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

This is your maths pack for the week commencing 20.04.20. I have tried to put as much help on it as possible. If you have any problems, please phone either 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.

**Order of operations**

**Remember your BIDMAS rules:**

Brackets

Indices (squares and cubes etc)

Division

Multiplication

Addition

Subtraction

|  |  |  |
| --- | --- | --- |
| Example 1: work out 12 – 3 x 3 + 8 = | | |
| 1 | This calculation involves subtraction, multiplication and division | |
| 2 | BIDMAS tells us that the multiplication needs to be done first | 3 x 3 = 9  12 – 9 + 8 |
| 3 | Working from the left to right, subtraction needs to be done next | 12 – 9 = 3 |
| 4 | Finally, do the addition | 3 + 8 = 11 |

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| Example 2: work out 7 x (10 – 4) + 11 = | | |
| 1 | This calculation involves multiplication, brackets, subtraction, and addition | |
| 2 | BIDMAS tells us that the things inside the brackets must be done first | (10 – 4) = 6  7 x 6 + 11 |
| 3 | The two operations left are the multiplication and addition. The multiplication needs to be done next | 7 x 6 = 42 |
| 4 | Finally, do the addition | 42 + 11 = 53 |

**Your turn**

Use BIDMAS to answer these questions:

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| --- | --- | --- |
| 5 + 1 x 3 = | 35 ÷ 5 + 2 = | 36 – 12 ÷ 4 = |
| 2 x (4 + 10) = | (3 + 2) x (9 – 4) = | 20 ÷ (5 – 3) = |
| (8 – 7) x (6 + 5) = | 7 + (10 – 9 ÷ 3) = | 20 – (5 x 3 + 2) = |
| 36 – (7 + 4 x 4) | (12 – 5 x 2) ÷ (4 – 2) = | (36 ÷ (11 – 2) ÷ ( 8 – 8 ÷ 2) = |

**Add in brackets to make the calculation correct**

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| Example 1: Add brackets to the following calculation so it is correct when worked out using BIDMAS: 18 – 3 x 5 = 75 | | |
| 1 | There are two possible places for brackets to go | 18 – (3 x 5) =  (18 – 3) x 5 = |
| 2 | Solve each one to see which give you the correct answer | 18 – (3 x 5) = 3  (18 – 3) x 5 = 75 |
| 3 | So we know the brackets should be here as in the second one | (18 – 3) x 5 = 75 |

**Your turn**

Put the brackets in the correct position to make the calculation correct:

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| 9 x 7 – 5 = 18 | 18 – 6 ÷ 3 = 4 | 21 ÷ 4 + 3 = 3 |
| 5 + 2 x 6 – 2 = 28 | 13 – 5 x 13 – 1 = 96 | 6 + 8 – 7 x 5 = 35 |

**Substitution**

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| Example 1: Find the value of the following if a = 1, b = 5 and c = 9  c – b + a = | | |
| 1 | Substitute the letters for numbers | 9 – 5 + 1 = |
| 2 | Carry out the calculation | 9 – 5 = 4 + 1 = 5 |

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| Example 1: Find the value of the following if a = 1, b = 5 and c = 9  2a + 3b = | | |
| 1 | Rewrite the sum | 2 x a + 3 x b = |
| 2 | Substitute the letters for numbers | 1 x 2 + 3 x 5 = |
| 3 | Carry out the calculation (use BIDMAS) | 1 x 2 = 2  3 x 5 = 15  2 + 15 = 17 |

**Your turn**

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| Find the value of the following if a = 1, b = 5 and c = 9 | | |
| a + 5 = | b – 4 = | b – a + c = |
| 13 – a = | 12 + b = | a + 11 = |

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| Find the value of the following if x = 12, y = 8 and z = 16 | | |
| 2x = | 5y = | 7x = |
| 6x = | 2x + 4 = | 2z + 9 = |

**Collecting like terms**

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

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| 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 |

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| 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**

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| b + b + b + b = | 4s + s + 2s + 7s = | 11n + 8n + n = |
| 3y + 5y – 2y = | 8y – y – 3y = | 2y - y - 3y - 5y + 6y = |
| c + c + c + d + d = | 3a + 5b + 8a + 2b = | 2c + 4 + c + 7 = |
| x + 7 + 4x + y + 5 = | 5x + 2y + 3x – 2y – 3 = | 5a – 7b + 5b – 2 + 2a + 11 = |

**Expanding out brackets**

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| Example 1: Expand the brackets in the following equation  -(q + 4) | | |
| 1 | You can think of –(q + 4) as -1 x (q + 4) | -(q + 4) = (-1 x q) + (-1 x 4)  = (-q) + (-4)  = -q -4 |

|  |  |  |
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| Example 2: simplify this expression by expanding out the brackets then collecting like terms  2(a + 5) + 3(a + 2) = | | |
| 1 | Multiply out both sets of brackets | 2(a + 5) = 2a + 10  3(a + 2) = 3a + 15 |
| 2 | Put the two equations together | 2a + 10 + 3a + 15 = |
| 3 | Write the terms so that the like terms are next to each other | 2a + 3a + 10 + 15 = |
| 4 | Collect the like terms | 2a + 3a = 5a  10 + 15 = 25 |
| 5 | So the answer would be | 5a + 15 |

**Your turn**

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| --- | --- | --- |
| 2(z + 3) + 4(z + 2)= | 7)t – 3) + 2(t + 12) = | 5(p – 3) – (p + 6)= |
| 2(z + 2) + 3(z + 6) = | 8(c + 4) – (c + 2) = | 4 (u + 4) + 3(u + 5) = |

**This pack should be completed and returned for marking by 4th May 2020**