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

This is your maths pack for the week commencing 04.05.20. 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 me and I will call you and try to guide you through.

**To be able to write equations**

Sometimes you’ll need to write your own equations based on a description of a situation. Always read the questions very carefully. Always **simplify** your equations as much as possible

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| Example 1: I think of a number, double it and add 3. The result equals 17. What is the number I thought of? |
| 1 | You don’t know what the number is yet | Call the number x |
| 2 | Doubling x gives 2xThen adding 3 gives 2x + 3The result is 17 | 2x + 3 = 17 |
| 3 | Solve the equation in the normal way | 2x + 3 = 172x + 3 -3 = 17 – 32x = 142x ÷ 2 = 14 ÷ 2X = 7 |

**Your turn**

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| Which number did I think of in the following situations? |
| I think of a number, and then I add 5 to it. The result is 12. |
| I think of a number, and then I multiply it by 7. The result is 54.  |
| I think of a number, and then I double it, and then add 3. The result is 19 |
| I think of a number, and then I multiply it by 4, and then subtract 10. The result is 44 |

**Solving simultaneous equations**

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| Example 1: Solve the simultaneous equations |
|  | 1. 5x – 4y = 13
2. 2x + 6y = -10
 |
| 1 | Multiply equation (1) by 3 and equation (2) by 2 to get 12y in each | 1. 3(5x – 4y = 13)

15x – 12y = 39(2)2(2x + 6y = -10)4x + 12y = -20 |
| 2 | Add the resulting equations to eliminate y |  15x – 12y = 39 4x + 12y = -20 + 19x = 19 |
| 3 | Solve the equation for x by dividing |  19x ÷19 = 19 ÷ 19 X = 1 |
| 4 | Put x = 1 into one of the original equations and solve for y |  5x – 4y = 13 5 - 4y = 13 5 - 4y - 5 = 13 – 5 -4y = 8 -4y ÷ 4 = 8 ÷ 4 Y = -2 |
| 5 | Use the other equation to check your answer if x = 1 and y = -2 |  4x + 12y = -20 4 + - 24 = -20 4 – 24 = 20 |

**Your turn**

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| 3x + 2y = 162x + y = 9 |
| 4x – y = 223x + 4y = 26 |
| 2x + 3y = 10X – y = 5 |
| 4x + 2y = 168x + y = 14 |
| 2c + 3d = 93c + 2d = 11 |
| 2e + 5f = 163e – 2f = 5 |

**Writing formulas**

A formula is like a set of instructions for working something out.

For example s = 4t + 3 is a formula for s. It tells you how to find s, assuming you know the value of t

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| Example 1: write an equation for the number of marbles I have in each case below |
| 1 | I have a bag containing m marbles, I then lose 8 marbles1. I have a bag containing m marbles
2. I lose 8 marbles
 | mm - 8  |
| 2 | My brother has 12 marbles, which is m marbles more than I own.1. My brother has 12 marbles
2. Which is m marbles more than I own

This means I have m marbles less than my brother |  1212 - m |

**Your turn**

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| Write an algebraic expression for each of the quantities asked for below |
| I have c carrots. Su has 6 carrots more than me. How many carrots does Su have? |
| Daisy ha p plants. Iris has 8 fewer plants. How many plants does Iris have? |
| Jessica has 6 shirts, which is s more than Becky. How many shirts does Becky have? |
| Emily has c chairs, which is 3 times more than Sara. How many chairs does Sara have? |

**Harder formula writing**

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| Example 1: I have m marbles. I lose half of those marbles, but then someone gives me 6 of their marbles. Write an expression for how many marbles I have now |
| 1 | I have m marbles | m |
| 2 | I lose half of those marbles (so divide by 2) | m ÷ 2 |
| 3 | Someone gives me 6 of their marbles ( so add 6) | m ÷ 2 + 6 |

**Your turn**

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| I have b flower bulbs. To find the number of flowers that should grow from them, multiply the number of bulbs by 3 and then add 5. How many flowers should I expect? |
| Alf has £18. He then works in a shop for h hours. For each hour he works he is paid £8. How much money in pounds does Alf have now? |

**To be able to substitute numbers into a formula**

Substituting numbers into a formula means replacing letters with numbers

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| Example 1: The area of a rectangle is given by the formula A = bhFind the value of A when b = 5 and h = 6 |
| 1 | Write down the formula | A = bh (A = b x h) |
| 2 | Replace the letters with the numbers | A = b x h A = 5 x 6 |
| 3 | Carry out the calculation | A = 5 x 6A = 30 |

**Your turn**

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| If x = 7 find the value of y = x + 4 | If m = -3 find the value of y = m + 2 |
| If x = 4 and y = 3 find the value of z = 6x + y | F = 1.8c + 32 find the value of F when c = 24˚C |

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| The formula for working out speed is s = d ÷ t where s is speed d is distance and t is time.Find the speed in metres per second of each of the following (only 1 d.p. is necessary) |
| A runner who travels 800metres in 110 seconds | A car that travels 400 metres in 14 seconds |
| A plane that travels 640000 metres in 3600 seconds | A satellite that travels 40000000 metres in 5000 seconds |

**This pack should be completed and returned for marking by 18th May 2020**