# THE DUST ${ }^{\text {sandiod }}$ Knowledge Organiser Maths <br> Year 10 - Term 6 <br> Additional Maths 



| Following the Year 10 End of Year Exams, these are my... |  |
| :---: | :---: |
| Strengths | Weaknesses |
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Website: vle.Mathswatch.co.uk/vle
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Password: Berrywood

Videos and Question can be found by selecting Videos in the top right corner after signing in.

| Number |  |  |  |
| :---: | :---: | :---: | :---: |
| V/x | Grade | MW Clip | Title |
|  |  | 71-74 | Calculating with fractions ( $+-\mathrm{x} /$ ) |
|  |  | 155 | Error intervals |
|  |  | 154 | Negative indices |
|  |  | 156 | Mathematical Reasoning |
|  |  | 132 | Limits of accuracy |
|  |  | 71 | Adding and subtracting fractions |
|  |  | 72 | Finding a fraction of an amount |
|  |  | 73 | Multiplying Fractions |
|  |  | 74 | Dividing Fractions |
|  |  | 91 | Checking calculations |
|  |  | 82, 131 | Index notation |
|  |  | 112 | Converting metric units |
|  |  | 91 | Estimation |
|  |  | 92 | Using place value |
|  |  | 85 | Fractions and percentages |
|  |  | 107 | Fractions and ratio problems |
|  |  | 77 | Using a calculator |
|  |  | 79,80 | LCM and HCF |
|  |  | 78 | Product of primes |
|  |  | 28 | Multiples and factors |
|  |  | 17, 66-7 | Operations with decimals |
|  |  | 75 | Order of operations (BIDMAS) |
|  |  | 29 | Powers |
|  |  | 76 | Reciprocals |
|  |  | 31-2, 90 | Rounding |
|  |  | 83 | Standard Form |
|  |  | 81 | Squares, cubes and roots |
|  |  | 84 | Terminating decimals and fractions |
|  |  | 3 | Decimals |
|  |  | 69 | Listing outcomes |
|  |  | 25, 26 | Simplifying and Equivalent fractions |
|  |  | 17-8 | Add and Subtract integers |
|  |  | 20 | Dividing integers |
|  |  | 19 | Multiplying integers |
|  |  | 68 | Rules of negatives |
|  |  | 2, 3 | Ordering numbers |


| Algebra |  |  |  |
| :---: | :---: | :---: | :---: |
| V/x | Grade | MW Clip | Title |
|  |  |  | Algebraic terminology |
|  |  | 161 | Cubic and Reciprocal graphs |
|  |  | 157 | Deduce quadratic roots algebraically |
|  |  | 137 | Derive an equation and formulae/expressions |
|  |  | 159 | Equation of a line |
|  |  | 134 | Expand the product of two brackets |
|  |  | 157 | Factorising quadratic expressions |
|  |  | 163 | Fibonacci, quadratic and simple geometric sequences |
|  |  | 160 | Graphical solution to equations |
|  |  | 138 | Inequalities on number lines |
|  |  | 139 | Linear inequalities |
|  |  | 160 | Quadratic graphs (roots, etc) |
|  |  |  | Reciprocal real-life graphs |
|  |  | 162 | Simultaneous equations |
|  |  | 131 | Simplify indices |
|  |  | 136, 101 | Changing the subject |
|  |  | 140 | Simultaneous equations on graphs |
|  |  | 33, 35 | Collecting like terms |
|  |  | 95 | Substitution |
|  |  | 94 | Factorise single bracket |
|  |  | 97 | Gradient of a line |
|  |  | 96 | Drawing straight line graphs |
|  |  | 133 | Mid-point of a line |
|  |  | 98 | Graphs of quadratic functions |
|  |  | 135 | Solving equations |
|  |  | 93 | Multiplying single brackets |
|  |  |  | Non-standard real life graphs |
|  |  | 103 | $n$ nt term of a linear sequence |
|  |  | 36 | Number machines |
|  |  | 99 | Sketching functions |
|  |  | 159 | Using " $\mathrm{y}=\mathrm{mx}+\mathrm{c}$ " |
|  |  | 8 | Coordinates in four quadrants |
|  |  | 102 | Position to term rules |
|  |  | 104 | Sequences of square, triangular and cube numbers |
|  |  | 7 | Algebraic notation |
|  |  | 37 | Sequences and Rules |


| Geometry and Measure |  |  |  |
| :---: | :---: | :---: | :---: |
| V/x | Grade | MW Clip | Title |
|  |  | 149, 167 | Arc lengths and sectors |
|  |  | 121 | Derive triangle results |
|  |  | 181 | Enlargements and negative SF |
|  |  | 165 | Loci |
|  |  | 150 | Pythagoras |
|  |  | 166 | Similarity and Congruence |
|  |  | 145-147 | Standard constructions |
|  |  | 114 | Surface Area |
|  |  | 168 | Trigonometric ratios |
|  |  | 119 | Volume of prisms |
|  |  | 120 | Alternate and corresponding angles |
|  |  | 117 | Area of a circle |
|  |  |  | Areas of compound shapes |
|  |  | 54-56 | Areas of triangles, trapezia and parallelograms |
|  |  | 124 | Bearings |
|  |  | 116 | Circle terminology |
|  |  | 118 | Circumference of a circle |
|  |  | 166 | Congruent triangles |
|  |  | 148 | Enlargements and fractional SF |
|  |  | 52 | Perimeter of 2D shapes |
|  |  | 51, 44 | Plans and elevations and nets |
|  |  | 123 | Polygons |
|  |  |  | Solve geometrical problems |
|  |  | 174 | Vector arithmetic |
|  |  | 115 | Volume of cuboids |
|  |  | 43 | 3-D Shapes |
|  |  | 12 | Congruent and similar shapes |
|  |  | 9 | Geometrical terminology and diagrams |
|  |  | 48 | Measuring lines and angles |
|  |  | 122 | Properties of quadrilaterals and triangles |
|  |  | 44 | General angle rules |
|  |  | 50 | Translations and vectors |
|  |  | 112 | Using standard units |
|  |  | 48, 11 | Reflections and symmetry |
|  |  | 49 | Rotations |


| Ratio, Proportion and Rates of Change |  |  |  |
| :---: | :---: | :---: | :---: |
| V/x | Grade | MW Clip | Title |
|  |  | 142 | Compound Units |
|  | ก | 97 | Gradient \& the rate of change |
|  | $\stackrel{\square}{0}$ | 109 | Growth and decay |
|  | $0$ | 110 | Reverse percentages |
|  |  | 109 | Percentage change |
|  |  | 142 | Problems with compound units |
|  | En | 144 | Scale factors and similarity |
|  |  | 111, 164 | Simple/compound Interest and Financial Maths |
|  |  |  | Solve Proportion Problems |
|  |  | 70, 85 | Compare Fractions, Decimals and Percentages |
|  |  | 143 | Distance, Time graphs |
|  |  | 105 | Exchange rates |
|  |  |  | Compare lengths, area, volume |
|  |  | 38,39 | Comparing quantities as a ratio |
|  |  | 106 | Division of a quantity as a ratio |
|  | $\checkmark$ |  | Express one quantity as a \% of another |
|  | $\stackrel{\square}{8}$ | 109 | Percentage change |
|  | 苑 | 38 | Problems involving ratio |
|  | ٪ | 42 | Proportion and ratio |
|  | 4 | 107 | Ratio and fractions |
|  | 言 | 106 | Ratio Sharing |
|  |  | 112 | Convert standard units |
|  |  | 72 | Express one quantity as a fraction of another |
|  |  | 38 | Use ratio notation |
|  |  | 39 | Recipe Questions |
|  |  | 4 | Use scale factors, diagrams and maps |
|  |  | 86, 87 | Percentage of an amount |
|  |  | 88, 89 | Change to a percentage |


| Statistics \& Probability |  |  |  |
| :---: | :---: | :---: | :---: |
| $\checkmark / x$ | Grade | MW Clip | Title |
|  |  | 128 | Histograms with equal class widths |
|  |  |  | Comparing Distributions |
|  |  | 151, 175 | Probability Tree |
|  |  |  | Probability of independent events |
|  |  | 16 | Mutually exclusive events |
|  |  | 126 | Sample space diagrams |
|  |  | 61 | Tables and Grids |
|  |  | 59 | Theoretical Probability |
|  |  | 125 | Experimental Probabilities |
|  |  | 127 | Venn Diagrams |
|  |  | 57 | Frequency Trees |
|  |  | 58 | Listing Combinations |
|  |  | 14 | Probability Scale |
|  |  | 59 | Probability of equally likely outcomes |
|  |  |  | Comparing data using graphs |
|  |  | 129 | Scatter Diagrams |
|  |  | 129 | Correlation |
|  |  | 152 | Population |
|  |  | 152 | Sampling |
|  |  | 153 | Time series |
|  |  |  | Pie Charts |
|  |  | 61 | Two-way tables |
|  |  | 16 | Pictograms |
|  |  | 15 | Tally charts and bar charts |
|  |  | 63 | Types of data |
|  |  | 64 | Vertical Line Charts |
|  |  | 130 | Averages from a table |
|  |  | 65 | Frequency tables and diagrams |
|  |  | 62 | Averages and range |


| 1. $4 \times 5^{2}$ | 2. Function Machines |
| :---: | :---: |
| 3. For every 7 boys on a softball team there are 2 girls. What is the ratio of boys to girls? | 4. The perimeter of a rectangle is 244 inches. The width is 36 inches. What is the length of the rectangle? |
| 5. What is the probability of choosing a green marble from a jar containing 4 red, 9 green and 3 blue marbles? | 6. Mr Smith kept a record of the number of absences for each student in his class for one term. Here are his results. 00084553215352 <br> Write down the mode. |
| 7. Express 175 as a product of it's prime factors. | 8. Write the next three terms of the following sequence 16, 8, 4, $\qquad$ |
| 9. If I need 65 g of flour to make 20 breadsticks, how much flour would I need to make 140 breadsticks? | 10. What is the size of angle a |
| 11. The highest mark in the Science test was 88. Three students scored 46 which was 6 marks higher than the lowest score. What was the range of the scores? | 12. If the probability picking a green marble from a bag of green and red marbles is 0.4 . If I choose a marble 100 times and replace it each time, how many times would I expect to pick a green marble? |
| 13. Order the following from smallest to largest. $0.76,0.706,0.7,0.60,0.067$ | 14. Find the value of the following expression if $a=7, b=6$ and $c=12$. $a+b+c$ |
| 15. What is the difference between the perimeter and area of the following square? | 16. You have a pair of dice. Find the probability of rolling a prime number on both dice. |
| 17. Katie earns $£ 45$ per week for her part-time job. She is to be given a $10 \%$ pay rise. <br> How much will she earn per week after the pay rise? | 18. Solve the following equation: $-32=x+9$ |
| 19. What is 12.5 L in m? | 20. Based on the pictogram below, how many cupcakes were eaten on Thursday? |
| Total: $\quad 120$ | Personal Target: |


| 1. $4+6 \times 7-11$ | 2. Function Machines |
| :---: | :---: |
| 3. The ratio of male to female birds in a bird cage was 5:2. For every 63 males there are $\qquad$ females. | 4. If a square has sides of 2 cm each, what is the area of the square in millimetres? |
| 5. What is the probability of getting a 9 after rolling a single die numbered 1 to 6 ? | 6. Mr Smith kept a record of the number of absences for each student in his class for one term. Here are his results. $000845532156724$ <br> Work out the mean. |
| 7. Express 112 as a product of it's prime factors. | 8. What is the nth term rule of the following sequence $15,10,5,0,-5,-10$ |
| 9. If I need 105 ml of milk to make 15 pancakes, how much milk do I need to make 30 pancakes? | 10. Calculate the size of angle $\beta$ |
| 11. Seven people took part in a sponsored swim. The number of lengths they completed were $16,11,8,8$, and $14,16,13$. What is the median number of lengths completed? | 12. A fair die is rolled 180 times, how many times would I expect it to either land on an odd number. |
| 13. Order the following from smallest to largest: $\frac{2}{3}, \frac{3}{5}, \frac{13}{15}, \frac{2}{5}$ | 14. Find the value of the following expression if $a=6, b=12$ and $c=9$. $c-b+a$ |
| 15. What is the perimeter of the shape? | 16. You have a deck of cards. Find the probability of drawing a red card on the first draw, replacing it and drawing a number less than 5 on the second draw. |
| 17. Increase £270 by $35 \%$ | 18. Solve the following equation: $5 x+8=53$ |
| 19. What is $19,580 \mathrm{~g}$ in kg ? | 20. The pie chart shows the what costs are involved building a house. What fraction of the total is cement? |
| Total: /20 | Personal Target: |


| 1. $12 \div 3+6 \times 3^{2}$ | 2. Function Machines |
| :---: | :---: |
| 3. At the malt shop the ratio of hotdogs sold to hamburgers sold was 9:5. For every $\qquad$ hamburgers sold there were 65 hotdogs sold. | 4. What is the area of the rectangle? |
| 5. What is the probability of choosing the letter $b$ from the word probability? | 6. Peter rolled a 6 -sided dice ten times. Here are his scores. 32463342542634 Work out the median of his scores. |
| 7. What is the highest common factor of 30 and 450? | 8. What are the missing terms in this sequence? <br> 2, $\qquad$ 16, 23, $\qquad$ , 37, $\qquad$ |
| 9. If I need 7 kg of cement to make 32 kg concrete, how much cement do I need to make 96 kg of concrete? | 10. Calculate the size of angle b. |
| 11. What is the difference between the mean and the median of the following set of numbers; $10,32,10,11,7,17,18,21$ | 12. Cards are randomly selected from a pack of cards and each then replaced before the next choice. Out of 65 choices how many times would I expect to pick a piture card? |
| 13. Order the following from smallest to largest: $\frac{3}{7}, \frac{1}{2}, 0.49,0.2$ | 14. Find the value of the following expression if $a=8, b=4$ and $c=9$. <br> $4 a+b c$ |
| 15. What is the difference between the area and perimeter of the following square? | 16. You have a deck of cards. Find the probability of drawing an ace on the first draw, replacing it and drawing a Spade card on the second draw |
| 17. The prices of all the televisions in a shop are to be increased by $12 \%$. <br> Calculate the new price of a television that originally cost £150 | 18. Solve the following equation: $22=-2 x$ |
| 19. What is 56 cm in mm ? | 20. If 12 red boxes were sold on Tuesday, add a key to the pictogram to make it correct. |
|  | Days $\quad$ Number of Red-Boxes Sold |
|  | Monder $\leq 2$ |
|  | Tuestar $\square$ |
|  | Wedinestar $\square$ |
|  | ${ }_{\text {Thussag }}$ - |
|  | Findar $\longrightarrow$ L |
|  | Sturday |
| Total: 120 | Personal Target: |

