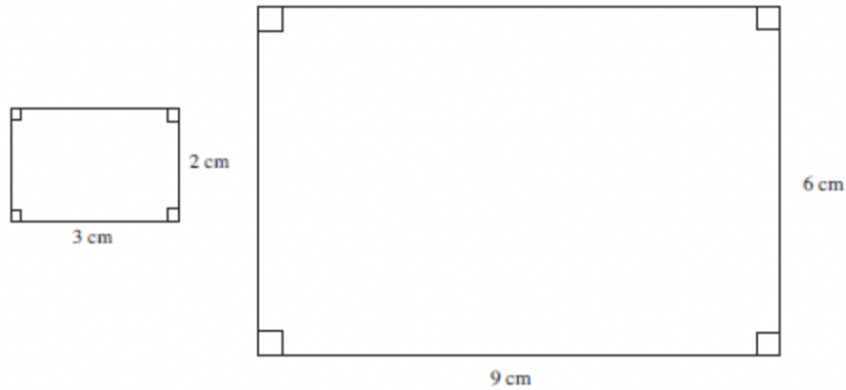


## Math formula sheet : Similarity and Congruence

### Similarity

1) All shapes but triangles



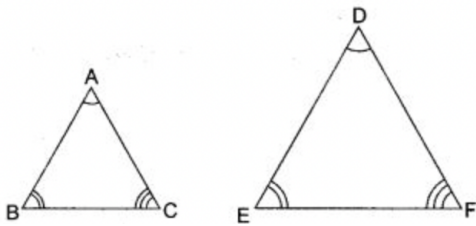
i) The sides have to be in proportion

$$\text{Length} = 3:9 = 1:3$$

$$\text{Width} = 2:6 = 1:3$$

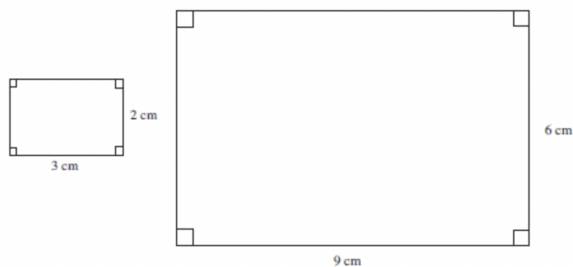
ii) The angles are the same

2) Triangles



ONLY the angles have to be the same

### Areas of similar shapes



Area of the small rectangle :  $6 \text{ cm}^2$

$K = \text{length or width of larger rectangle} / \text{length or width of smaller rectangle}$

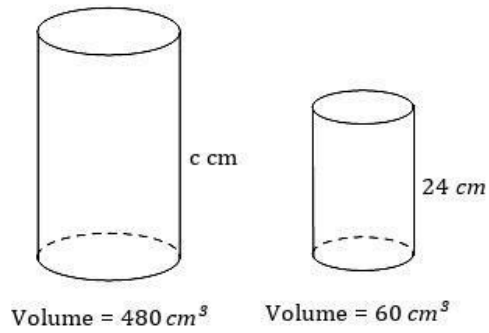
$$K = 9/3 \text{ or } 6/2 = 3$$

However, when dealing with area which is  $\text{m}^2$ , we use  $k^2$

Area of the large rectangle :  $6 \times 9 = 54 \text{ cm}^2$

## Volumes of similar objects

Ratio of volumes :  $k^3$



$$K^3 = 480/60 = 8$$

$$\text{So } K = 2$$

$$24 \times k = c, \quad 24 \times 2 = 48$$

$$\text{So } c = 48 \text{ cm}$$

## Congruence ( triangles )

i) SSS : (all sides are the same)

ii) SAS : ( side, angle, side) the angle is in between 2 sides : 

iii) RHS : ( hypotenuse H, Right angle R, side S)