‘Introduction to algebra’

The Knowledge for Progression:

- To know that terms are a constant, variable or combination of both and can be positive or negative. The 4 operations can be applied in exactly the same way as numerical operations
- To know that like terms are the same variables raised to the same power
- To know that expanding means the removal of brackets by multiplication
- To know that an expression is made up of constants, variables and mathematical operations, but does not include an = sign
- To know that substitution means replacing the variables in an algebraic expression with their numerical values

Speak Like a Mathematician

Key Word	Dual Coding	Definition
Variable	$4a + b - 12$	A letter or a symbol representing a numerical value
Coefficient		A numerical value that comes before a variable
Term		A constant, variable or combination of both
Like terms	$3c + 2d - c + 5d + 4c^2$	The same variables raised to the same power
Expression	4a + b - 12	Made up of constants, variables, and mathematical operations
Expand		The removal of brackets by multiplying
Substitution	When a = 4 work out 3 + a 3 + 4 = 7	Replacing variables with numerical values

‘Solving equations and inequalities’

The Knowledge for Progression:

- To know that an equation contains an equals symbol, variable and constant
- To know that an inequality contains an inequality symbol, variable and constant
- To know that equation/inequality are formed from expressions
- To know that solve means to find the value of the variable
- To know that solving always requires performing the inverse operations

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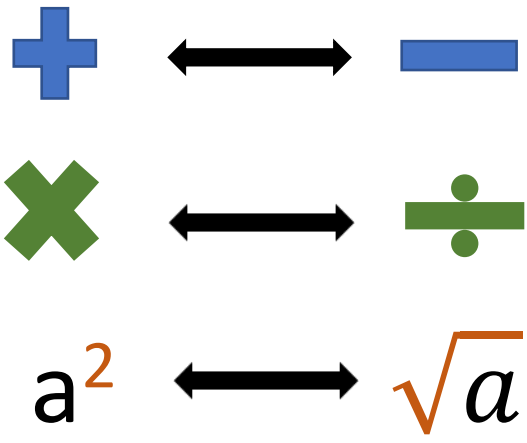
Key Word	Dual Coding	Definition
Equation	$4a + b - 12 = 32$	Two expressions connected by an equal symbol
Inequality	$4a + b - 12 > 32$	Two expressions connected by an inequality symbol
Solve	$\frac{x}{5} = 6$ $x = 30$	Find the value of the variable
Inverse		Opposite operations that reverse the effect of the other operation

‘Volume prisms’

The Knowledge for Progression:

- To know that volume = area of the cross-section x length
- To know that volume is the number of cube units inside the shape

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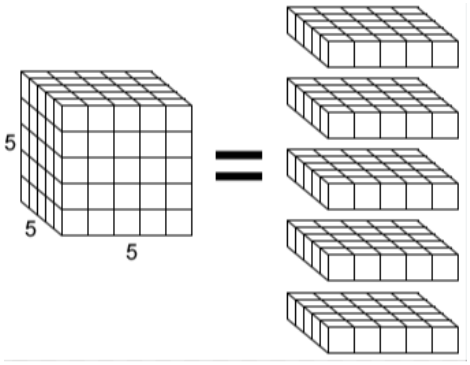
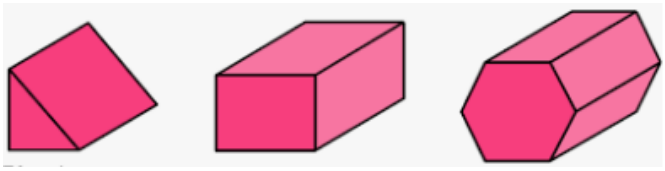
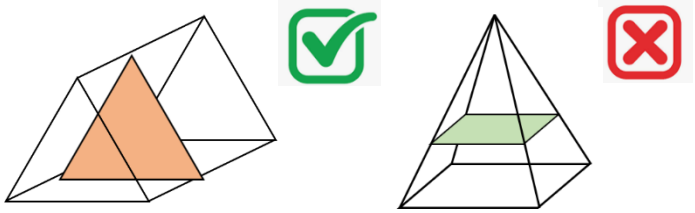
Key Word	Dual Coding	Definition
Volume		The number of cube units inside a 3D shape
Prism		A 3D shape with a uniform cross section. The cross section is a polygon
Uniform cross-section		The **same** face that runs through the length of a 3D shape.

‘Sequences’

The Knowledge for Progression:

- To know that a sequence is a set of numbers or diagrams that follow a pattern
- To know that the term-to-term rule is the way that you obtain the next term using the previous term
- To know that an arithmetic sequence is a linear sequence where each term is generated by adding or subtracting a constant amount
- To know that a geometric sequence is where each term is generated by multiplying by a constant amount
- To know that terms in a triangular sequence are generated by adding consecutive numbers, starting from 1
- To know that the terms in a Fibonacci sequence are generated by adding the two previous terms

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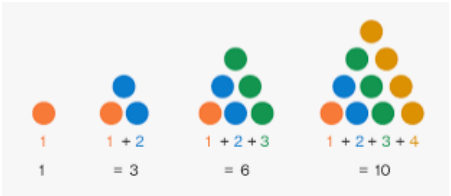
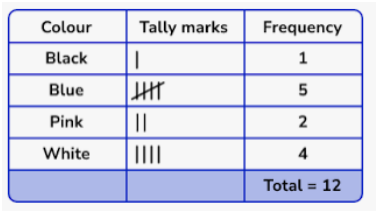
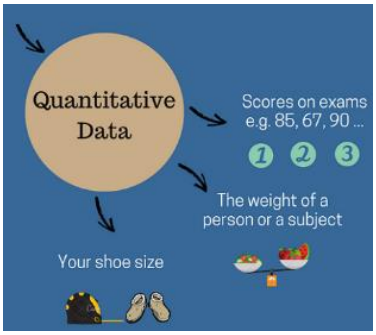
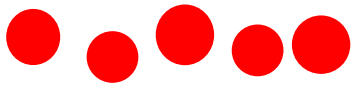
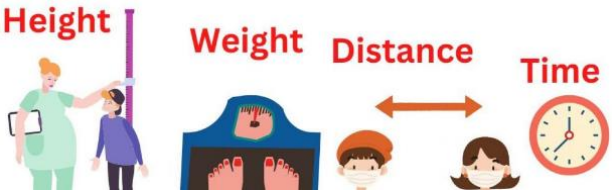
Key Word	Dual Coding	Definition
Sequence	2, 4, 8, 16 …	A set of values or diagrams that follow a pattern
Term	Term: 1 2 3 4  Term: 1 2 3 4 5	The position of a value or diagram in a sequence
Term-to-term rule	2, 4, 8, 16, 32 X2 X2 X2 X2	The way that you obtain the next term of a sequence using the previous term
Arithmetic sequence	3, 7, 11, 15 +4 +4 +4	Terms are generated by adding or subtracting a constant amount. This can also be called an arithmetic progression.
Geometric sequence	3, 12, 48, 194 X4 X4 X4	Terms are generated by multiplying by a constant amount. This can also be called a geometric progression.
Triangular sequence	 	Terms are generated by adding consecutive numbers, starting from 1
Fibonacci sequence	1, 1, 2, 3, 5, 8, 13 + + + + + +	Terms are generated by adding the two previous terms

‘Measuring discrete data’

The Knowledge for Progression:

- To know that the range is a measure of spread and consistency
- To know the range is the difference between the largest value and the smallest value
- To know that the mode is the item of data with the highest frequency
- To know that the median is the middle value when in size order
- To know that qualitative data relates to qualities and attributes
- To know that quantitative data relates to quantities and amounts. It can be discrete or continuous
- To know that discrete data is data which is counted
- To know that continuous data is data which is measured

Speak Like a Mathematician

Key Word	Dual Coding	Definition
Frequency		The number of times an event occurs
Qualitative data	Red Blonde  Sour Rough	Relates to qualities and attributes
Quantitative data		Relates to quantities and amounts
Discrete data	 5 circles	Data which is counted
Continuous data		Data which is measured

‘Presenting discrete data’

The Knowledge for Progression:

- To know that a frequency table shows the frequencies of data
- To know that a bar chart and vertical line chart are used to display discrete data
- To know that a comparative bar chart is used to compare two sets of data on the same chart

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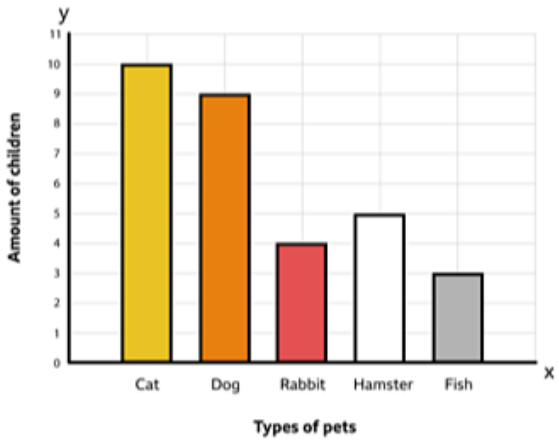
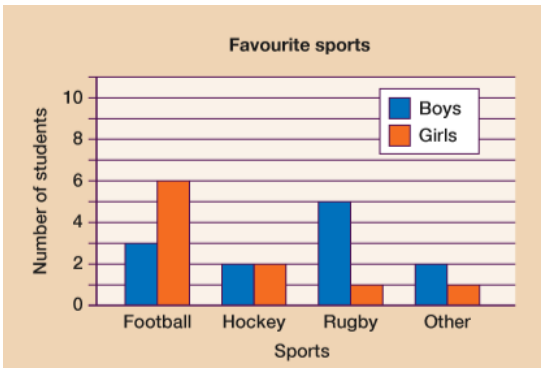
Key Word	Dual Coding	Definition
Bar chart		A way of presenting discrete data
Comparative bar chart		Used to compare two sets of data