Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

This is your maths pack for the week commencing 27.04.20. I have tried to put as much help on it as possible. If you have any problems please either phone the school or email: [mgater@suttonhouse.org.uk](mailto:mgater@suttonhouse.org.uk) me and I will call you and try to guide you through.

**Substitution**

|  |  |  |
| --- | --- | --- |
| Example 1: Find the value of s when r = 5 | | |
| 1 | Write down the formula | S = 3r |
| 2 | 3r means 3 x r  Replace r with 5 and do the calculation | S = 3 x 5  S = 15 |

**Your turn**

|  |  |
| --- | --- |
| If X is 2, what is: | |
| X + 3 | X - 1 |

|  |  |
| --- | --- |
| If d is 6, what is: | |
| 2d | 6 ÷ d |

|  |  |
| --- | --- |
| Find the value of S when t = 2: | |
| S = 4 + t | S = 2 + t |
| S = t - 1 | S = 5 - t |

|  |  |
| --- | --- |
| Find the value of S when q = 8 and r = 6: | |
| S = q + 3 | S = r – 2 |
| S = q + r | S = q - r |

**Expressions**

N algebraic expression uses letters (called variables) to represent numbers.

Expressions do not contain the equals sign.

An expression consists of a number of terms separated by + or – signs.

Terms can be letters, numbers or a mixture of both.

Each term has a + or a – sign in front of it.

Terms at the beginning of an expression without a term are positive.

|  |  |  |
| --- | --- | --- |
| **ab** | **a - b** | **ab - c² + d²** |
| Has just one term ab | Has two terms a & b | Has 3 terms ab, c² & d² |

**Your turn**

|  |  |  |
| --- | --- | --- |
| How many terms are in each of these expressions? | | |
| **6y + z - c** | **a + b** | **3r – 7 + u** |
| **11b + x - 3** | **ab** | **ab + 7** |
| **6 + c + xy** | **ab² - b** | **12 – abc + d³** |

In expressions there is a standard algebraic notation (a kind of short hand)

ab = a x b

3y = 3 x y

a³ = a x a x a

a²b = a x a x b

|  |  |  |
| --- | --- | --- |
| Example 1: write this as a single term  4p x 5p | | |
| 1 | Multiply the numbers and letters separately | 4 x 5 x p x p  4 x 5 = 20  p x p = P²  20 x P² = 20 P² |

|  |  |  |
| --- | --- | --- |
| Example 2: write this as a single term  2w x 3y | | |
| 1 | Multiply the numbers and letters separately | 2 x 3 x w x y  2 x 3 = 6  w x y = wy  6 x wy = 6wy |

**Your turn**

|  |  |  |
| --- | --- | --- |
| Write each of these terms as a single expression | | |
| y x y x y | n x n x n | a x a |
| a x b x b | 2m x 3m | 9y x 2y |
| 6d x 4d | 3s x 7t | 5x x 3x |

**Simplifying Expressions**

You can simplify algebraic equations by collecting like terms together for example all the a’s, then the b’s etc

|  |  |  |
| --- | --- | --- |
| Example 1: simplify this expression by collecting like terms  5p – 2p + 4p = | | |
| 1 | The expression has 3 like terms each only contains the letter p so we can combine them | 5p - 2p + 4p =  5p – 2p = 3p + 4p = 7p |

|  |  |  |
| --- | --- | --- |
| Example 2: simplify this expression by collecting like terms  4a + 3b – a – 7b = | | |
| 1 | First write the terms so that the like terms are next to each other | 4a – a + 3b – 7b= |
| 2 | Now collect the like terms together | 4a – a = 3a  3b – 7b = -4b |
| 3 | So the answer would be | 3a – 4b |

**Your turn**

|  |  |  |
| --- | --- | --- |
| **2y + 7y** | **9b – 3b** | **6x – x** |
| **8s – 7s** | **6d + 5d – 2d** | **8t + 4t – 6t** |
| **6g – 2g + g** | **9a + a – 6a – 2a** | **8w – w – 4w – 3w** |
| **8r + r – 6r - 2r** | **19h + h – 5h - 12h** | **16n + n – 4n -2n** |

**Expanding out brackets**

|  |  |  |
| --- | --- | --- |
| Example 1: Expand the brackets in the following equation  a(b + 2) | | |
| 1 | Multiply both b and 2 by a | a x b = ab  a x 2 = 2a  ab + 2a |

|  |  |  |
| --- | --- | --- |
| Example 2: Expand the brackets in the following equation  g(g - 6) | | |
| 1 | Multiply both g and -6 by g | g x g = g²  g x -6 = -6g  g² - 6g |

**Your turn**

|  |  |  |
| --- | --- | --- |
| 3(c + 2) | 4(d + 6) | 11(f – 8) |
| 12(3 + m) | 6(8 + c) | d(e + 2) |
| p(p+ 3) | m(11 + m) | z(12 + z) |

**This pack should be completed and returned for marking by 11th May 2020**