Maths – Algebraic Thinking – Autumn Term 1

LEES BROOK COMMUNITY SCHOOL

Section A: Vocabulary

Sequences

Term: Each value in a sequence is called a term. In the sequence 2, 5, 8, 11…, 8 is the third term.

Term-to-term rule: A rule which allows you to find the next term in a sequence.

***n*th term**: A rule which allows you to calculate the term that is in the *n*th position of the sequence. *nth* term of 2,5,8,11,. is $3n - 1$

Fibonacci type sequences: A sequence where the next number is found by adding up the previous two terms e.g.. 1,1,2,3,5,8,13,21,34,…

Difference: the gap between two terms.

Algebraic notation

Expression: A mathematical statement written using symbols, numbers or letters.

Input: the number or expression put into a function.

Output: the number or expression that comes out of a function.

Substitute: replaces one variable with a number or new variable.

Evaluate: work out.

Inverse: the opposite operation. Divide/multiply.

Equality and equivalence:

Equality: two expressions that have the same value

Equation: a statement showing that two expressions are equal, shown by '=' symbol –means the same

Solution: the set or value that satisfies the equation

Solve: to find the solution.

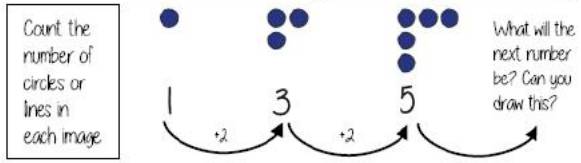
Like: variables that are the same are 'like'

Coefficient: a multiplicative factor in front of a variable. For example: 5x: 5 is the coefficient, x is the variable.

Section B: Key facts and processes

Sequences

Describe and continue a sequence diagrammatically



Continue linear sequences: 7, 11, 15, 19, 23, 27 (add 4)

Find the terms: substitute in for n=1, n=2 etc.
For 4n +2, first term: (4x1) +1=6, second: (4x2) +3 = 10

Finding the nth term of a linear sequence

1. Find the difference. 2. Multiply that by n.
3. Substitute $n = 1$ to find out what number you need to add or subtract to get the first number in the sequence.

E.g. 7, 11, 15, 19, 23. Difference= 4. nth term= $4n + 3$

Understand and use algebraic notation

Collect like terms: $y + 2y + y = 4y$

$y \times 4 = 4 \times y = 4y$

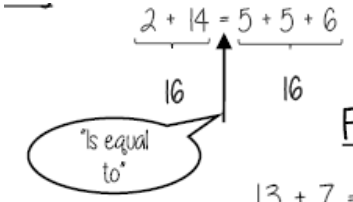
$y \times y \times y = y^3$

Substitute into expressions: if $y = 3$, $b = 5$

$4y = 4 \times 3 = 12$ $\quad y + b = 3 + 5 = 8$

Equality and equivalence

Equality



Equivalence:

$2 \times 2m \equiv 7m - 3m$

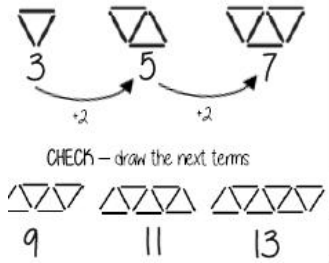
Fact Families

$13 + 7 = 20$ $\quad 20 - 7 = 13$

$7 + 13 = 20$ $\quad 20 - 13 = 7$

Section C: Support

Predict and check terms



Predictions:
Look at your pattern and consider how it will increase.

e.g. How many lines in pattern 6?
Prediction - 13
If it is increasing by 2 each time - in 3 more patterns there will be 6 more lines

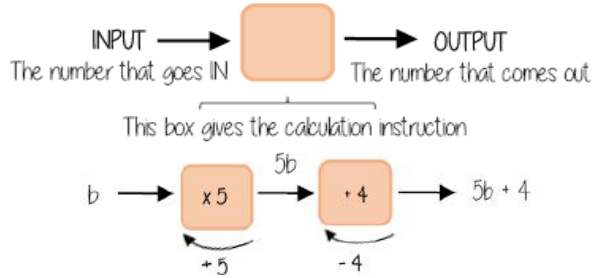
Continue non-linear Sequences

4, 12, 36, 108… 1, 2, 4, 8, 16 …

x3 x3 x3

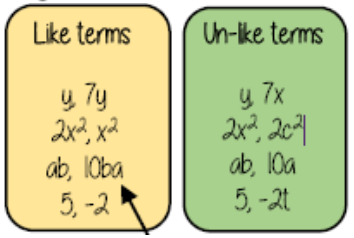
First term

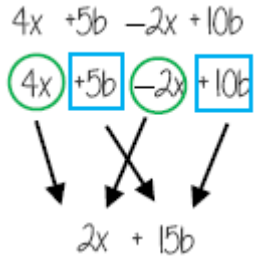
it doubles each time



Collecting like terms

Only like terms can be combined





Revision QR Code for Corbett Maths which includes videos, worksheets and exam questions

Maths – Place Value & Proportion – Autumn Term 2

LEES BROOK COMMUNITY SCHOOL

Section A: Vocabulary

Place value and ordering

Place value: The value of a digit depending on its place in a number. In our decimal number system, each place is 10 times bigger than the place to its right

Place holder: We use 0 as a place holder to show that there are none of a particular place in a number

Integer: a whole number that is positive or negative

Negative: Any number less than zero; written with a minus sign.

Ascending order: putting into numerical order from smallest to biggest.

Descending order: putting into numerical order from biggest to smallest.

Rounding: making a number simpler but keeping its value close to what it was. e.g.. round to nearest 10 or 100

Significant figure: A rounding method where the most significant numbers are retained and the rest changed to zeroes. The most significant digit in an integer is the number on the left. In a decimal starting 0. ….. it is the first non-zero number after the decimal point.

Fractions, Decimals, Percentages Equivalence

Equivalent: of equal value

Per cent: parts per hundred

Fraction: how many parts out of a whole

Decimal: a number with a decimal point used to separate ones, tenths, hundredths etc...

Interval: what is between two values or points.

Tenth: one whole split into 10 parts

Recurring decimal: a decimal number with a digit that repeats forever.

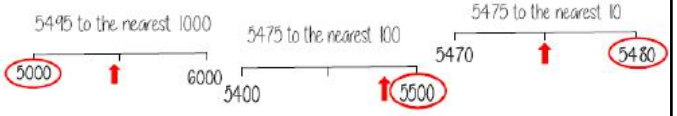
Section B: Key facts and processes

Place value and ordering

Millions	Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Units/ones	Decimal point	Tenths	Hundredths
6	8	0	5	7	1	0	.	4	9

This is six million, eight hundred and five thousand, seven hundred and ten point four three

Rounding to nearest power of 10: round up if halfway



Significant figure: the most significant digit in an integer is the number on the left. In a decimal starting **0.**…
It is the first non-zero number after the decimal point.

Round to 1 significant figure

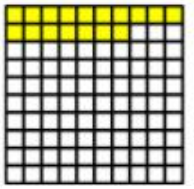
370 to 1 significant figure is 400
37 to 1 significant figure is 40
3.7 to 1 significant figure is 4
0.37 to 1 significant figure is 0.4
0.00000037 to 1 significant figure is 0.0000004

Round to the first non zero number

Fractions, Decimals, Percentages:

Revision QR Code for Corbett Maths which includes videos, worksheets and exam questions

Section C: Support



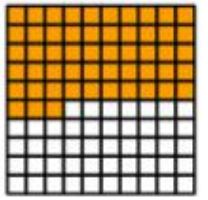
Here are 100 squares. I have 17 yellow squares.

The fraction of yellow squares is $\frac{17}{100}$

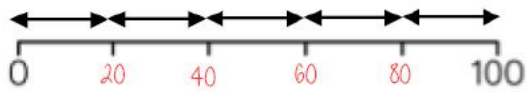
The percentage of yellow squares is 17%

I want to make 0.53 of this big square orange.

So I want to make 53 hundredths orange.
This is the same as 53% or $\frac{53}{100}$

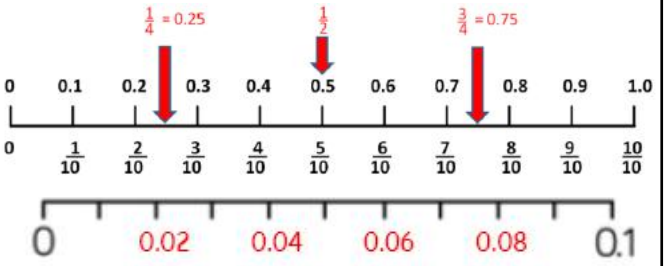


Intervals on a number line



Decimal intervals on a number line

One whole split into 10 parts makes tenths - 0.1
One tenth split into 10 parts makes hundredths - 0.01



You are expected to know some of the key FDP equivalences without working them out

Decimal	Percentage	Fraction
0.5	50%	$\frac{1}{2}$
0.25	25%	$\frac{1}{4}$
0.75	75%	$\frac{3}{4}$
0.2	20%	$\frac{1}{5}$
0.1	10%	$\frac{1}{10}$
$0.\dot{3}$	$33.\dot{3}\%$	$\frac{1}{3}$