

Year 8 Mathematics Core HT 5

Prop	Proportion graphs							
1.	Proportion	Compares a part with a whole						
2.	Direct	Τωο	quantities increase at the same rate	$y \propto x$ y = kx for a constant k				
	proportion	Grap origii	h is a straight line that goes through the n	y = hx				
3.	Inverse/indirect proportion	One the s	variable increases at a constant rate as econd variable decreases	$y \propto \frac{1}{x}$ $y = \frac{k}{x} \text{ for a constant } k$ $y = \frac{k}{x}$ $y = \frac{k}{x}$				
Linea	r graphs							
4.	Gradient		The steepness of a graph Gradient = $\frac{change \text{ in } y}{change \text{ in } x}$ $= \frac{rise}{run}$	This has a This has a positive negative gradient gradient				
5.	Gradient between two points		If A = (x ₁ , y ₁) and B = (x ₂ , y ₂) The gradient of line AB = $\frac{y_2 - y_1}{x_2 - x_1}$	$\begin{array}{c} B \\ (x_2, y_2) \\ (x_1, y_1) \end{array}$				
6.	Parallel lines		Have the same gradients					
7.	Mid-point		The coordinate half way between two point	If A = (x_1, y_1) and B = (x_2, y_2) the mid-point is $(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2})$				

8.	Linear function	An arithmetic sequence that can be represented by a straight line graph				
9.	Linear equation	An equation that produces a straight line graph				
10.	y = mx = c	The general equation of a straight line	<i>m</i> = gradient and <i>c</i> = y intercept			

Per	Percentages						
11.	Percentage	Means 'out of 100'					
12.		A decimal you multiply by to represent a percentage					
	Multiplier	To use a multiplier to find a percentage, divide your percentage by 100, then multiply the amount by this value.					
		Calculate the percentage and add onto the original					
13.	Percentage increase	Or use a multiplier	$amount \times \frac{100 + \% increase}{100}$				
		Calculate the percentage and subtra	ct from the original				
14.	Percentage decrease	Or use a multiplier	$amount \times \frac{100 - \% increase}{100}$				
15.	Percentage change	$\frac{Change}{Original} \times 100$					
16.	Express one number as a percentage of another	$\frac{Number \ 1}{Number \ 2} \times 100$					
	Reverse percentage	Use when asked to find the priginal amount after a percentage increase or decrease.					
17		Original Value x Multiplier = New Value					
17.		Original Value = <u>New Value</u>					
		Multiplier					
18.	Interest	A fee paid for borrowing money or money earnt through investing.					
			l = Prt				
19.	Simple interest	Interest that is calculated as a percentage of the original	I – Interest P – Original amount r – interest rate t - time				
		When interest is calculate on the original amount and any previous interest	$P\left(1+\frac{R}{100}\right)^{n}$				
20.	Compound interest	OR	R – Interest rate				
		$Original \times Multiplier^{time}$	n – the number of interest periods (e.g. yrs)				
21.	Тах	A financial charge placed on sales or savings by the government e.g. VAT					

22.	Loss			Income minus all expenses, resulting in a negative value							
23.	Profit			Income minus all expenses, resulting in a positive value							
24.	Depreciation			A re	duction in	the value	of a produ	ıct over tin	ne		
25.	Annual			Mec	Means yearly						
26.	Per annum			Means per year							
27.	Salary			A fix	A fixed regular payment, often paid monthly						
FD	FDP Conversions										
29.	Percentage to decimal			Divi	Divide by 100						
30.	Decimal to percentage			Multiply by 100							
31.	Fraction to percentage			Find an equivalent fraction with 100 as the denominator							
32.	Percentage t	age to fraction			Write as a fraction over 100 then simplify						
33.	Fraction to d	Fraction to decimal			Carry out division or convert to a percentage first						
34.	Decimal to fraction			Use place value to find the denominator and simplify or convert to a percentage first.							
Bas	Basics to memorise										
	Fraction	1		1	1	1	1	1	1	2	3
		100	1	0	8	5	4	3	2	3	4
35.	Decimal	0.01 0		0.1	0.125	0.2	0.25	o. 3	0.5	0. Ġ	0.75
	Percentage	1%	10) %	12.5%	20%	25%	33. 3%	50%	66. 7%	75%



Analysing and displaying data

1.	Types of Data	Qualitative Data – non-numerical data Quantitative Data – numerical data Continuous Data – data that can take any numerical value within a given range. Discrete Data – data that can take only specific values within a given range. Example: Qualitative Data – eye colour, gender etc. Continuous Data – weight, voltage etc. Discrete Data – number of children, shoe size etc.						
2.	Grouped Data	Data that has been Seen in grouped free Foot length, <i>l</i> , (cm) $10 \le l < 12$ $12 \le l < 17$	bundled in to ca quency tables, histo <u>Number of children</u> 5 53	tegories . ograms, cumulative frequency etc.				
З.	Pie Chart	Used for showing how data breaks down into its constituent parts . When drawing a pie chart, divide 360° by the total frequency . This will tell you how many degrees to use for the frequency of each category. Remember to label the category that each sector in the pie chart represents.						
4.	Cumulative Frequency	Cumulative Frequency is a running total .						





