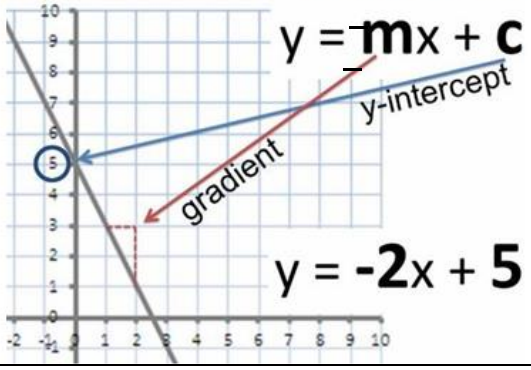
Y8 Autumn Maths Knowledge Organiser

Topic	Key fact	Hegarty maths clip number
Expanding single brackets	$2(y - 3) = 2xy - 2x3 = 2y - 6$ ✓	160 - 161
Plotting linear graphs using a table of values	▪ Need minimum 3 pairs of coordinates. ▪ Start at x = 0. ▪ Do the positive x co-ordinates first. ▪ X co-ordinate: along the corridor ▪ Y co-ordinate: up the stairs. ▪ Y = mx + c will be a straight line.	206
Identifying gradient and y-intercept	The number in front of x is called the gradient and tells us how many up (+) or down (-) the graph goes for every 1 across (right). 	207
Calculating with Decimals	Addition and subtraction: line up the decimal point. Multiplication: Change to whole numbers and remember to put the point in at the end. Division: If dividing by a decimal times both numbers by 10, 100 or 1000. Do not put decimal back in.	47 - 51
Four Operations with Fractions	To add and subtract fractions you need to write all fractions in a sum with the same denominator by writing equivalent fractions. Multiplying: Cancel down whenever possible, then multiply the numerators together and multiply the denominators together. Dividing fractions: KFC (**K**eep the first, **F**lip the second and **C**hange the sign to x)	65 -78
Sharing in a given ratio	Always find 1 part	332 to 334
Ratio problems	Set out in columns and put information below the appropriate column	335 to 338
Proportion	Direct proportion: as one quantity increases so does the other Inverse proportion: as one quantity increases the other decreases	339 to 342
Mean, Median, Mode and Range (recap averages)	Mean: Add up all the numbers and then divide by the number of items. Median: Put in order and then find the middle. If two middle values then add the two middle numbers and divide by 2. Mode: The number that appears the most. There can be more than one mode. Range: The difference between the largest and smallest numbers.	404 -410 And 419 – 421

Multi-step Angle Reasoning	Angles on a straight line add up to 180^{o}. Angles in a triangle add up to 180^{o}. Angles in a quadrilateral add up to 360^{o}. Vertically opposite angles are equal. Angles around a point add up to 360^{o}.	477 - 480, 484 - 491, 812 - 815
Pie Charts	• Find the angle for each category: • 360° ÷ total frequency = the number of degrees per piece of data • To work out each category's associated angle we multiply the number of degrees per piece of data by each frequency. **Top Tip:** Always draw each angle clockwise, using the previous line drawn to start.	427 - 429

Key Vocabulary

- Numerator - the top number in a fraction.
- Denominator - the bottom number in a fraction.
- Mixed number - a number consisting of an integer and a proper fraction.
- Improper fraction - an improper fraction is a fraction where the top number (numerator) is greater than or equal to the bottom number (denominator): it is top-heavy.
- Direct proportion - one quantity increases at the same rate as the other quantity increases.
- Inverse proportion - one quantity increases at the same rate as the other quantity decreases.
- Rate - a price or charge set according to a scale or standard hotel rates.
- Quantity – the amount of something.
- Expand – to multiply the term before bracket by the terms in the bracket.
- Expression – collection of terms. E.g 4x + 8p.
- Gradient – the steepness of a curve
- Linear Graph – straight line graph $y = mx + c$
- Y-intercept – where the graph crosses the y axis