FUNCTIONAL SKILLS MATHS

Area (Square or Rectangle)

Length x Width

$A = LW$
$A = 7 (4)$
$A = 28$ km^2

Area (Triangle)

$A = \frac{1}{2}bh$

b = base
h = height
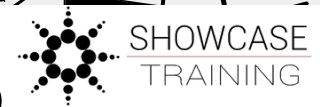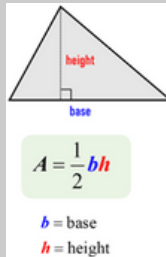
(Base x Height) ÷ 2

Area (Circle π)

$A = \pi r^2$

$\pi \approx 3.1416$
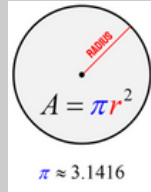
(Radius^2) x π
Radius x Radius x π
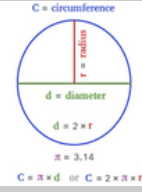
Circumferences of a circle

C = circumference
r = radius
d = diameter
d = 2 × r
π = 3.14
C = π×d or C = 2×π×r

Circumference = 2 x π x Radius
or
Circumference = π x Diameter

BIDMAS

Order of Operations

B	Brackets	10 × (4 ÷ 2) = 10 × 6 = 60
I	Indices	5 × 2² = 5 × 4 = 9
D	Division	10 ÷ 2 = 10 ÷ 3 = 13
M	Multiplication	10 × 4 ÷ 2 = 10 ÷ 8 = 2
A	Addition	10 + 4 ÷ 7 = 40 ÷ 7 = 47
S	Subtraction	10 ÷ 2 − 3 = 5 − 3 = 2

MEAN, MEDIAN, MODE, RANGE

MEAN - mean or average. Add all and divided by how many there are.

MEDIAN – Median is the middle number when in number order (smallest to biggest)

MODE – Mode is the number that appears most often.

RANGE – Range is the biggest take the smallest

Median (Middle)
The number which is in the middle or the middle value.
11 7 11 18 9 7 6 23 7
6 7 7 7 9 11 11 18 23
Median: 9

Mode (Most)
The number that appears the most.
11 7 11 18 9 7 6 23 7
6 7 7 7 9 11 11 18 23
Mode: 7

Mean (Average)
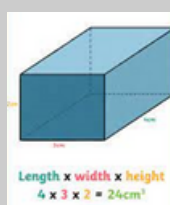The total of the numbers divided by how many numbers there are.
11 7 11 18 9 7 6 23 7
11+7+11+18+9+7+6+23+7=99
99 / 9 = 11
Mean: 11

Range (Difference)
The difference between the largest and the smallest number.
11 7 11 18 9 7 6 23 7
Large : 23   Small : 6
23 - 6 = 17
Range: 17

Compound Interest

Compound Interest
Initial x multiplier   time
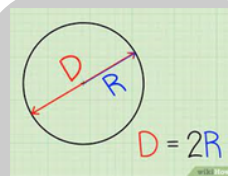
Diameter of a circle

D = 2R

Diameter = 2 x Radius

Volume (Square or Rectangle)

Length x Width x Height

Length x width x height
4 × 3 × 2 = 24cm³

Fraction / Percent

$\frac{a}{b}$

$\frac{x}{100}$ $\frac{a}{b} \times 100$

Percent x%

Converting fractions to percentages

23/100 = 23%
If the denominator is not 100 you will need to find the equivalent
Top ÷ bottom number x 100 = %

Speed, Distance, Time

D = Distance
S = Speed
T = Time
D÷S=T
D÷T=S
SxT=D

Speed: $\frac{D}{S \times T}$ Time: $\frac{D}{S}$ Distance: $S \times T$

Percentage formula

$\frac{is}{of} = \frac{\%}{100}$ or $\frac{part}{whole} = \frac{\%}{100}$

Percentage

100%, to find any other percentage take original number ÷ by 100 (gives 1%) x by number of percent needed

Converting fraction to decimals
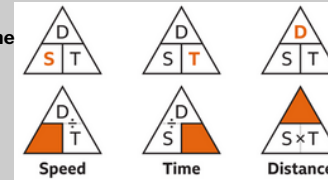
Converting **fractions to decimals** is representing a fraction as a decimal without changing its value.

Example
Convert $\frac{1}{2}$ to a decimal $\frac{1}{2} = 1 \div 2$ $2\overline{)1.0}$ = 0.5   So $\frac{1}{2} = 0.5$

Converting fraction to decimals

3/8
3÷8 = 0.375

Conversion

Length
×10: cm → mm   ×100: m → cm   ×1,000: km → m
÷10   ÷100   ÷1,000

Mass
×1,000: g → mg   ×1,000: kg → g   ×1,000: t → kg
÷1,000   ÷1,000   ÷1,000

Volume
×1,000: l → ml   ×10: cl → ml   ×100: l → cl
÷1,000   ÷10   ÷100

Length
Mass
Volume

Volume (Triangular prism)

Formula: Volume (V) = ½ × b × h × l
b = base edge, h = height, l = length

Height x Base x Length ÷ 2

Percentage (decrease)

Percent Decrease = $\frac{Old\ Value - New\ Value}{Old\ Value} \times 100$

Starting value – final value ÷ starting value x 100

Converting decimals to percentages

$0.45 \times 100 = 45$
$0.45 = 45\%$

Decimal x 100 = %

Converting percentages to fractions
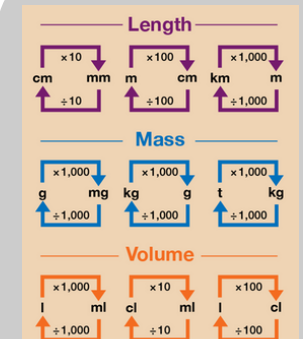
Converting **percentages to fractions** is representing the percentages as a fraction without changing its value to achieve equivalence.

E.g.
Convert **40%** to a fraction
$40\% = 40 \div 100 = \frac{40}{100} = \frac{40 \div 20}{100 \div 20} = \frac{2}{5}$
So $40\% = \frac{2}{5}$

Converting percentages to fractions

% ÷ 100 = top number

Volume (Cylinder)

$V = \pi r^2 h$

π x Radius^2 x Height
or
π x Radius x Radius x Height

Percentage (increase)

Percentage Increase = $\frac{(Final\ Value - Initial\ Value)}{Initial\ Value} \times 100$

Final value – starting value ÷ starting value x 100

Great YouTube channels to support Maths revision:

NCFE - https://youtube.com/playlist?list=PL05ClIRfHw9gUhxUDacO5CcprsarCaEgs
Corbett Maths - https://www.youtube.com/@corbettmaths/featured
The GCSE Maths Tutor - https://www.youtube.com/@TheGCSEMathsTutor/featured
Maths with Mr J - https://www.youtube.com/@MathwithMrJ