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| **Topic/Skill** | **Definition/Tips** | **Example**  **Topic: Fractions** |
| 1. Fraction | A mathematical expression representing the **division** of one integer by another.  Fractions are written as **two numbers separated by a horizontal line**. | is a ‘proper’ fraction.  is an ‘improper’ or ‘top-heavy’ fraction. |
| 2. Numerator | The **top** number of a fraction. | In the fraction , 3 is the numerator. |
| 3. Denominator | The **bottom** number of a fraction. | In the fraction , 5 is the denominator. |
| 4. Unit Fraction | A fraction where the **numerator is one** and the denominator is a positive integer. | are examples of unit fractions. |
| 5. Reciprocal | The reciprocal of a number is **1 divided by the number**.  The reciprocal of is  **When we multiply a number by its reciprocal we get 1**. This is called the ‘multiplicative inverse’. | The reciprocal of is  The reciprocal of is , because |
| 6. Mixed Number | A number formed of both an **integer part** and a **fraction part**. | is an example of a mixed number. |
| 7. Simplifying Fractions | **Divide the numerator and denominator by the highest common factor**. |  |
| 8. Equivalent Fractions | Fractions which represent the **same value**. |  |
| 9. Comparing Fractions | To compare fractions, they each need to be rewritten so that they have a **common denominator**.  **Ascending** means **smallest to biggest**.  **Descending** means **biggest to smallest**. | Put in to ascending order : .  Equivalent:  Correct order: |
| 10. Fraction of an Amount | **Divide** by the **bottom**, **times** by the **top** | Find of £60 |
| 11. Adding or Subtracting Fractions | Find the **LCM of the denominators** to find a common denominator.  Use equivalent fractions to change each fraction to the **common denominator**.  Then just **add or subtract the numerators** and keep the **denominator the same**. | Multiples of 3: 3, 6, 9, 12, **15**..  Multiples of 5: 5, 10, **15**..  LCM of 3 and 5 = 15 |
| 12. Multiplying Fractions | **Multiply** the **numerators** together and **multiply** the **denominators** together. |  |
| 13. Dividing Fractions | **‘Keep it, Flip it, Change it – KFC’**  Keep the first fraction the same  Flip the second fraction upside down  Change the divide to a multiply  Multiply by the reciprocal of the second fraction. |  |

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| **Topic/Skill** | **Definition/Tips** | **Example**  **Topic: Indices** |
| 1. Square Number | The number you get when you **multiply a number by itself**. | **1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169, 196, 225…** |
| 2. Square Root | The **number you multiply by itself** to get another number.  The reverse process of squaring a number. | because |
| 3. Solutions to | **Equations** involving **squares** have **two solutions**, one **positive** and one **negative**. | Solve  This can also be written as |
| 4. Cube Number | The number you get when you **multiply a number by itself and itself again**. | 1, 8, 27, 64, 125… |
| 5. Cube Root | The **number you multiply by itself and itself again** to get another number.  The reverse process of cubing a number. | because |
| 6. Powers of… | The powers of a number are that **number raised to various powers**. | The powers of 3 are:        etc. |
| 7. Multiplication Index Law | When **multiplying** with the same base (number or letter), **add the powers**. |  |
| 8. Division Index Law | When **dividing** with the same base (number or letter), **subtract the powers**. |  |
| 9. Brackets Index Laws | When raising a power to another power, multiply the powers together. |  |
| 10. Notable Powers |  |  |

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| **Topic/Skill** | **Definition/Tips** | **Example**  **Topic: Standard Form** |
| 1. Standard Form |  | 8400 = 8.4 x  0.00036 = 3.6 x |
| 2. Multiplying or Dividing with Standard Form | Multiply: **Multiply the numbers** and **add the powers**.  Divide: **Divide the numbers** and **subtract the powers**. |  |
| 3. Adding or Subtracting with Standard Form | **Convert** in to **ordinary** numbers, **calculate** and then **convert back** in to standard form |  |

**Knowledge Organiser**