Year 10 Revision

Chapter 2 Area and Volume

Conversion Rate

1 cm = 10 mm	10
1 m = 100 cm	100
1 km = 1000 m	1000

Units of Area — Conversion Rate

$1\ cm^2 = 100\ mm^2$	100
$1\ m^2 = 10\ 000\ cm^2$	10 000
$1\ km^2 = 1\ 000\ 000\ m^2$	1 000 000
$1\ ha = 10\ 000\ m^2$	10 000

Units of Volume — Conversion Rate

$1\ cm^3 = 1000\ mm^3$	1000
$1\ m^3 = 1\ 000\ 000\ cm^3$	1 000 000
$1\ km^3 = 1\ 000\ 000\ 000\ m^3$	1 000 000 000

Conversion Rules

Converting to **smaller** units, **multiply** by conversion rate.

Converting to **larger** units, **divide** by conversion rate.

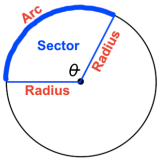
Finding the Circumference of a Circle

$C = 2\pi r$ or $C = \pi d$

Perimeter of a Sector

Perimeter = Arc length + Radius + Radius

$$P = \frac{\theta}{360^\circ} \times 2\pi r + \text{Radius} + \text{Radius}$$



Steps for Formula Solutions
Line 1: Formula
Line 2: Substitute all numbers
Line 3: Calculate answer
Lastly: Check units

Perimeter of Composite Figures

1. Find the length of each part
2. Add all the lengths together

Area of a Square

Area = $Side^2$

$A = S^2$

Area of a Rectangle

Area = Length x Breadth

$A = \ell \times b$

Area of a Triangle

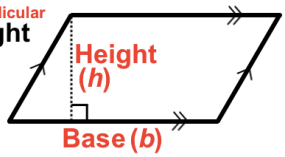
Area = $\frac{1}{2}$ Base x Height (Perpendicular)

$A = \frac{1}{2} b \times h$

Area of a Parallelogram

Area = Base x Height (Perpendicular)

$A = b \times h$



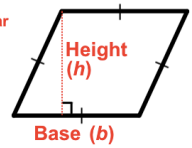
Area of a Rhombus

Version 1

Using the base and perpendicular height

Area = Base x Height (Perpendicular)

$A = b \times h$



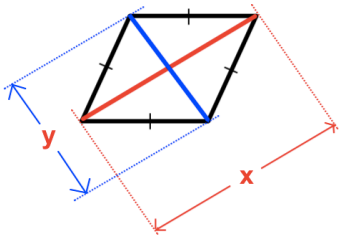
Steps for Formula Solutions
Line 1: Formula
Line 2: Substitute all numbers
Line 3: Calculate answer
Lastly: Check units

Area of a Rhombus

Version 2

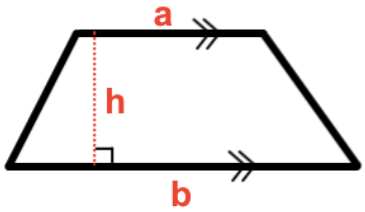
Using the diagonals

$A = \frac{1}{2} x \times y$



Area of a Trapezium

$A = \frac{1}{2} h (a + b)$



Area of a Sector

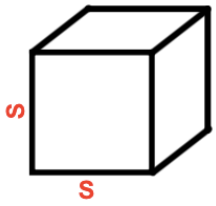
$$\text{Area of a Sector} = \frac{\theta}{360^\circ} \times \pi r^2$$

Area of Composite Figures

1. Find the area of each shape.
2. Add up the total area.

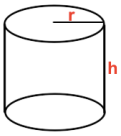
Steps for finding surface area
1. Find the area of each face.
2. Add up all the areas.

Surface Area of a Cube



Surface area = $6s^2$

Surface Area of a Cylinder



Steps for finding surface area
1. Find the area of each face.
2. Add up all the areas.

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

Volume of a Prism

Volume of a Prism = Area x Height

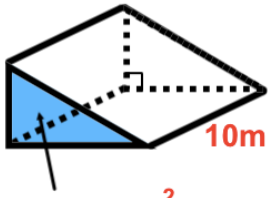
"Area"

This must be the area of a cross-section . A cross-section is an end shape, one that "repeats" all the way to the other end of the solid.

"Height"

This is the distance between the end shapes of a prism. It is often not a vertical height, but "how far back" the end shape goes.

Volume of a Prism



Area = $25m^2$

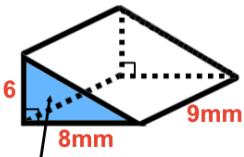
V = A x H

V = 25 x 10

V = 250 m^3

For volume, we use cubic units.

Volume of a Prism



Area = $\frac{1}{2}$b x h

Area = $\frac{1}{2}$8 x 6

Area = $24mm^2$

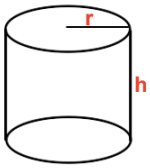
V = A x H

V = 24 x 9

V = 216 mm^3

For volume, we use cubic units.

Volume of a Cylinder

Volume = Axh

Volume = $\pi r^2 xh$