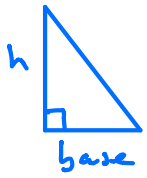
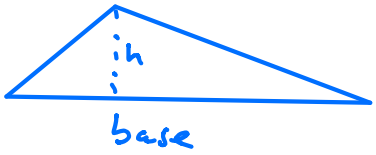
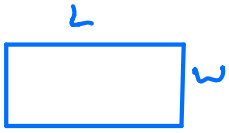
Revision Lesson I

Area

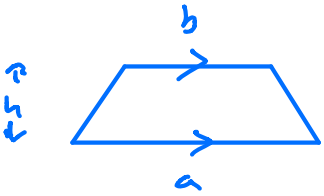


Area of triangle
$= \frac{1}{2}$ base $\times$ height

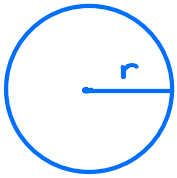




Area $= L \times W$



Trapezium Area $= \dfrac{(a+b)h}{2}$

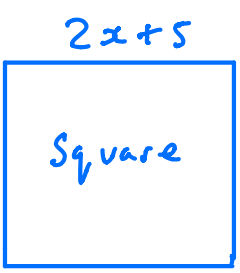


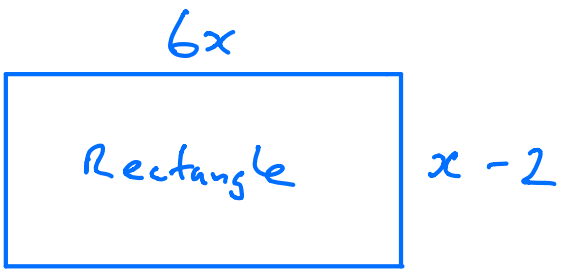
Area of Circle $= \pi r^2$

Circumference $= 2\pi r$

Perimeter = Distance around edge of shape

Algebraic Relationships





These have the same perimeter
What is it?

$$4(2x+5) = 6x + x - 2 + 6x + x - 2$$

$$8x + 20 = 14x - 4$$

$$8x - 14x = -4 - 20$$

$$-6x = -24$$

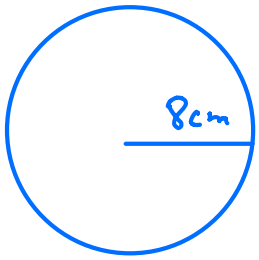
$$x = \frac{-24}{-6}$$

$$\underline{x = 4}$$

Perimeter $4(2(4)+5) = 52$ cm

or $14(4) - 4 = 52$ cm

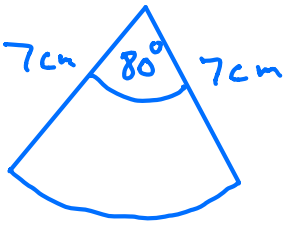
Circle



Find area and circumference

Area $= \pi r^2 = \pi \times 8^2 = 201 \text{ cm}^2$

Circ $= 2\pi r = 2 \times \pi \times 8 = 50.3$ cm



Part of a circle

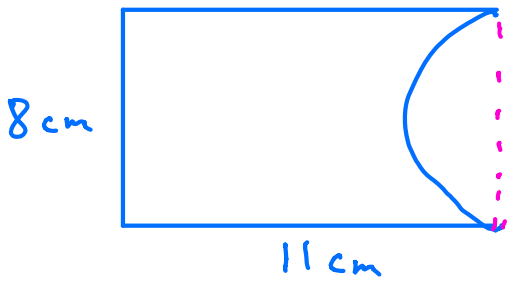
Find area and perimeter

$$\text{Area} = \pi r^2 \times \frac{80}{360}$$

$$= \pi \times 7^2 \times \frac{80}{360} = 34.2 \text{ cm}^2$$

$$\text{Perimeter} = 2\pi r \times \frac{80}{360} + r + r$$

$$= 2 \times \pi \times 7 \times \frac{80}{360} + 7 + 7 = 23.8 \text{ cm}$$



semi-circle cut from rectangle

Find area and perimeter

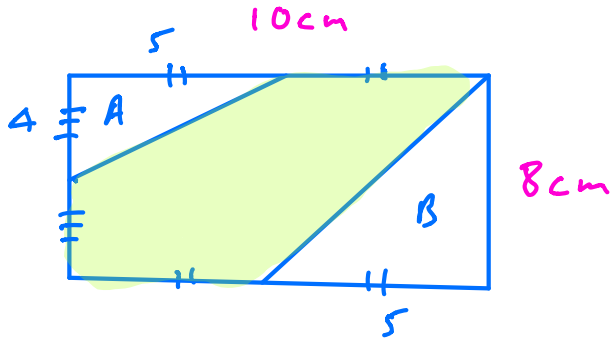
Area = Rectangle − Semi-circle

$= 11 \times 8 - \frac{\pi r^2}{2}$

$= 11 \times 8 - \frac{\pi \times 4^2}{2} = 62.9 \text{ cm}^2$

Perimeter $= 11 + 8 + 11 + \frac{2\pi r}{2}$

$= 11 + 8 + 11 + \pi \times 4 = 42.6 \text{ cm}$



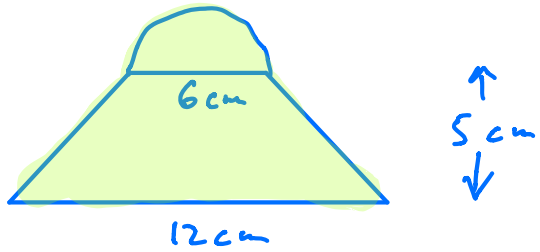
Find area of shaded region

Shaded Area = Area of Rect − A − B

$= 10 \times 8 - \frac{1}{2} \times 4 \times 5 - \frac{1}{2} \times 5 \times 8$

$= 80 - 10 - 20$

$= 50 \text{ cm}^2$



Find area

Trapezium + Semi-circle

$\frac{1}{2}(12+6)\times 5 + \frac{\pi \times 3^2}{2} = 59.1\ cm^2$

A circular helicopter pad radius 12m needs 2 coats of paint. A £5.99 tin of paint covers $4m^2$. How much will the paint job cost?

Area of pad $= \pi r^2 = \pi \times 12^2$

2 coats so area $= 2 \times \pi \times 12^2 = 904.78\ m^2$

Number of tins $= \frac{904.78}{4} = 226.19 = 227$

$227 \times £5.99$

$= £1359.73$

Packing Problems

How many packets 6 cm x 5cm x 4cm will fit into a box 1m x 75cm x 24cm ?

100 x 75 x 24

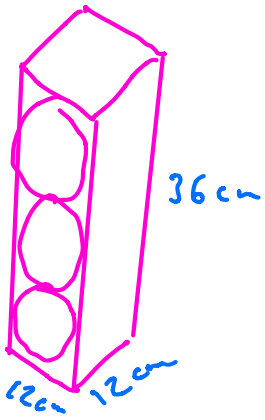
4 x 5 x 6

$$25 \times 15 \times 4 = 1500$$

Sphere

$$\text{Vol} = \frac{4}{3}\pi r^3$$

$$\text{Surface Area} = 4\pi r^2$$



3 sphere radius 6 cm fit in cuboid box touching all sides

What is volume of empty space?

$$\text{Empty Space} = \text{Vol of cuboid} - \text{Vol of 3 spheres}$$

$$= 36 \times 12 \times 12 - 3 \times \frac{4}{3}\pi \times 6^3$$

$$= 2470 \text{ cm}^3$$
