**Semester 1**

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| **Term 1** | | | | | | | |
|  | **Level E** | **Level F** | **Level G** | **Level H** | **Level I** | **Level J** | **Level K** |
| **Indices** | ***Tangled Tables***  Complete 100 multiplication sums in 8 minutes! | ***Black Bean Maths***  3 examples of ‘breaking up’ a multiplication problem : 1 with numbers less than 10, 1 with 1 number greater than 10 and 1 with both numbers greater than 10 | ***Indices Poster***  A number between 4 and 9, shown to the power of 1,2,3,4 and 5 | ***Square Roots***  A number line showing how to estimate the square roots of ten non-square numbers | ***Index Laws Card Game***  24 card concentration game using all four index laws and four bases | ***Index Laws Card Game***  Same as Level I but with integer and variable indices | ***Index Laws Card Game***  Same as Level J but with algebraic powers that have both a coefficient and a pronumeral |
| **Factors and Multiples** |  | ***Factors and Multiples Game***  20 moves on the Factors and Multiples game with explanations | ***Factors and Multiples Puzzle***  Complete the puzzle | ***Factor Trees***  5 numbers between 10 and 100 expressed as powers of primes | ***Circle Investigation***  Photograph, measure 10 circles. Calculate the ratio of circumference to diameter for each | ***Scientific Notation***  Convert 10 large and 10 small scientific notation values to regular notation. Find 10 examples that you can express as scientific notation. | ***Perfect Square Triominoes***  Create 10 triominoes that show quadratics in quadratic, perfect square and algebra tile form. |
| **Directed numbers** |  |  | ***Positive and Negative Number Poster***  10 different positive and negative values on a number line | ***Adding and Subtracting Negative Number Stories***  Stories about adding positive numbers, adding negative numbers, subtracting positive numbers and subtracting negative numbers. | ***Multiplying and Dividing Negative Number Stories***  Stories about multiplying and dividing positive by positive; positive by negative; negative by positive and negative by negative. |  |  |
| **Crusoe Estate** |  | ***Crusoe Estate Level F***  8 rectangular blocks. Calculate area and perimeter. | ***Crusoe Estate Level G***  8 rectangular blocks. Calculate area and perimeter.  Find best value block of land | ***Crusoe Estate Level H***  5 rectangular, 5 triangular and 5 parallelogram blocks. | ***Crusoe Estate Level I***  5 parallelograms, 5 rhombuses and 5 kite blocks. | ***Crusoe Estate Level J***  4 parallelograms, 4 rhombuses, 4 trapezoids and 4 kite blocks. |  |
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| **Term 2** | | | | | | | |
|  | **Level E** | **Level F** | **Level G** | **Level H** | **Level I** | **Level J** | **Level K** |
| **Comparing Fractions** | ***Concentration Game***  Play concentration, showing whether cards are equal or not both as a fraction bar and written | ***Comparing Fractions Game***  Play Comparing Fraction game, show comparisons between pair of cards as a fraction bar and written on a number line. Use only sixths and twelfths. | ***Comparing Fractions Game***  Play Comparing Fraction game, showing comparisons between pair of cards as a fraction bar and written. Show cards on a number line. Use all cards. | ***Comparing Fractions Dice Game***  Compare 10 mixed numbers between -10 and +10 using lowest common denominator. Show each number on a number line. | ***Real Life Rates and Ratio***  10 examples of ratios, 6 examples of rates  . | ***Coffee Cup Experiment***  Calculate rate of cooling via table and graph of 4 coffee cups. Find temperature after 15 minutes.. | ***Paying off your mortgage***  Use a spreadsheet to simulate paying off a $300,000 mortgage over 25 years. Create an advertisement on the effects of extra repayments, lump sums and interest rate decreases. |
| **Operations with Fractions** | ***Counting Fractions***  Play Fraction Bar Racing with one bar. Show each move on a number line with the card turned over and where you landed. | ***Adding and Subtracting Fractions***  Play Fraction bar racing with 2 bars. Show each addition with bars and written. Play Rope Tug on Level 1. Show each subtraction with bars and written. | ***Adding and Subtracting Fractions***  Play Fraction bar racing with 2 bars. Show each addition with bars and as an algorithm. Play Rope Tug on Level 1. Show each subtraction with bars and as an algorithm. | ***+ - x ÷ fractions Game***  Play the “closest to 2” game. One sheet each on addition, subtraction, multiplication and division. Show simplification and working. | ***Big Mac Percentages***  7 tables comparing costs with 6 countries, plus another country not in the article | ***Simple Interest Game***  Play the Simple Interest Game and show the calculations when you lay down a counter. Minimum six calculations | ***Algebra Fraction Games***  Play the two algebra fractions games (addition-subtraction and multiplication-division) and record when you place a counter (minimum 6 per game) |
| **Decimals and Percentages** | ***Ordering Decimals***  Choose 6 decimals,3 with 1 decimal place and 3 with 2. Put them in order and show each one as a diagram. | ***Ordering Decimals***  Choose 6 decimals,2 with 1 decimal place, 2 with 2 and 2 with 3. Put them in order and show each one as a diagram. | ***Decimals, Fractions and Percentages Dominoes***  Make 4 doughnuts and prove each connection using diagrams | ***Decimals, Fractions and Percentages Dominoes***  Create 16 dominoes forming 4 doughnuts, with proofs. Don’t use common values. | ***Profit and Loss***  Complete the provided *Covers* profit and loss game and then create your own using percentages not present on the original game. | ***Simple Interest Analysis***  Analyse five different savings accounts for the best value, and create an ad that contains a table and graph for that bank. | ***The Media and Statistics***  Find examples in the media of manipulating graphical displays and faulty surveys. |
| **Probability** | ***Spinner Game***  Construct a spinner game with a spinner divided into eighths. The number of eighths for each particular event should correspond to the likelihood of a real life. | ***Spinner Game***  Analyse your game by spinning their spinner 50 times and record results in a table. Include probability of each event as a fraction, percentage, and decimal. Graph results of the 50 spins | ***Spinner Game***  Spin your spinner 10, 25, 50 and 100 times. Create a graph for each set of spins (four graphs). Within each graph, they compare the results they got with the expected results and comment on the differences | ***First down the mountain***  Create a game based on adding together two dice. Show the two way table, probabilities of each event and connect them to a real life event. | ***Cat and Dog***  Use “cat and dog” to create your own game which is fair. The new game must have three options – cat gets a point, dog gets a point, and either neither gets a point or both get a point. Use a two way table to show the game is fair, and use a Venn Diagram to show the probability for all possible events | ***Pick Two Cards***  Find the instances of the “Two Cards” game where both the dealer and the player have an equal chance of winning. Show each instance with a tree diagram. | ***Probability and Genetics***  Use two six-sided dice to simulate the genotype and phenotype of a crossed pea plant and roll 100 times, record results. Use the relative proportions of each genotype and phenotype, compare to the theoretical ratios, using tree diagrams. Use proportions to create a game. |