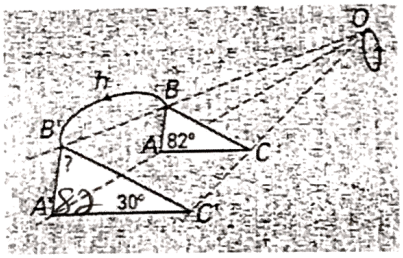
Review

Similarity Transformation (Dilatations)

Lesson 22-27

1. Find the measure or length corresponding to each question mark.

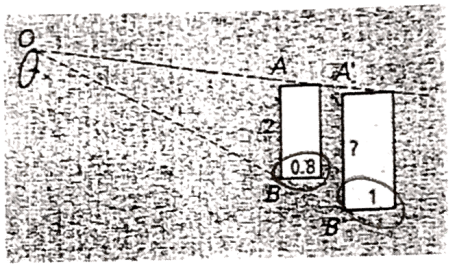
a)




180 - 82 - 30

= 68°

b)

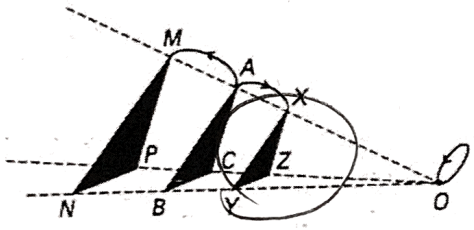



1 / .8 = 1.25

2 × 1.25

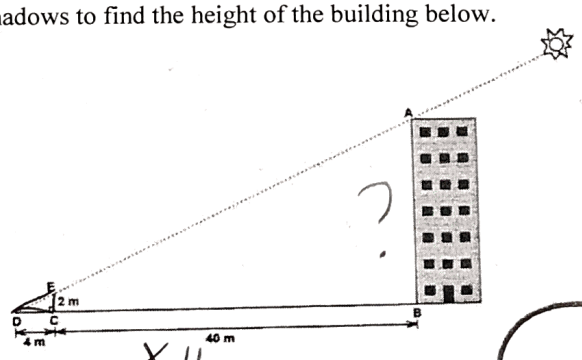
2.5

2. Which of the given figures is the image of Δ ABC using similarity transformation h with centre O and a ratio of ¾. .75 smaller.




XYZ

3. The length of shadows can be used to determine the height of many objects that are difficult to measure directly. Use the shadows to find the height of the building below.




X 11

4 | 2

58

44

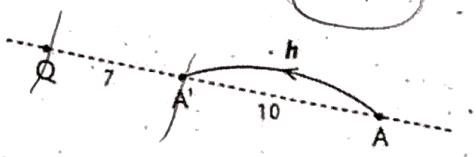
X 11

22m

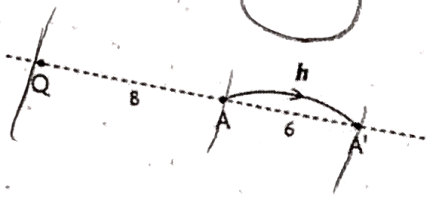
Lesson 22-27

4. In each case, determine the scale factor of the dilatation about centre Q.

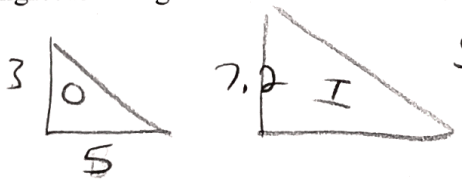
a) $SF = \frac{7}{17}$ .41




b) $\frac{14}{8}$ 1.75



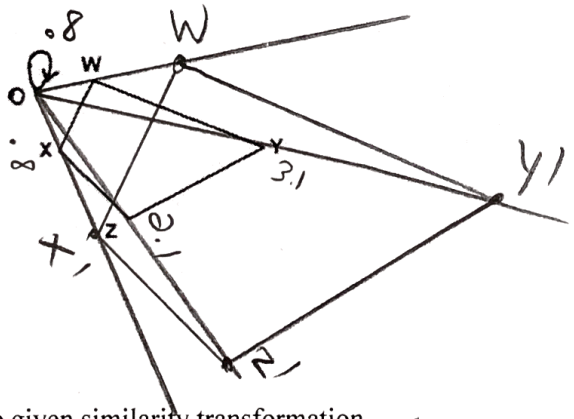

5. On a plane, a similarity transformation associates a triangle with a height of 3cm and a base of 5cm with a triangle 7.2cm high. How long is the base of the second triangle?




SF 2.4

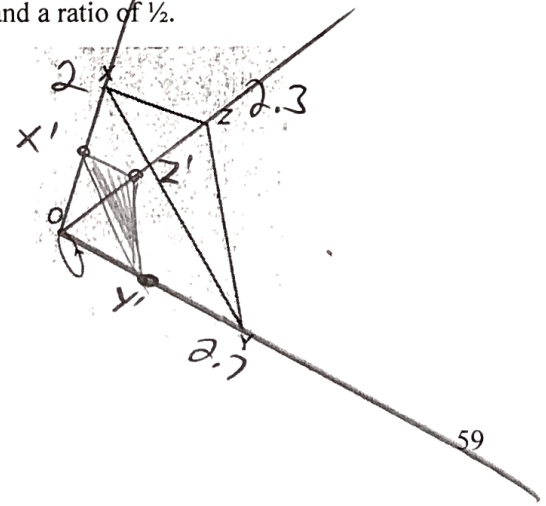
2.4 x 5 = 12

6. Use the method of your choice to enlarge figure WXYZ by a factor of 2.

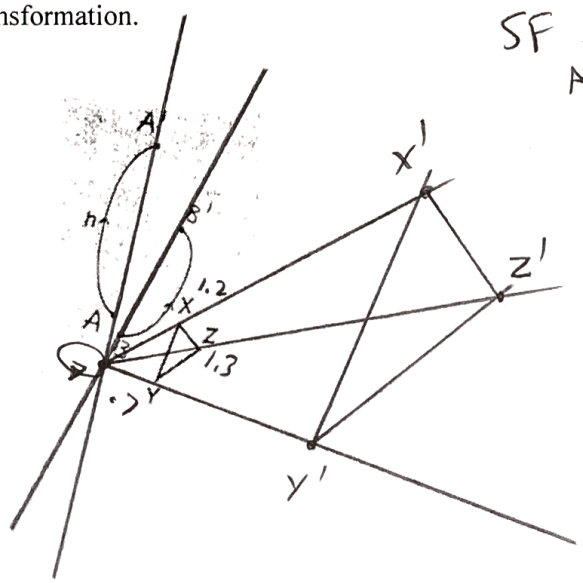



7. Draw the image of Δ XYZ using the given similarity transformation.

a) Similarity transformation with centre O and a ratio of ½.




b)



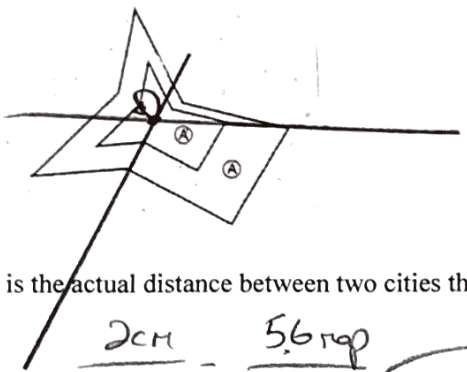

SF 2.9 / .7

4.1

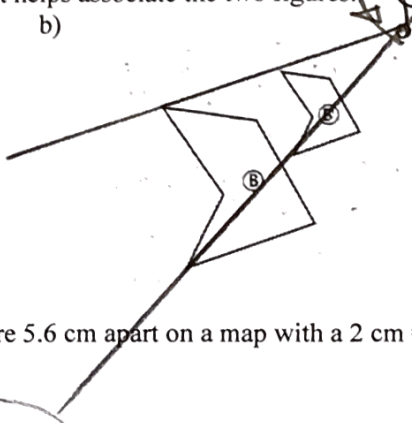
Lesson 22-27

8. In each case, determine the centre of dilatation P that helps associate the two figures.

a)




b)




9. What is the actual distance between two cities that are 5.6 cm apart on a map with a 2 cm = 450 km scale?

$\frac{2cm}{450km} = \frac{5.6map}{}$ 1260 km

10. The plans for a house are drawn on a 1 : 25 scale. What will be the dimensions of the base of the house (in metres) if it measures 40 cm by 54 cm on the plans.

$\frac{1}{25}$ 54 × 25 = 1350 cm = 13.5 m

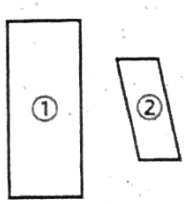
40 × 25 = 1000 = 10 m

11. Knowing that segments AB and A'B' are associated by a dilation, determine the unknown data in this table.

| Scale factor of the dilatation | 2.5 | 0.35 | 3.4 | 4.7 | .2 | 0.9 |
|---|---|---|---|---|---|---|
| m $\overline{AB}$ | 14 | 16 | 1.7 | 13 | 4.3 | 12.1 |
| m $\overline{A'B'}$ | 35 | 5.6 | 5.78 | 61.1 | 0.86 | 10.89 |

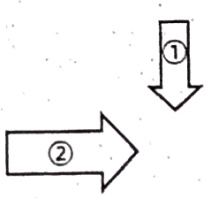
12. In each case, explain why figures 1) and 2) cannot be associated by a dilatation.

a)




- Parallel lins
- angles.

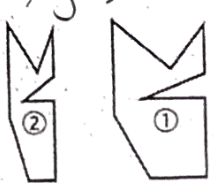
b)




- p. lins ×
- angles ✓

c)

- Parrell
- Prop. sides
- Agles.




× Agles.

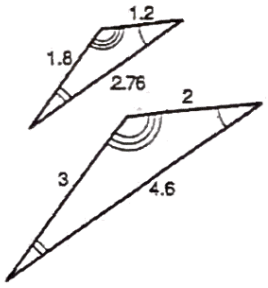
× parallel lins

× prop sids

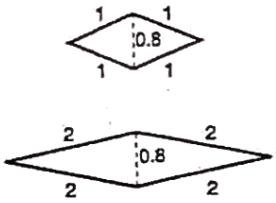
Lesson 22-27

13. State whether or not the pairs of figures are similar and why? Prop. sides angles.

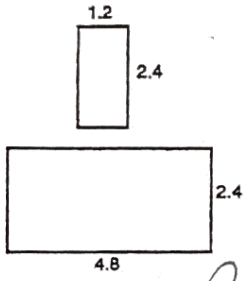
a) b) c)




Yes or No




Yes or No Angles




Yes or No Prop Sides

14. The second side of a triangle is twice as long as the first side and the third side is 5 cm less than the second side. After a similarity transformation of scale factor 6, the new triangle has a perimeter of 270 cm.
    a) Find the lengths of the sides of the initial triangle.
    b) Find the lengths of the sides of the image triangle.
    c) Find the ratio between the perimeters of the two triangles.

orig.

| 1 | 2 | 3 |
|---|---|---|
| $x$ | $2x$ | $2x-5$ |

Image

| 1 | 2 | 3 |
|---|---|---|
| $6x$ | $6(2x)$ $12x$ | $(2x-5)6$ $12x-30$ |

$6(x+2x+2x-5) = 270$

$6x+12x+12x-30 = 270$

$30x = 270+30$

$\frac{30x}{30} = \frac{300}{30}$

$x = 10$

The sides of the initial triangle are 10 cm, 20 cm, and 15 cm.
The sides of the image triangle are 60 cm, 120 cm, and 90 cm.
The ratio between the perimeters of the two triangles is _____.

45 : 270

1 : 6 or 270 : 45

6 : 1