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| **Topic/Skill** | **Definition/Tips** | **Example**  **Year 9 Foundation Knowledge Organisers**  **N1 Integers** |
| 1. Integer | A **whole number** that can be positive, negative or zero. |  |
| 2. Negative Number | A number that is **less than zero**. Can be decimals. |  |
| 3. Addition | To find the **total**, or **sum**, of two or more numbers.  ‘add’, ‘plus’, ‘sum’ |  |
| 4. Subtraction | To find the **difference** between two numbers.  To find out how many are left when some are taken away.  ‘minus’, ‘take away’, ‘subtract’ |  |
| 5. Multiplication | Can be thought of as **repeated addition**.  ‘multiply’, ‘times’, ‘product’ |  |
| 6. Division | Splitting into equal parts or groups.  The process of calculating the **number of times one number is contained within another one**.  ‘divide’, ‘share’ |  |
| 7. BIDMAS | An acronym for the **order** you should do calculations in.  BIDMAS stands for **‘Brackets, Indices, Division, Multiplication, Addition and Subtraction’**.  Indices are also known as ‘powers’ or ‘orders’.  With strings of division and multiplication, or strings of addition and subtraction, and no brackets, work from left to right. | , where the 2 is the index/power. |
| 8. Multiple | The result of multiplying a number by an integer.  The **times tables** of a number. | The first five multiples of 7 are: |
| 9. Factor | A number that **divides exactly** into another number without a remainder.  It is useful to write factors in pairs | The factors of 18 are:  The factor pairs of 18 are: |
| 10. Lowest Common Multiple (LCM) | The **smallest** number that is in the **times tables** of each of the numbers given. | The LCM of 3, 4 and 5 is 60 because it is the smallest number in the 3, 4 and 5 times tables. |
| 11. Highest Common Factor (HCF) | The **biggest** number that **divides exactly** into two or more numbers. | The HCF of 6 and 9 is 3 because it is the biggest number that divides into 6 and 9 exactly. |
| 12. Prime Number | A number with **exactly two factors**.  A number that can only be divided by itself and one.  The number **1 is not prime**, as it only has one factor, not two. | The first ten prime numbers are: |
| 13. Prime Factor | A factor which is a prime number. | The prime factors of 18 are: |
| 14. Product of Prime Factors | Finding out which **prime numbers multiply** together to make the **original** number.  Use a **prime factor tree.**  Also known as ‘prime factorisation’. |  |
| 15. Combination | A collection of things, where the **order does not matter**. | How many combinations of two ingredients can you make with apple, banana and cherry?  Apple, Banana  Apple, Cherry  Banana, Cherry  3 combinations |
| 16. Permutation | A collection of things, where the **order does matter**. | You want to visit the homes of three friends, Alex (A), Betty (B) and Chandra (C) but haven’t decided the order. What choices do you have?  ABC  ACB  BAC  BCA  CAB  CBA |
| 17. Permutations with Repetition | When something has different types, there are  **choices each time**.  Choosing of something that has different types, the permutations are: | How many permutations are there for a three-number combination lock?  10 numbers to choose from and we choose 3 of them 🡪  permutations. |
| 18. Permutations without Repetition | We have to **reduce the number of available choices each time**.  One you have chosen something, you cannot choose it again. | How many ways can you order 4 numbered balls? |
| 19. Factorial | The factorial symbol ‘!’ means to multiply a series of descending integers to 1.  Note: |  |

**Knowledge Organiser**