
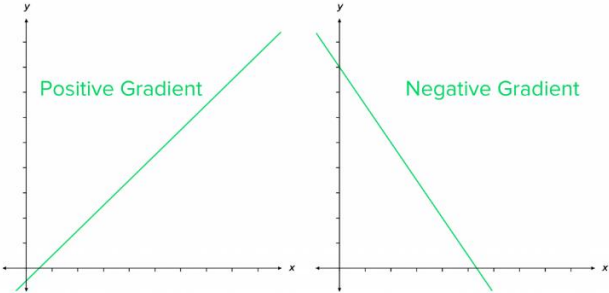
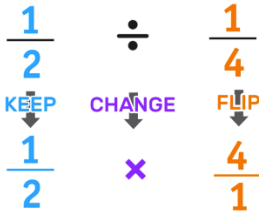


ESSENTIAL KNOWLEDGE FOR YEAR 9

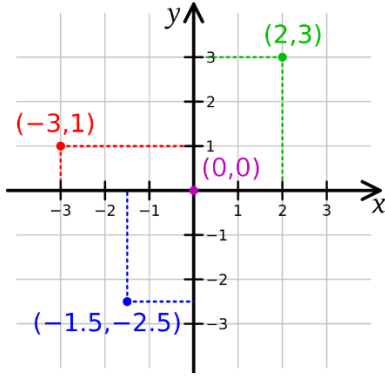
(LEARN THESE KEY FACTS FROM PREVIOUS YEARS)

Know

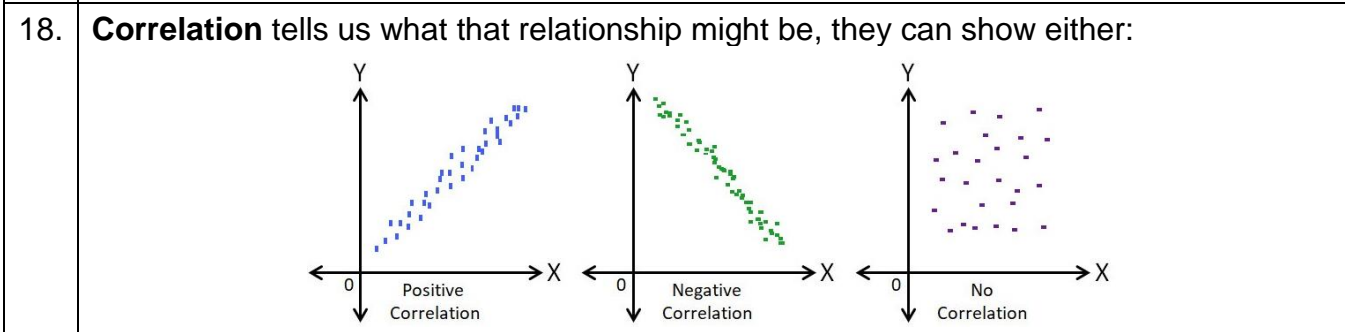
1.	<p>A ratio is the relationship between two or more numbers that are separated by a colon</p> <p style="text-align: center;">$2 : 3$</p> <p style="text-align: center;">  </p>
2.	<p>π (or pi) is a constant that is the ratio of a circle's circumference to its diameter (approximately 3.14)</p>
3.	<p>The general form of the equation for a straight line is $y = mx + c$</p>
4.	<p>In $y = mx + c$, m represents the gradient (the steepness of the line)</p>
5.	<p>In $y = mx + c$, c represents the y-intercept (where the line crosses the y-axis)</p>
6.	<p>A negative gradient represents a line going "down-hill"</p> <p style="text-align: center;">  </p>
7.	<p>Direct proportion; as one amount increases, another amount increases at the same rate.</p>
8.	<p>An improper fraction is a 'top-heavy' fraction, the numerator is larger than the denominator. For example, $\frac{9}{4}$</p>
9.	<p>A mixed number is a number made up of whole's and fractional parts. For example, $5\frac{3}{7}$</p>
10.	<p>Similar shapes in maths are enlargements of each other, their lengths are in direct proportion. (Angles remain the same in similar shapes)</p>
11.	<p>A scale factor tells us what multiplier has been used to enlarge a shape (remember enlargements can get smaller too, with scale factors between 0 and 1)</p>
12.	<p>A map scale is often written in the form 50 000:1, this means 1 cm on the map is equivalent to 50 000cm in real life.</p>
13.	<p>To multiply fractions together, multiply the numerators together and the denominators together.</p>
14.	<p>To divide fractions together, use KFC. Keep the first fraction the same, Flip the second fraction over (this is also the reciprocal of the fraction), Change the sign to a multiply, then work it out.</p> <p style="text-align: center;">  </p>
15.	<p>A reciprocal is 1 divided by the number given, or when given as a fraction the numerator and denominator switch places.</p>



16. A **coordinate** is used to identify a location on a grid. We give the x-value first, then the y-value, and it is written in brackets.



17. We use a **scatter graph** to see if two variables have a relationship.



19. **Continuous** data can take any value, often it will be a measurement.

20. **Discrete** data can only take certain values, like shoe sizes.

21. **Qualitative** data use words instead of numbers, like someone's favourite colour.

22. A **sequence** is a set of numbers that follow a rule to get from one number to the next.

23. A **formula** is a rule written using symbols that represents different amounts. For example, the area of a triangle can be found with the formula $A = \frac{bh}{2}$

24. An **expression** is a collection of algebraic terms that are being added or subtracted together.

25. An **equation** shows that two things are equal.

26. An **identity** is true no matter what values are chosen. For example, $3(x + 5) \equiv 3x + 15$. \equiv is the mathematical symbol for an identity.

27. To **expand** an expression means to multiply out the brackets.
 Expand the following expression
 $3(x - 9)$

	x	- 9
3	3x	-27

Final Ans: $3x - 27$

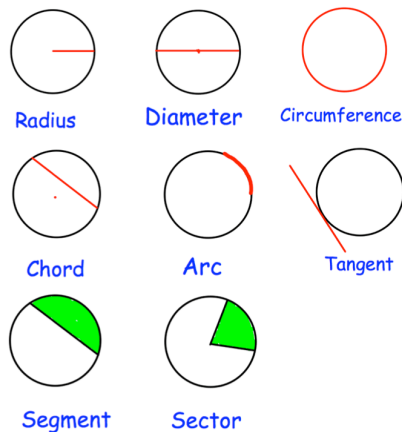
28. To **factorise** an expression is the reverse of expanding. So factorising $3x - 27$ gives $3(x - 9)$. For it to be fully factorised we must have the highest common factor in front of the bracket.

29. **Inequalities...**

Greater than	$>$	Greater than or equal to	\geq
Less than	$<$	Less than or equal to	\leq



30. **Parts of a Circle...**



31. **Know these key equivalent fractions, decimals and percentages...**

Fraction	Decimal	Percentage
$\frac{1}{1}$	1	100
$\frac{1}{2}$	0.5	50
$\frac{1}{4}$	0.25	25
$\frac{1}{5}$	0.2	20
$\frac{1}{10}$	0.1	10
$\frac{1}{20}$	0.05	5
$\frac{1}{100}$	0.01	1

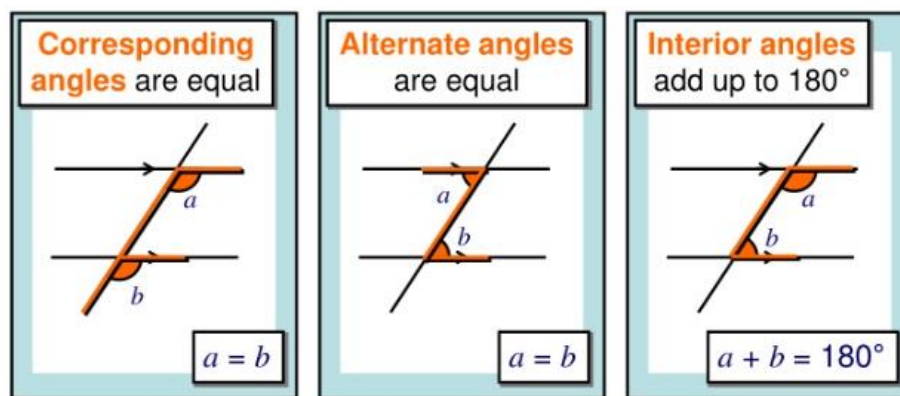
32. **Laws of indices, multiplying:** $a^m \times a^n = a^{m+n}$

33. **Laws of indices, dividing:** $a^m \div a^n = a^{m-n}$

34. **Percentage multipliers** use decimal equivalents of percentages and multiplication to calculate amounts. For example, the percentage multiplier for 63% is $\times 0.63$

35. A number written in **standard form** is a number written between 1 and 10 multiplied by 10 to an appropriate power. We use standard form to represent very large or very small numbers. For example, $0.00032 = 3.2 \times 10^{-4}$, $320000 = 3.2 \times 10^5$

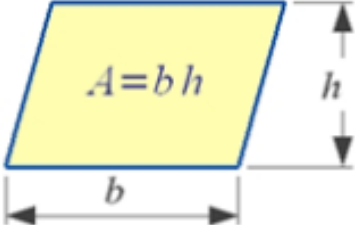
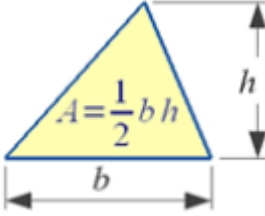
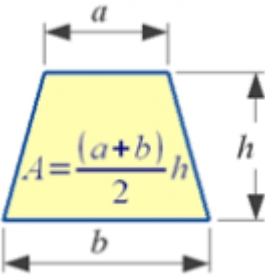
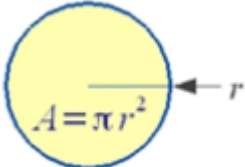
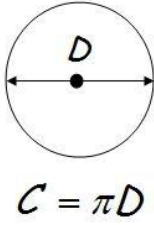
36. **Angles on parallel lines...**



Look for an F-shape

Look for a Z-shape

Look for a C- or U-shape

37.	Area of a parallelogram and rectangle... 
38.	Area of a triangle... 
39.	Area of a trapezium... 
40.	Area of a circle... 
41.	Circumference of a circle... 
42.	The range is the largest number subtract the smallest number.
43.	The mode is the <u>most</u> common number.
44.	The median is the middle number, when put in order.
45.	The mean is the total of all the numbers divided by the amount of numbers.