OPAL - Multiples and Factors

What is a factor pair?	Two factors of a number that when multiplied together, make the number.
What is a common multiple?	When two numbers share the same multiple—eg: common multiples of 14 and 2 are: 14, 28 and 42 (to name a few)
What are the common multiples of (eg: 6 and 8) that are below 100?	(24, 48, 72, 96)
What are the factor pairs of (eg: 12)?	(1 and 12, 2 and 6, 3 and 4)
Tell me 5 multiples of (eg. 4, 6, 8, 10 etc,)	(4, 8, 12, 16, 20) (6,12,18,24,30) (8, 16, 24, 32, 40)

Questions in yellow will be asked 3 times using different numbers.

Amethyst - Prime Numbers

What is a prime number?	a number that is divisible only by itself and 1
What are the prime numbers between 1-10?	(2, 5, 7)
How many prime numbers are their between 10 and 30?	(11, 13, 17, 19, 23, 29) (6 in total)
What are the prime numbers between 50 and 100?	(53, 59, 61, 67, 71, 73, 79, 83, 89, 97)
Can you tell me 2 numbers above 100 that are prime?	(101, 103, 107, 109, 113, 127, 131, 137, 139, 149, 151, 157, 163, 167, 173, 179, 181, 191, 193, 197, 199)

Tip: Use a number square to help identify and revise prime numbers.

Remember, 1 is not a prime number. Can you think why?

Emerald- Indices and roots (squared)

Multiplication facts:	Division facts:
2^2 (2 squared) = 4	$\sqrt[2]{4}$ (square root of 4) = 2
3^2 (3 squared) = 9	$\sqrt[2]{9}$ (square root of 9) = 3
4^2 (4 squared) = 16	$\sqrt[2]{16}$ (square root of 16) = 4
5^2 (5 squared) = 25	$\sqrt[2]{25}$ (square root of 25) = 5
6^2 (6 squared) = 36	$\sqrt[2]{36}$ (square root of 36) = 6
7^2 (7 squared) = 49	$\sqrt[2]{49}$ (square root of 49) = 7
8^2 (8 squared) = 64	$\sqrt[2]{64}$ (square root of 64) = 8
9^2 (9 squared) = 81	$\sqrt[2]{81}$ (square root of 81) = 9
10^2 (10 squared) = 100	$\sqrt[2]{100}$ (square root of 100) = 10
11^2 (11 squared) = 121	$\sqrt[2]{121}$ (square root of 121) = 11
12^2 (12 squared) = 144	$\sqrt[2]{144}$ (square root of 144) = 12

What is a squared number?	A number that has been multiplied by itself.
What is a square root?	The inverse of a squared number. It is a value that, when multiplied by itself, gives the number.

Topaz - Fraction, decimal and percentage equivalents

10% = 0.1 = 1/10 Ten percent = Zero point one = One tenth	**1% = 0.01 = 1/100** One percent = Zero point zero-one = One hundredth
20% = 0.2 = 1/5 Twenty percent = Zero point two = One fifth	**2% = 0.02 = 1/50** Two percent = Zero point zero-two = One fiftieth
5% = 0.05 = 1/20 Five percent = Zero point zero-five = One twentieth	**33% = 0.33˙ = 1/3** Thirty three percent = Zero point three-three recurring = One third
25% = 0.25 = 1/4 Twenty five percent = Zero point two-five = One quarter	**50% = 0.5 = 1/2** Fifty percent = Zero point five = One half
12.5% = 0.125 = 1/8 Twelve point five percent = Zero point one-two-five = One eighth	**100% = 1.0 = 1/1** One hundred percent = One whole = One over one

What is an equivalent?	A pair or set of whole or decimal numbers, fractions or percentages that are equal in value.
What does the word recurring mean?	A number or group of numbers that repeats itself an infinite number of times.
How do we show that a number is recurring?	A dot is placed next to the digits that are to be repeated, higher than where a decimal point would be.

SAPPHIRE - Indices and roots (cubed)

Multiplication facts:	Division facts:
2^3 (2 cubed) = 8	$\sqrt[3]{8}$ (cube root of 8) = 2
3^3 (3 cubed) = 27	$\sqrt[3]{27}$ (cube root of 27) = 3
4^3 (4 cubed) = 64	$\sqrt[3]{64}$ (cube root of 64) = 4
5^3 (5 cubed) = 125	$\sqrt[3]{125}$ (cube root of 125) = 5
6^3 (6 cubed) = 216	$\sqrt[3]{216}$ (cube root of 216) = 6
7^3 (7 cubed) = 343	$\sqrt[3]{343}$ (cube root of 343) = 7
8^3 (8 cubed) = 512	$\sqrt[3]{512}$ (cube root of 512) = 8
9^3 (9 cubed) = 729	$\sqrt[3]{729}$ (cube root of 729) = 9
10^3 (10 cubed) = 1000	$\sqrt[3]{1000}$ (cube root of 1000) = 10
11^3 (11 cubed) = 1331	$\sqrt[3]{1331}$ (cube root of 1331) = 11
12^3 (12 cubed) = 1728	$\sqrt[3]{1728}$ (cube root of 1728) = 12

What is a cubed number?	A number that is the product of three numbers which are the same.
What is a cube root?	The inverse of a cubed number. It is a value that, when multiplied by itself twice, gives the number.

Ruby - Famous sequences and Perfect numbers

What is special about the Fibonacci sequence?	The sequence starts with a zero and a one and from then on, each number is equal to the sum of the two before it.
What are the first 10 numbers in the Fibonacci sequence?	0, 1, 1, 2, 3, 5, 8, 13, 21, 34
What are the first 10 squared numbers?	1, 4, 9, 16, 25, 36, 49, 64, 81, 100
What are the first 10 cubed numbers?	1, 8, 27, 64, 125, 216, 343, 512, 729, 1000
What is a perfect number?	A number that is equal to the sum of its divisors.
What are the first five perfect numbers?	6, 28, 496, 8128, 33 550 336
What's the next number in the following number sequence?	**(eg: -24, -8 , 8, 24, 40, __?)** Use your knowledge of number to think on your feet and find the difference between the numbers that you're given.

Diamond - Metric and imperial equivalents

Length	Capacity
1km = 1000m One kilometre = One thousand metres	**1l = 1000ml** One litre = One thousand millilitres
1m = 100cm One metre = One hundred centimetres	**1gal = 8pt = 4.5l** One gallon = Eight pints = Four-point-five litres
1cm = 10mm One metre = One hundred centimetres	**1pt = 568ml** One pint = Five hundred and sixty-eight millilitres
1mi = 1760yd = 1.6km One mile = One thousand, seven hundred and sixty yards = One-point-six kilometres	**Mass**
1yd = 3ft = 914 cm One yard = Three feet = Nine hundred and fourteen centimetres	**1kg = 1000g** One kilogram = One thousand grams
1ft = 12in = 30cm One foot = Twelve inches = Thirty centimetres	**1st = 14lb = 6.4kg** One stone = Fourteen pounds = Six-point-four kilograms
1in = 2.5cm One inch = Two-point-five centimetres	**1lb = 16oz = 453g** One pound = sixteen ounces = Four hundred and fifty-three grams
	1oz = 28g One ounce = Twenty-eight grams

What are the metric measures for (eg: mass)?	(Kilograms and grams)
What are the imperial measures for (eg: capacity)?	(Pints and gallons)

Make sure you practise **every day** when you are able to, in order to improve! Aim for the top and to be the best!

In order to move up a level, you must answer **VERY quickly** and correctly (in under 5 seconds) - you will be asked 10 random questions from the list and 5 from any other previous list (once you reach Orange) so make sure that you keep practising every level, even after you pass it. If your teacher is satisfied with your speed, then you may move up a level.