completed, is it correct to say that **a similarity transformation changes a line into a parallel line?**

WORKSHEET 9

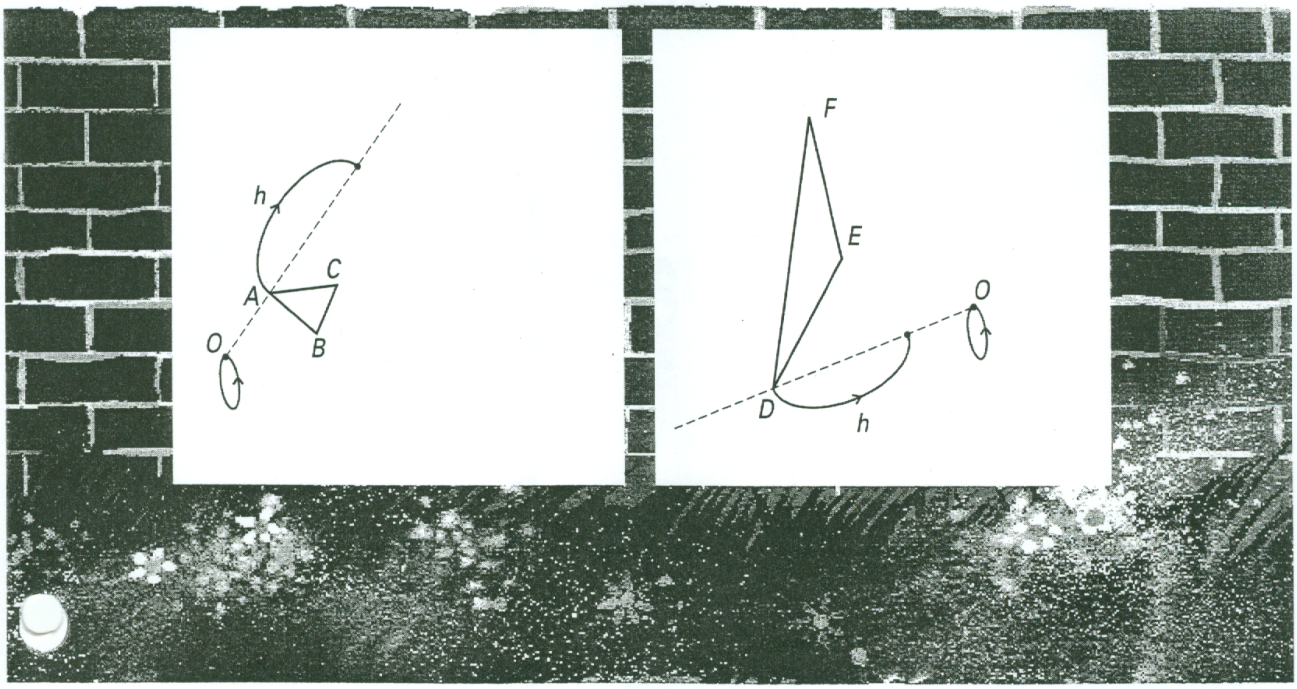
10 This property of similarity transformations can be used to construct the image of a figure more efficiently. Study the following film frames carefully.



Draw parallel lines to find the image that results from the described similarity transformation.

a) Similarity transformation with centre *O* and a ratio of 3 : 1.

b) Similarity transformation with centre *O* and a ratio of $\frac{1}{3}$.

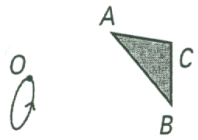


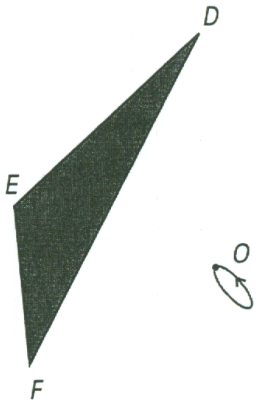
WORKSHEET 10

11 Draw the image of the triangles that result from the described similarity transformation.

a) Similarity transformation with centre *O* and a ratio of 2 : 1.

b) Similarity transformation with centre *O* and a ratio of $\frac{1}{2}$.



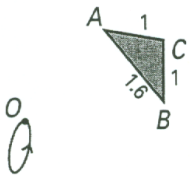


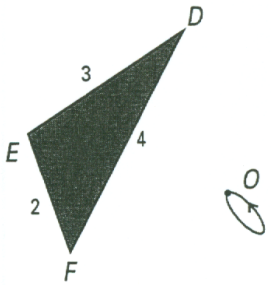
12 According to the diagrams you have just completed, is it correct to say that **a similarity transformation preserves angle measures?**

13 Draw the image that results from each of the described similarity transformations. Use a ruler to measure the sides of the image.

a) Similarity transformation with centre *O* and a ratio of 2 : 1.

b) Similarity transformation with centre *O* and a ratio of $\frac{1}{2}$.





14 *a)* Refer to the preceding question and find the following ratios.

1) $\frac{m\,\overline{A'B'}}{m\,\overline{AB}}$ $\frac{m\,\overline{A'C'}}{m\,\overline{AC}}$ $\frac{m\,\overline{B'C'}}{m\,\overline{BC}}$ 2) $\frac{m\,\overline{D'E'}}{m\,\overline{DE}}$ $\frac{m\,\overline{E'F'}}{m\,\overline{EF}}$ $\frac{m\,\overline{F'D'}}{m\,\overline{FD}}$

b) What can you conclude if you compare the ratio in each case?

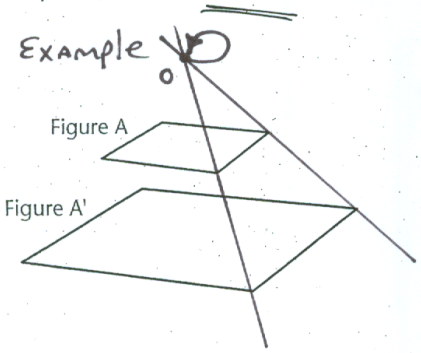
Name: _____

Group: _____ Date: _____

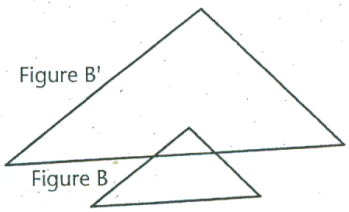
Mental Computation 11.4

In each case, determine the centre of dilatation that helps associate both figures.

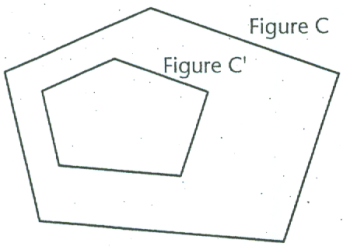
1 a)



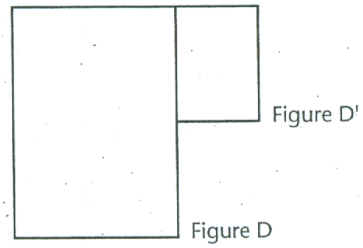
b)



c)

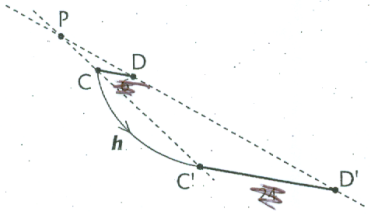


d)

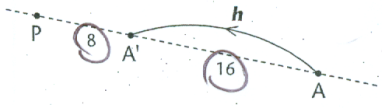


2 In each case, determine the scale factor of the dilatation about centre P.

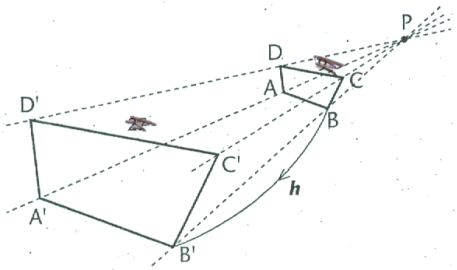
a) _____



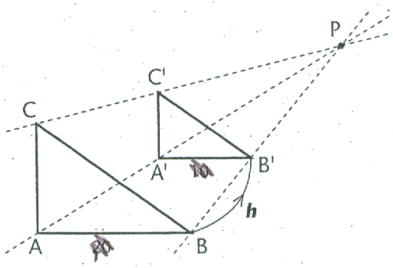
b) _____



c) _____



d) _____



Name: _____

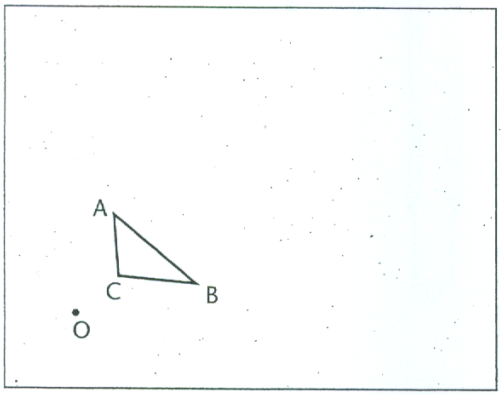
Group: _____ Date: _____

A Quick Glance 11.4

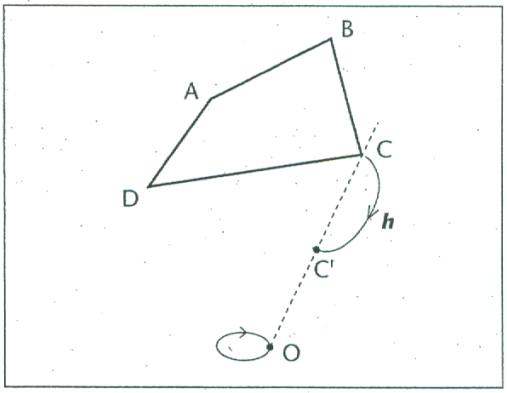
(Continued)

2 Draw the mirror image of the figure by using the dilatation described.

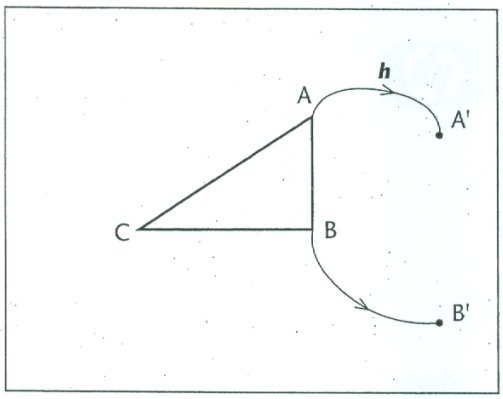
a) Dilatation about centre O and scale factor of 3



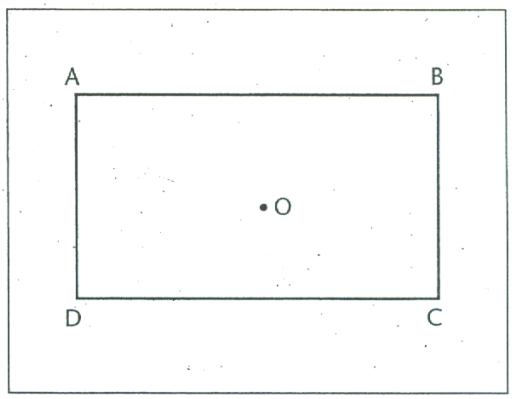
b)



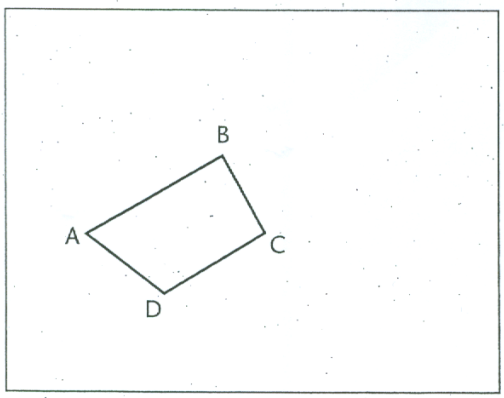
c)



d) Dilatation about centre O and a scale factor of 0.6



e) Dilatation about centre A and a scale factor of 2



f) Dilatation about centre B and a scale factor of $\frac{1}{3}$