Year 8 : Cycle 1: Mathematics 100% sheet

Section 1: Algebraic notation	
Indices	**Power** of a variable or number.
Term	A **number or letter** on its own, or **numbers and letters** multiplied together. *e.g. -2, 3x or* $5a^2$
Like terms	Terms which are the same apart from their numerical coefficients: they are the **same variable** and have the **same power.**
Expression	A set of **terms combined using** the operations **+, -, x or ÷**, there is **no "="sign.** *e.g. 4x-3, 5a - 3xy + 17*
Equation	Where **two expressions** are **equal** in value – there is always an **"="sign.** *e.g. 4b = 18*

Section 2: Probability of outcomes and frequency trees	
P(A) =	The **probability of an event A** =
P(A') =	The **probability** that **event A will not occur** = The **complement of A.**
Calculating probability	All probabilities add up to 1 whole and can be in the form of fraction, decimal or percentage.
Independent events	Events where the **outcome** of an event **is not affected** by the **outcome** of a **previous event**.
Dependent events	Events where the **outcome** of an event **is affected** by the **outcome** of a **previous event.**

Section 3: MMMR	
Mean	Add up all the amounts and then divide the total by the number of amounts.
Median	Put the data in numerical order and state the middle value.
Mode	The value which occurs the most.
Range	The largest value subtracts the smallest value.
Comparing data	Compare averages to say who is better/faster. Compare ranges to say who is more consistent.

Section 4: Statistical diagrams	
Stem and leaf	A way of displaying a list of numbers. The stem goes down and the leaves go out to the right, has a key.
Vertical line graph	Like a bar chart, but the bars have no width, they are just straight lines up the page.
Two-way table	Shows information about two variables which do not overlap, the numbers represent frequencies.
Scatter graph	A graph to show bivariate data.
Correlation	When there is a relationship between two sets of data, but we do not know if one caused the other.

Section 5: Pie charts	
Frequency	The total that each piece of data occurs.
Frequency table	A frequency table shows how many times a value occurs.
Degrees	The unit in which an angle is measured.
Protractor	The equipment we use to draw an accurate angle.
Angle	The space between two lines that intersect at a point.

Section 6: Index Laws	
When the base is the same, we can use the following rules:	
Multiplying	**Add** the **powers**. *e.g.* $7^2 \times 7^8 = 7^{10}$
Dividing	**Subtract** the **powers**. *e.g.* $7^8 \times 7^2 = 7^6$
Raising a power by another power	**Multiply** the **powers.** *e.g.* $(7^8)^3 = 7^{24}$
p^0	Anything to the power of 0 is equal to 1.

Section 7: Powers and roots including Pythagoras'	
Squaring	Multiplying a number by itself.
Square root	A number which produces a specified quantity when multiplied by itself.
Pythagoras' Theorem	A relationship between the **3 sides** on a **right-angled triangle.** $\mathbf{a}^2 + \mathbf{b}^2 = \mathbf{c}^2$
Hypotenuse	The longest side length of a right-angled triangle, opposite the right angle.
Right-angle triangle	Triangle that includes a 90° angle and two other acute angles.

Section 8: Standard Form	
Notation	Allows us to write **very large** or **very small** numbers without lots of zeros. N**umbers written** in the form $A \times 10^n$ **'A'** is **between 1 and 10** and **'n'** is any **integer.**
'n' is positive	**large** number (≥ 1).
'n' is negative	**small** number (< 1).
Multiplication	$a \times 10^m \times b \times 10^n = a \times b \times 10^{m+n}$
Division	$a \times 10^m \div b \times 10^n = a \div b \times 10^{m-n}$

Section 9: Prime factors and HCF/LCM	
Highest common factor (HCF)	The **highest factor** which belongs to two or more numbers.
Prime number	An integer greater than 1 that has **exactly two factors, 1 and itself.**
Prime numbers	**2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31…**
Prime factor	A **factor** of a number which is also **prime.**

Section 10: Prime factors and HCF/LCM	
Multiple	The result of **multiplying** a number by an integer, e.*g. the 3rd multiple of 7 is* ***21.***
Lowest common multiple	The **lowest common number** in the **multiplication tables** of two or more different numbers.
Product of prime factors	A set of **prime factors** which **multiply** to give a number.
Index form	Giving an answer in its simplest form and containing powers.

Section 11: Sets and Venn Diagrams	
Venn diagram	A diagram using circles or other shapes, to show the relationship between sets.
Set	A collection of items with one of each member.
The intersection	(A ∩ B) in A and in B.
The union	(A ∪ B) in A or in B or in both.
The compliment	A' Not in A.

Section 12: Inequalities	
Inequality	An inequality compares two values, showing if one is less than, greater than, or simply not equal to another value.
x ≤ means	x is less than or equal to.
x <	x is less than.
x ≥	x is more than or equal to.
x >	x is more than.

Section 13: Revision: Algebraic notation	
Solve	**Find the value** of an unknown or variable.
Iterate	**Repeatedly** carry out a process.
Rearrange	**Changing the subject** of a formula.
Evaluate	In maths, this means **find the value of.**
Form	To **write** or **produce**.