

O Level E Maths Tutorial 11: Congruence and similarity

Syllabus :

- congruent figures and similar figures
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1. (i) What does it mean if two triangles are congruent?
- (ii) What does it mean if they are similar?
- (iii) Which pair of figures are congruent? Which pair are similar?

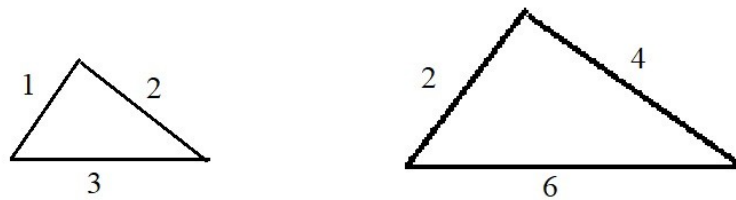


Figure 11-1



Figure 11-2

- properties of similar triangles and polygons:
 - corresponding angles are equal
 - corresponding sides are proportional
-

2. State why these two triangles are similar.



Figure 11-3

3. These two triangles are similar.

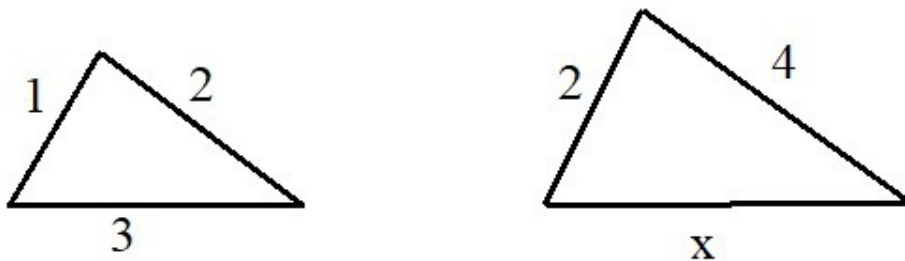


Figure 11-4

Find x .

-
- enlargement and reduction of a plane figure

4. Given

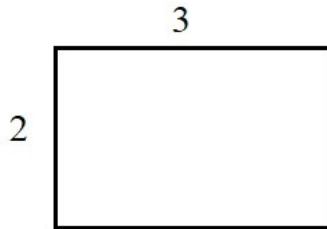


Figure 11-5

Sketch a figure for a 2 times enlargement, and a figure for a 3 times reduction. Label the length and height in each case.

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- scale drawings
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5. A map shows a rectangular field as a 2 cm by 3 cm rectangle. The scale of the map is 1:100000. Find the dimensions of the actual field.

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- properties and construction of perpendicular bisectors of line segments and angle bisectors
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6. This figure shows a line AB that is constructed with the help of a compass. Point A is equidistant from P and Q. So is B.

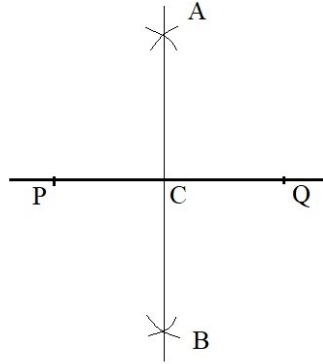


Figure 11-6

- (i) What does this mean about angle ACQ?
- (ii) What does this mean about PC and CQ?

7. This figure shows a line EG that is constructed with the help of a compass. Point G is equidistant from D and F. D and F are equidistant from E.

- (i) What does this mean about line EG?

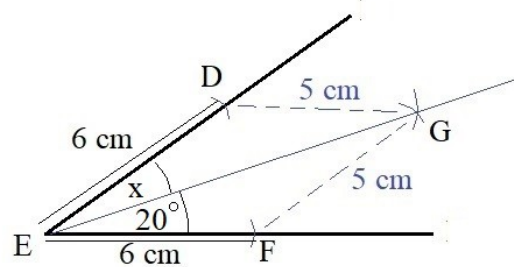


Figure 11-7

- (ii) What is angle x ?

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- determining whether two triangles are

- congruent
 - similar
-

7. State whether each pair of triangles below are congruent or similar. Give the reason.

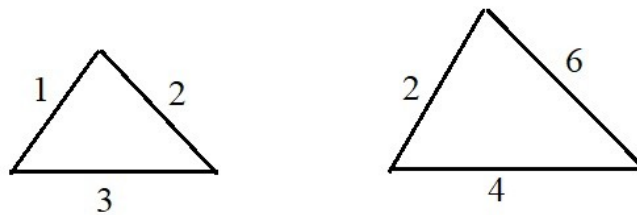


Figure 11-8

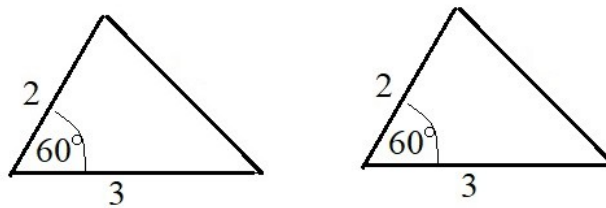


Figure 11-9

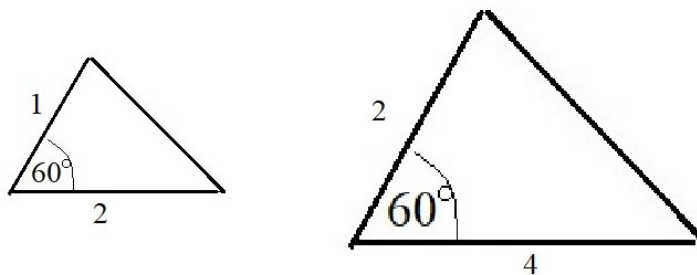


Figure 11-10

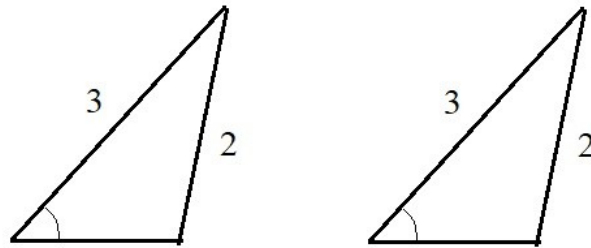


Figure 11-11

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- ratio of areas of similar plane figures
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8.

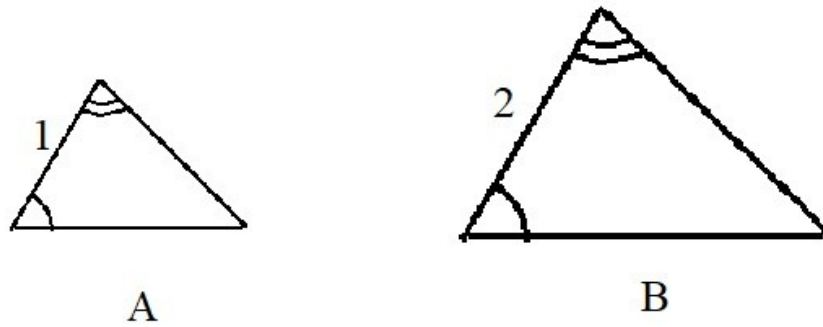


Figure 11-12

- Find the ratio of area A to area B.
- Area A is 3 cm^2 . Find area B.

- ratio of volumes of similar solids

9. Two pyramids are similar solids:

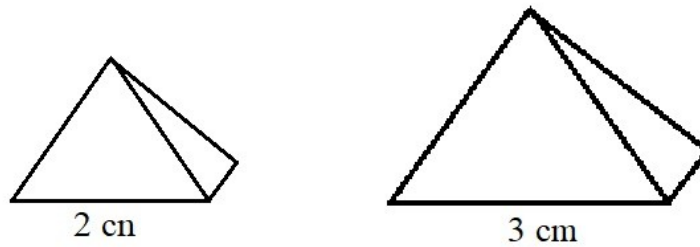


Figure 11-13

Find the ratio of the bigger to the smaller volume.

- solving simple problems involving similarity and congruence

10. The diagram shows a hollow cone of height 30 cm.

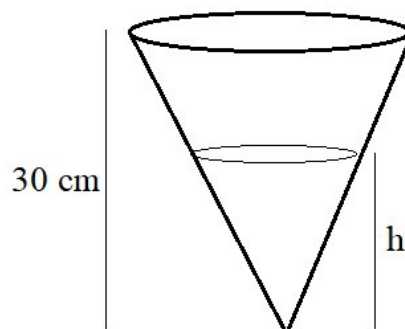


Figure 11-14

The volume of liquid in the cone is half the volume of the cone. Calculate the depth, h cm, of the liquid.