

GCSE Higher Maths – Learning Journey

Topic	Remember this!
Four Operations	Show full workings
Ordering Values	Use place value columns to compare
Rounding	Know the difference between decimal places and significant figures
Estimation	Do not work it out exactly...use an estimate!
Powers and Roots	Don't just times or divide, remember what a power means
Laws of Indices	When multiplying you ADD the powers
Reciprocals	must always multiply to = 1
Factors, Multiples and Primes	Draw your factor tree in full. Multiplying the branches...don't add!
HCF and LCM	Use a Venn diagram. Middle multiplied = HCF, All of them multiples = LCM
Writing in standard Form	the number at the front must be between 1 and 10. Negative power = decimal
Operations in standard form	Put your answer back into standard form
Simplifying surds	make the number in the root as small as possible
Multiplying/dividing surds	Simplify your answer
Gathering Like Terms	Think of it like a shopping list (don't add the powers)
Simplifying expressions	Use the laws of indices
Expanding	Get rid of the brackets by multiplying
Expanding and simplifying	Do what it says...expand and then simplify
Factorising linear expressions	Factorise means put it into brackets (opposite of expand)
Expanding quadratics	Use crab claw (draw the lines...it should look like a crab's claw)
Factorising quadratics	What two numbers add to the make b and times to make c
Substitution	swap the letters over and use BIDMAS
Solving Linear equations	Find the value of the letter. Always think about "balancing"
Changing the subject of a formula	Change how it's written so that it equals a different letter
Iteration	Find a solution and then put that back into the equation

H T O

$$\begin{array}{r} 345 \\ +129 \\ \hline \end{array}$$

Work out 3.17×5.8

Rounding Rhyme
 Five to Nine - Climb the Vine!
 Zero to Four - Slide to the Floor!

$5 = 5 \times 5 \times 5 \times 5 = 625$
 Factors of 16: 1 2 4 8 16
 The highest common factor is 8
 Factors of 24: 1 2 3 4 6 8 12 24
 Let us find the L.C.M. of 28 and 12
 Multiples of 28 are 28, 56, 84, 112,
 Multiples of 12 are 12, 24, 36, 48, 60, 72, 84, 96,
 The least common multiple (L.C.M.) of 28 and 12 is 84.
 $2300000000000 = 2.3 \times 10^{14}$
 $0.00000000000002 = 2 \times 10^{-15}$

Surd laws
 $\sqrt{x \times y} = \sqrt{x} \times \sqrt{y}$
 $\sqrt{x \div y} = \sqrt{x} \div \sqrt{y}$

Laws of indices
 $a^m \times a^n = a^{m+n}$
 $a^m \div a^n = a^{m-n}$
 $(a^m)^n = a^{m \times n}$

Binomial Expansion – Crab Claws
 To help remember the Pattern, think of the terms in the first bracket as two Crab Claws, which each reach into the second bracket and grab the values there and multiply them.

$(2+3) \times (4+5)$

Factorise:
 $4x + 32 = 4(x + 8)$

$5(3x + 2) - 2 = -2(1 - 7x)$
 $15x + 10 - 2 = -2 + 14x$
 $15x + 8 = -2 + 14x$
 $15x + 8 - 14x = -2 + 14x - 14x$
 $x + 8 = -2$
 $x + 8 - 8 = -2 - 8$
 $x = -10$

Distribute.
Combine same-side like terms.
Combine opposite-side like terms.
Solve.