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| **Topic/Skill** | **Definition/Tips** | **Example**  **Topic: Congruence and Similarity** |
| 1. Congruent Shapes | Shapes are congruent if they are **identical** - **same shape** and **same size**.  Shapes can be rotated or reflected but still be congruent. |  |
| 2. Congruent Triangles | 4 ways of proving that two triangles are congruent:  1. **SSS** (Side, Side, Side)  2. **RHS** (Right angle, Hypotenuse, Side)  3. **SAS** (Side, Angle, Side)  4. **ASA** (Angle, Side, Angle) or **AAS**  ASS does not prove congruency. |  |
| 3. Similar Shapes | Shapes are similar if they are the **same shape but different sizes**.  The proportion of the matching sides must be the same, meaning the ratios of corresponding sides are all equal. |  |
| 4. Scale Factor | The **ratio of corresponding sides** of two similar shapes.  To find a scale factor, **divide a length** on one shape **by the corresponding length** on a similar shape. | Image result for math definition scale factor  Scale Factor = |
| 5. Finding missing lengths in similar shapes | 1. Find the **scale factor**.  2. **Multiply or divide** the corresponding side to find a missing length.  If you are finding a missing length on the larger shape you will need to multiply by the scale factor.  If you are finding a missing length on the smaller shape you will need to divide by the scale factor. | Scale Factor = |
| 6. Similar Triangles | To show that two triangles are similar, show that:  1. The three sides are in the same proportion  2. Two sides are in the same proportion, and their included angle is the same  3. The three angles are equal | image: two triangles: left triangle: top Y corner: 85 degrees, right Z corner: 40 degrees, left corner: X. Right triangle: same labels: Y: 85 degrees, X: 55 degrees.  image: two triangles: left triangle: top Y corner: 85 degrees, right Z corner: 40 degrees, left corner: X. Right triangle: same labels: Y: 85 degrees, X: 55 degrees. |
| **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: |

**Knowledge Organiser**