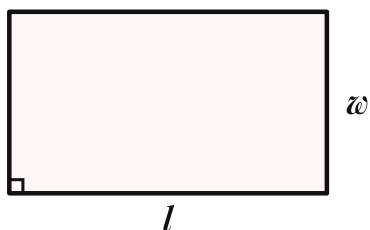


?

Foundation

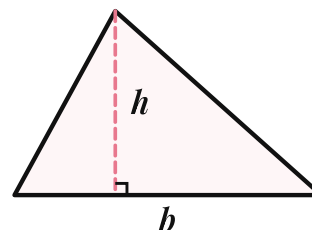
Area of a rectangle



?

Foundation

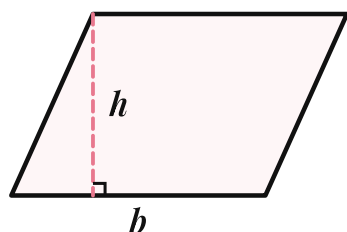
Area of a triangle



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Foundation

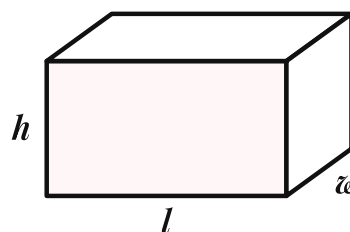
Area of a parallelogram



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Foundation

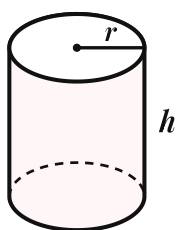
Volume of a cuboid



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Foundation

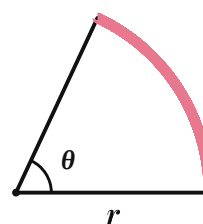
Volume of a cylinder



?

Foundation

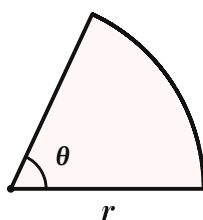
Arc length



?

Foundation

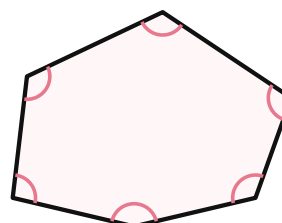
Area of a sector



?

Foundation

Sum of the interior angles of a polygon



= Area of a triangle

$$\text{Area} = \frac{1}{2} \times b \times h$$

b is the base, h is the perpendicular height

e.g.: base 9 cm, height 5 cm: $\frac{1}{2} \times 9 \times 5 = 22.5 \text{ cm}^2$

= Area of a rectangle

$$\text{Area} = l \times w$$

l is the length, w is the width

e.g.: 7.5 cm by 4 cm: $7.5 \times 4 = 30 \text{ cm}^2$

= Volume of a cuboid

$$\text{Volume} = l \times w \times h$$

length $\times$ width $\times$ height

e.g.: 6 cm by 5 cm by 2.5 cm: $6 \times 5 \times 2.5 = 75 \text{ cm}^3$

= Area of a parallelogram

$$\text{Area} = b \times h$$

b is the base, h is the perpendicular height

e.g.: base 8 cm, height 3.5 cm: $8 \times 3.5 = 28 \text{ cm}^2$

= Arc length

$$\text{Arc length} = \frac{\theta}{360} \times \pi d$$

$$\text{or } \frac{\theta}{360} \times 2\pi r$$

θ is the angle at the centre

e.g.: $\theta = 80^\circ$, $r = 9 \text{ cm}$: $\frac{80}{360} \times \pi \times 18 = 4\pi = 12.6 \text{ cm}$

= Volume of a cylinder

$$\text{Volume} = \pi r^2 h$$

the area of the circle $\times$ the height

e.g.: $r = 3 \text{ cm}$, $h = 10 \text{ cm}$: $\pi \times 3^2 \times 10 = 282.7 \text{ cm}^3$

= Sum of the interior angles of a polygon

$$\text{Sum} = (n - 2) \times 180^\circ$$

n is the number of sides

e.g.: A heptagon has 7 sides: $(7 - 2) \times 180^\circ = 900^\circ$

= Area of a sector

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

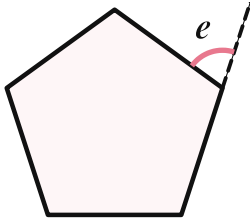
θ is the angle at the centre

e.g.: $\theta = 40^\circ$, $r = 6 \text{ cm}$: $\frac{40}{360} \times \pi \times 6^2 = 4\pi = 12.6 \text{ cm}^2$

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Foundation

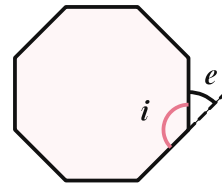
Exterior angle of a regular polygon



?

Foundation

Interior angle of a regular polygon



?

Foundation

Speed

?

Foundation

Density

?

Foundation

Pressure

?

Foundation

Percentage change

?

Foundation

Simple interest

?

Foundation

The mean

= Interior angle of a regular polygon

$$i = 180^\circ - e$$

i is the interior angle, e is the exterior angle: they make a straight line

e.g. A regular decagon: exterior = $360^\circ \div 10 = 36^\circ$, so
interior = $180^\circ - 36^\circ = 144^\circ$

= Exterior angle of a regular polygon

$$\text{Exterior angle} = 360^\circ \div n$$

n is the number of sides

e.g. A regular 12 sided shape: $360^\circ \div 12 = 30^\circ$

= Density

$$\text{Density} = \text{mass} \div \text{volume}$$

So mass = density $\times$ volume and volume = mass $\div$ density

e.g. 540 g of aluminium filling 200 cm³: $540 \div 200 = 2.7 \text{ g/cm}^3$

= Speed

$$\text{Speed} = \text{distance} \div \text{time}$$

So distance = speed $\times$ time and time = distance $\div$ speed

e.g. 195 km in 2.5 hours: $195 \div 2.5 = 78 \text{ km/h}$

= Percentage change

$$\text{Percentage change} = \frac{\text{change}}{\text{original}} \times 100$$

the change is the difference between the new and original amounts

e.g. £80 up to £92: $12 \div 80 \times 100 = 15\%$

= Pressure

$$\text{Pressure} = \text{force} \div \text{area}$$

So force = pressure $\times$ area and area = force $\div$ pressure

e.g. 720 N on 1.6 m²: $720 \div 1.6 = 450 \text{ N/m}^2$

= The mean

$$\text{Mean} = \text{total} \div \text{number of values}$$

add up all the values, then share the total equally

e.g. 4, 7, 9, 12, 13: $45 \div 5 = 9$

= Simple interest

$$\text{Interest} = \text{amount} \times \frac{\text{rate}}{100} \times \text{years}$$

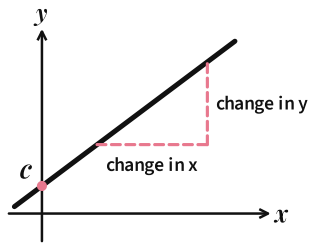
the same interest is added every year

e.g. £600 at 3.5% for 4 years: $600 \times 3.5 \div 100 \times 4 = £84$

?

Foundation

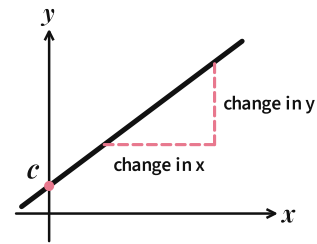
Equation of a straight line



?

Foundation

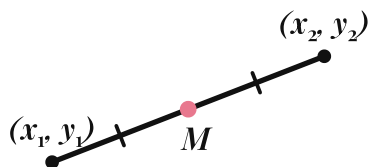
Gradient of a line



?

Foundation

Midpoint of a line segment



?

Foundation

Laws of indices

?

Foundation

Probability of an event not happening

?

Foundation

Expected frequency

?

Foundation

Relative frequency

?

Foundation

Independent events

= Gradient of a line

$$\text{Gradient} = \frac{\text{change in } y}{\text{change in } x}$$

going up is positive, going down is negative

e.g. (1, 2) to (4, 11): $9 \div 3 = 3$

= Equation of a straight line

$$y = mx + c$$

m is the gradient, c is where the line crosses the y axis

e.g. $y = 3x - 2$: gradient 3, crosses the y axis at (0, -2)

= Laws of indices

$$a^m \times a^n = a^{m+n}$$

$$a^m \div a^n = a^{m-n}$$

$$(a^m)^n = a^{mn}$$

same base: add, subtract or multiply the powers

e.g. $5^3 \times 5^4 = 5^7$, $2^9 \div 2^4 = 2^5$, $(3^2)^4 = 3^8$

= Midpoint of a line segment

$$M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

the mean of the x coordinates and the mean of the y coordinates

e.g. (2, 7) and (8, -1): (5, 3)

= Expected frequency

$$\text{Expected frequency} = P(A) \times \text{number of trials}$$

how many times you expect the event to happen

e.g. A fair dice rolled 120 times:
 $P(\text{six}) \times 120 = \frac{1}{6} \times 120 = 20$ sixes

= Probability of an event not happening

$$P(\text{not } A) = 1 - P(A)$$

the probabilities of all the outcomes add up to 1

e.g. $P(\text{late}) = 0.35$, so $P(\text{not late}) = 1 - 0.35 = 0.65$

= Independent events

$$P(A \text{ and } B) = P(A) \times P(B)$$

when one event does not change the probability of the other

e.g. Two fair coins: $P(\text{two heads}) = 0.5 \times 0.5 = 0.25$

= Relative frequency

$$\text{Relative frequency} = \frac{\text{frequency}}{\text{number of trials}}$$

an estimate of the probability from an experiment

e.g. Red 18 times in 60 spins: $18 \div 60 = 0.3$