

**AREAS OF COMPOSITE SHAPES**

**Perimeter:** The distance around a closed figure.

Possible Units: cm, mm, m, in, ft

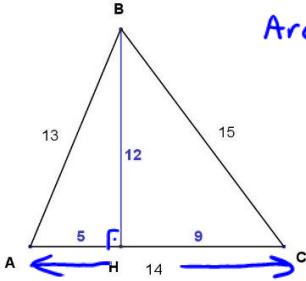
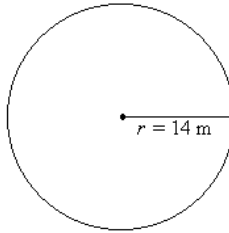
**Area:** The number of square unit needed to cover a surface

Possible Units: cm<sup>2</sup>, m<sup>2</sup>, in<sup>2</sup>, ft<sup>2</sup>, mm<sup>2</sup>

**KEY WORDS**

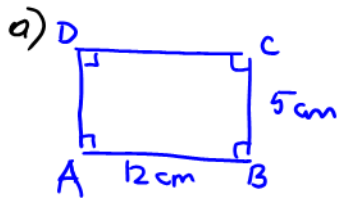
Distance  
cm, mm, m, in, ft  
square unit  
cm<sup>2</sup>, m<sup>2</sup>, in<sup>2</sup>, ft<sup>2</sup>

**Example:** Find the area and perimeter of each shape:

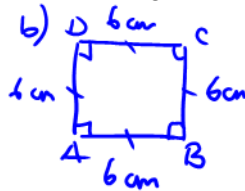
 <p>Area = <math>\frac{\text{base} \times \text{height}}{2}</math>  <math>= \frac{14 \times 12}{2}</math>  <math>= 168</math>  <math>= 84 \text{ unit}^2</math></p> <p>Perimeter = Sum of interior sides  <math>= \overline{AB} + \overline{BC} + \overline{CA}</math>  <math>= 13 + 15 + 14</math>  <math>= 42 \text{ units.}</math></p>	 <p>Area = <math>\pi \cdot r^2</math>  <math>= \pi \cdot 14^2</math>  <math>\approx 615.8 \text{ m}^2</math></p> <p>Circumference = <math>2 \cdot \pi \cdot r</math>  <math>= 2 \cdot \pi \cdot 14</math>  <math>\approx 88 \text{ m}</math></p>
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**Practice:** Find the areas of the following shapes: (Use the  $\pi$  button on your calculator.)

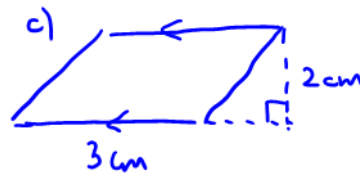
- a) A rectangle measuring 5 cm by 12 cm
- b) A square with side lengths 6 cm
- c) A parallelogram with base 3 cm and height 2 cm



$A = 5 \times 12$   
 $= 60 \text{ cm}^2$



$A = 6 \times 6$   
 $= 36 \text{ cm}^2$



$A = 3 \times 2$   
 $= 6 \text{ cm}^2$

Definition: A complex figure that is made up of two or more sample figures.

1) Calculate the area of the following shapes:

a)

Area<sub>Total</sub> = Area<sub>A</sub> + Area<sub>B</sub>  
 =  $7 \times 5 + 7 \times 3$   
 =  $35 + 21$   
 = 56

b)

We have two identical triangles.  
 Area<sub>Shaded</sub> = Area<sub>Rectangle</sub> - 2 Area<sub>A</sub>  
 =  $7.5 \times 10.2 - 2 \cdot \frac{3.8 \times 3.8}{2}$   
 =  $76.5 - 14.44$   
 = 62.06  
 ∴ Area of shaded region is 62.06 yd<sup>2</sup>

c)

A<sub>Shaded</sub> = A<sub>Big square</sub> - A<sub>Small square</sub>  
 =  $8 \times 8 - 3 \times 3$   
 =  $64 - 9$   
 = 54  
 ∴ Area of shaded region is 54 in<sup>2</sup>.

d)

A<sub>Shaded</sub> = A<sub>Rectangle</sub> + A<sub>Semi circle</sub>  
 =  $7.4 \times 3.7 + \pi \cdot 1.85^2$   
 =  $27.38 + 5.81$   
 = 33.2  
 ∴ Total area is 33 m<sup>2</sup>.