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| **Topic/Skill** | **Definition/Tips** | **Example**  **Topic: Algebraic Fractions** |
| 1. Algebraic Fraction | A fraction whose **numerator** and **denominator** are **algebraic expressions**. |  |
| 2. Adding/ Subtracting Algebraic Fractions | For , the **common denominator** is |  |
| 3. Multiplying Algebraic Fractions | **Multiply** the **numerators together** and the **denominators together**. |  |
| 4. Dividing Algebraic Fractions | **Multiply** the first fraction by the **reciprocal of the second fraction**. |  |
| 5. Simplifying Algebraic Fractions | **Factorise** the numerator and denominator and **cancel common factors**. |  |

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| **Topic/Skill** | **Definition/Tips**  **Topic: Proofs** | **Example** |
| 1. Expression | A mathematical statement written using **symbols**, **numbers** or **letters**, | 3x + 2 or 5y2 |
| 2. Equation | A statement showing that **two expressions are equal** | 2y – 17 = 15 |
| 3. Identity | An equation that is **true for all values** of the variables  An identity uses the symbol: | *2x ≡ x+x* |
| 4. Formula | Shows the **relationship** between **two or more variables** | Area of a rectangle = length x width or A= LxW |
| 5. Coefficient | A **number** used to **multiply** a **variable**.  It is the number that comes before/in front of a letter. | 6z  6 is the coefficient  z is the variable |
| 6. Odds and Evens | An **even** number is a **multiple of 2**  An **odd** number is an integer which is **not a multiple of 2**. | If n is an integer (whole number):  An even number can be represented by **2n** or **2m** etc.  An odd number can be represented by **2n-1** or **2n+1** or **2m+1** etc. |
| 7. Consecutive Integers | Whole numbers that follow each other in order. | If n is an integer:  **n, n+1, n+2** etc. are consecutive integers. |
| 8. Square Terms | A term that is produced by multiply another term by itself. | If n is an integer:  , etc. are square integers |
| 9. Sum | The sum of two or more numbers is the value you get when you add them together. | The sum of 4 and 6 is 10 |
| 10. Product | The product of two or more numbers is the value you get when you multiply them together. | The product of 4 and 6 is 24 |
| 11. Multiple | To show that an expression is a **multiple** of a number, you need to show that you can **factor out the number**. | is a multiple of 4 because it can be written as: |

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| **Topic/Skill** | **Definition/Tips**  **Topic: Functions** | **Example** |
| 1. Function Machine | Takes an **input** value, performs some **operations** and produces an **output** value. | Image result for function machine |
| 2. Function | A **relationship** between two sets of values. | ‘For any input value, square the term, then multiply by 3, then subtract 5’. |
| 3. Function notation | is the **input** value  is the **output** value. | Suppose the input value is  The output value is |
| 4. Inverse function | A function that performs the **opposite process** of the original function.  1. Write the function as  2. Rearrange to make the subject.  3. Replace the **with**  and the **with** | . Find the inverse. |
| 5. Composite function | A **combination** of two or more **functions** to create a new function.  is the composite function that **substitutes** the function **into** the function  means ‘**do g first, then f**’  means ‘**do f first, then g**’ | ,  What is ?  What is ? |
| Rearranging Formulae | **Use inverse operations** on both sides of the formula (balancing method) until you find the expression for the letter. | Make x the subject of  Multiply both sides by z  Add 1 to both sides  Divide by 2 on both sides  We now have x as the subject. |
| 11. Surd | The **irrational number** that is a **root of a positive integer,** whose value cannot be determined exactly.  Surds have **infinite non-recurring decimals**. | is a surd because it is a root which cannot be determined exactly.  which never repeats. |
| 12. Rules of Surds |  |  |

**Knowledge Organiser**