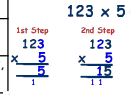
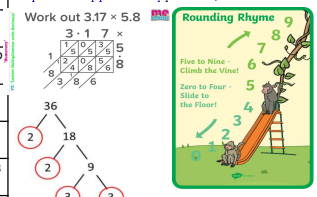
Year 9 Maths - Learning Journey

Lesson	Topic	Remember this!
1	Column addition and subtraction (Revision)	How to lay workings out in columns
2	Long multiplication (Revision)	How to lay out long multiplication (including place holders)
3	Long multiplication (Revision)	How to lay out long multiplication (including place holders)
4	Multiplying one decimal by another	Ignore the decimal points, work it out, put decimal points back in
5	Division (Revision)	How to use the bus shelter method
6	Dividing one decimal by another	Make the thing you're dividing by into a whole number
7	Calculate using powers and roots	Squaring is NOT doubling, cubing is NOT tripling, etc.
8	BIDMAS	Multiplication and division must come before addition and subtraction
9	Factors, multiples and prime numbers	Be clear on the difference between a multiple and a factor
10	Prime Factor Form	Write your answer like 2 x 2 x 3 x 5 or use powers
11	Lowest Common Multiple (LCM)	LCM cannot be smaller than the numbers you started with
12	Highest Common Factor (HCF)	HCF cannot be bigger than the numbers you start with
13	Squares, square roots, cubes and cube roots	Squaring is NOT doubling, cubing is NOT tripling, etc.
14	Calculating with negative numbers	Adding a negative goes down, subtracting a negative goes up
15	Rounding to decimal places and significant figures	Five to Nine - Climb the Vine!, Zero to Four - Slide to the Floor!
16	Upper and lower bounds	Use number lines to help if necessary
17	Standard form	First part cannot be smaller than one and cannot be 10 or more
18	Standard form	The power tells you how many places to move the decimal point
19	Standard form (worded questions)	Read question carefully - does answer have to be in standard form?
20	Multiplying and dividing numbers in standard form	Is your answer back in 'proper' standard form?
21	Adding and subtracting numbers in standard form	Is your answer back in 'proper' standard form?

Higher Tier Only





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.

$230000000000 = 2.3 \times 10^{11}$

$0.0000000000002 = 2 \times 10^{-13}$

$(4.6 \times 10^4) \times (3 \times 10^3)$

$4.6 \times 3 \times 10^4 \times 10^3$

13.8×10^7 ✗

1.38×10^8 ✓

Lesson	Topic	Remember this!
22	Simplifying surds	Use prime factor form to help simplify bigger numbers
23	Multiplying and dividing surds	Remember to simplify your answers
24	Adding and subtracting surds	Find a common root before adding or subtracting
25	Rationalising the denominator	Remember to multiply numerator and denominator by the same thing
26	Fraction Revision 1	Find common denominator before ordering fractions
27	Fraction Revision 2	Understand numerators and denominators
28	Calculating fractional increases and decreases	The denominator has to be the original amount
29	Fraction Revision 3	Find the fraction of the amount, then add or subtract
30	Calculating reverse fractions	It's not as simple as finding the fraction of the amount and adding/subtracting!
31	Multiplying and dividing mixed numbers	Change to improper fractions first, change back to mixed number at the end
32	Adding and subtracting mixed numbers	Either change to improper fractions or use whole numbers and fractions separately
33	Converting between fractions, decimals and percentages	Need to be able to change freely between the three
34	Recurring and terminating decimals	How do we show one digit is recurring? Two digits? Three?
35	Using algebra to convert a recurring decimal into a fraction	Working must be shown!
36	Calculating percentage increases and decreases	Divide by the original amount
37	Expressing one amount as a percentage of another	Divide by the original amount
38	Calculating a percentage change	Divide by the original amount
39	Calculating any percentage of any amount	How do you do this without a calculator? With a calculator?
40	Simple interest and depreciation	Percentage x number of time periods
41	Compound interest and depreciation	Be clear on the difference between simple and compound interest
42	Reverse percentages	It's not as simple as finding the percentage of the amount and adding/subtracting!
43	Simplifying ratios with different units	Make units the same before simplifying
44	Sharing in a given ratio	When sharing, answers should add to total amount at start of question
45	Problem solving using ratios	When sharing, answers should add to total amount at start of question
46	Proportion problems using the unitary method	Work out what one is worth, then multiply
47	Recipe and scale proportion problems	You may need to divide first to help find the answer
48	Recipe and scale proportion problems	You may need to divide first to help find the answer

$\sqrt{a} \times \sqrt{b} = \sqrt{ab}$

$\sqrt{a} \times \sqrt{a} = \sqrt{a^2} = a$

$a\sqrt{b} \times c\sqrt{d} = ac\sqrt{bd}$

$\frac{1}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{2}$

$1\frac{1}{2} \times 2\frac{1}{5} = 3\frac{3}{10}$

$\frac{3}{2} \times \frac{11}{5} = \frac{33}{10}$

$1\frac{1}{2} + 2\frac{3}{4} = (1+2) + (\frac{1}{2} + \frac{3}{4})$

$= 3 + (\frac{2}{4} + \frac{3}{4})$

$= 3 + \frac{5}{4}$

$= 3 + 1\frac{1}{4} = 4\frac{1}{4}$