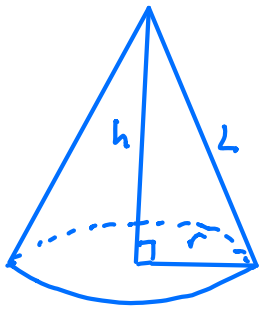
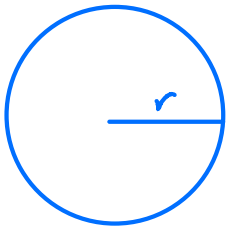
Cone



$$\text{Vol} = \frac{1}{3}\pi r^2 h$$

$$\text{Curved Surface Area} = \pi r L$$

Sphere



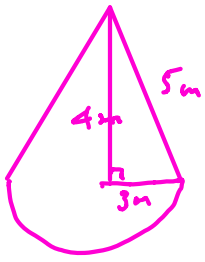
$$\text{Vol} = \frac{4}{3}\pi r^3$$

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

These formulae will be given on an exam paper

Examples

Cone and hemisphere



Find Volume

$$\text{Vol} = \frac{1}{3}\pi r^2 h + \frac{2}{3}\pi r^3$$

$$\text{Vol} = \frac{1}{3}\pi \times 3^2 \times 4 + \frac{2}{3}\pi \times 3^3$$

$$\text{Vol} = 30\pi = 94.2\,m^3$$

We wish to paint the surface of this object

A tin of paint costing £4.65 will cover $3.8\,m^2$

How much will the painting cost?

Surface Area $= \pi r L + 2\pi r^2$

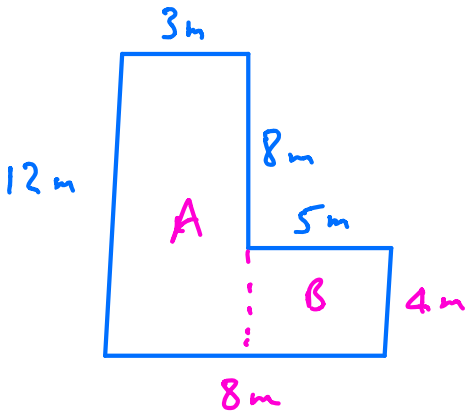
$= \pi \times 3 \times 5 + 2 \times \pi \times 3^2$

$= 33\pi = 103.67\,m^2$

Tins of Paint $= \dfrac{103.67}{3.8} = 27.28$ so 28 tins

$28 \times £4.65 = £130.20$

Compound Shapes



Find Area and Perimeter

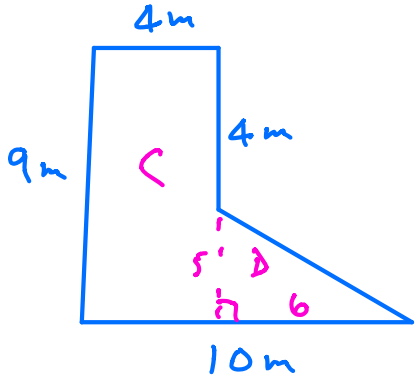
Perimeter $= 3+8+5+4+8+12$

$= 40m$

$A = 12 \times 3 = 36$

$B = 5 \times 4 = 20$

Total $56\,m^2$

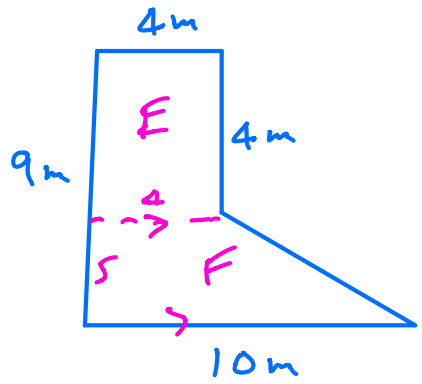


Find Area

$C = 9 \times 4 = 36$

$D = \frac{1}{2} \times 6 \times 5 = 15$

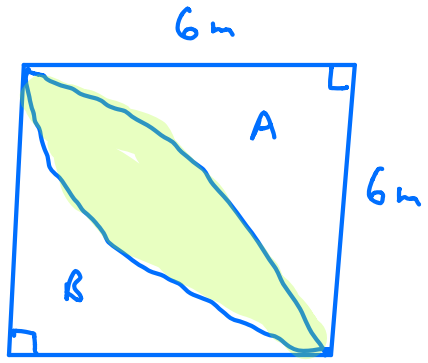
$51\,m^2$



$E = 4 \times 4 = 16$

$F = \frac{1}{2}(10+4) \times 5 = 35$ +

$51\ m^2$



Find Shaded Area

Area A = Area

A = Square − $\frac{1}{4}$ Circle

$= 6^2 - \frac{1}{4} \times \pi \times 6^2$

$= 7.726$

$A + B = 7.726 \times 2$

$= 15.452$

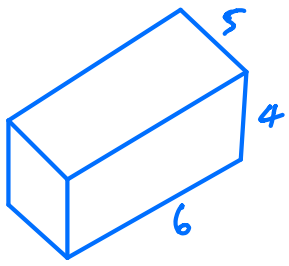
Shaded Area = Square − A − B

$= 36 - 15.452$

$= 20.548$

$= 20.5\ m^2$ to 3 sig. figs.

Find the total surface area of a cuboid 6m x 5m x 4m



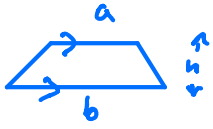
Top / Bottom	$2 \times 6 \times 5$	$= 60$
Front / Back	$2 \times 6 \times 4$	$= 48$
Left / Right	$2 \times 5 \times 4$	$= 40$ +
Total Surface Area		$148\ m^2$

Area of circle $= \pi r^2$

Circumference of circle $= 2\pi r$

Volume of cylinder $= \pi r^2 h$

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

Area of trapezium $=$  $\frac{1}{2}(a+b)h$

Volume of cuboid $=$ Length $\times$ Width $\times$ Height
