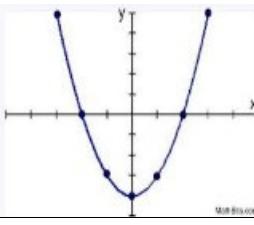
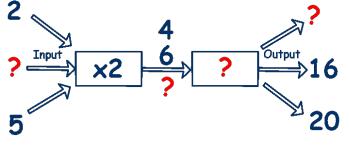


Year 7 Maths Knowledge Organiser – Autumn 2 2020 – Algebraic Thinking

| Exploring Sequences | | | Examples / Illustrations |
|--|-----------------------------|---|---|
| 1 | Sequence | Ordered sets of numbers, shapes or other mathematical objects, arranged according to a specific rule. | 2, 5, 8, 11, 14, ... 1, 10, 100, 1000, ... |
| 2 | Term (in a sequence) | One of the values that features in a sequence . | 2, 5, 8, ... the 2 nd term is 5 7, 6, 5, ... the term in the 3 rd position is 5 |
| 3 | Position | Where in a sequence the term is located. | |
| 4 | Term-to-term rule | Rule which allows you to find the next term in a sequence if you know the previous term . | 1 st term is 2. Term-to-term rule is ‘add 3’. Sequence is: 2, 5, 8, 11... |
| 5 | Linear | The difference between the terms is constant, which will form a straight line on a graph. | Sequence 3, 4, 5, 6, 7, 8, ... forms this graph when plotted:  |
| 6 | Non-linear | The difference between the terms is not constant, which will form a curve on a graph. |  |
| 7 | Ascending | The terms in a sequence increase in value. | 3, 7, 9, 11, 131 are in ascending order |
| 8 | Descending | The terms in a sequence decrease in value. | 131, 11, 9, 7, 3 are in descending order |
| 9 | Fibonacci | Special sequence where the next term is found by adding up the previous two terms . | The Fibonacci sequence is: 0,1,1,2,3,5,8,13,21,34, ... |
| Understanding and using algebraic notation | | Examples / Illustrations | |
| 10 | Operation | A mathematical process. | + - × ÷ |
| 11 | Function | Mathematical relationship between 2 variables . The 2 nd value depends on (is a function of) the 1 st . |  |
| 12 | Input | Value that is operated on to produce an output . | |
| 13 | Output | Value that is produced when an input has been operated on. |  |
| 14 | Inverse | Each mathematical operation has an opposite that ‘undoes’ the original operation . | (+↔−) (×↔÷) |

| | | | |
|---------------------------------|--------------------------|---|---|
| 15 | Variable | A letter used to represent any number in an expression . | x or y |
| 16 | Term (notation) | One part of an expression , equation or formula which may be a number, a variable or a product of both. | $4x + 3y$ has 2 terms |
| 17 | Coefficient | The number in front of the variable (letter). | $4x \rightarrow$ coefficient is 4 |
| 18 | Expression | Mathematical statement which contains one or more terms . It can include numbers, variables and arithmetic operations. | $4x + 3y - 2x$ |
| 19 | Substitute | Replace letters in expression with known values. | If $d=5$ then solving $3d+6$ would be $(3 \times 5) + 6 = 21$ |
| Equality and equivalence | | Examples / Illustrations | |
| 20 | Equals signs | A way of representing how values relate to each other. | = Equal to ≈ Roughly equal to ≠ Not equal to ≡ Identity (always equals) |
| 21 | Equivalent | Has the same value, but written in a different form. Either form can be used and the value is unchanged. | $y + y + y$ is equivalent to $3y$ |
| 22 | Inequality | Similar to an equation , but the unknown has a range of values, not just a single value. | > Greater than ≥ Greater than or equal to < Less than ≤ Less than or equal to |
| 23 | Equation | Expressions connected by an equals sign. | $5x - 2 = 2x + 4$ |
| 24 | Solve an equation | Solving an equation is to find the numerical value of a variable . | $2x + 3 = 9$ $2x = 6$ (subtract both sides by 3) $x = 3$ (divide both sides by 2) |
| 25 | Index | The number of times a constant or variable has been multiplied by itself. | 4^5 is the same as $4 \times 4 \times 4 \times 4 \times 4$ |
| 26 | Simplify | Combining the common terms in an expression . | $4x + 3y - 2x$ is simplified to $2x + 3y$ |
| 27 | Formula | Equation which has a real-life application. | Area of a circle = πr^2 |