**BGCFL**

#### MATHS DEPARTMENT



# YEAR 8

**SCHEME OF WORK**

**This scheme of work is to be used as a guide only. Sometimes due to unforeseen circumstances the class may be a week behind or sometimes may even be a week ahead of schedule. The topics will still be covered in the same order.**

# Term 1 year 8

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| **Number** | Learning Objectives. | Resources. |
| Week 1 | Stage 3: Add and subtract 3 digit numbers on paper. | Play money.  Number lines.  Dice.  Cubes.  Counters.  Worksheets.  Test sheets.  ICT: Bitesize, Twinkl and many more resources.  . |
| Stage 4: Know times tables up to 10 x 10. |
| Stage 6: Solve times and divide problems, including remainders. |
| Notes: | Start the new year by reinforcing number work. Starters can be times table questions. Times and divide with more than single numbers can be difficult but allow students to progress at their own level of ability. |
| Week 2 | Stage 4: Recognise negative numbers on a number line. |
| Stage 4: Use negative numbers in real life. I.e. temperature. (ORACY) |
| Stage 4: Find numerical differences in temperatures including negative temperatures. |
| Notes: | Have a good discussion about when we use negative numbers. Money, temperature, sea level and even golf scores. Start with direction of number as in increase and decrease in temperature and then introduce plus and subtracting including negative numbers for more able students. |
| Week 3 | Stage 5: Order decimals to 3 decimal places. |
| Stage 5: Add and subtract decimals to 2 decimal places. |
| Notes: | Show that place value continues after the decimal point. Show that 0.09 is less than 0.1 etc. Make sure that numbers are correctly placed when using column addition and subtraction. Money can be used to show 2 decimal places in real life. |
| Week 4 | Stage 5: Multiply whole numbers by 10 and 100. |
| Stage 5: Divide whole numbers by 10 and 100. |
| Stage 5: Multiply and divide any number by 10 and 100. |
| Notes: | This will include estimation. Show how we can estimate multiplying big numbers such as 24 pencils at 48p each is 20 x 50 = 1000p. Also explain that we use the decimal system because everything is always x 10, 100 etc. |
| Week 5 | Stage 5: Find multiples of any number. |
| Stage 5: Find factors of any number. |
| Notes: | This is a good topic to reinforce times table knowledge. Although most of the time will be spent finding factors, prime numbers can also be introduced. Mention that this kind of Mathematics is used in banking security. |
| Week 6 | Consolidation and end of term test. |
| Advice: Less able pupils may not complete all sections. They can concentrate on understanding number and simple addition and subtraction. Use year 7 SOW if required.  Most able pupils can progress further by solving problems involving 4 or more digits.  Many activities can be taught as starters or games at the end of each lesson. | | |

Term 2 Year 8

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| **Shape and Measure** | Learning Objectives. | Resources. |
| Week 1 | Stage 3: Reflect shapes in a mirror line. | Number lines.  Rulers.  Metre rules.  Angie measures.  Trundle wheels.  Weighing scales.  Measuring jugs.  Maps.  Textbooks.  Worksheets.  Plastic shapes.  Test sheets.  ICT: Bitesize, Twinkl and many more resources. |
| Stage 4: Know the order of rotational symmetry of a shape. |
| Notes: | Recap of reflective symmetry to include difficult objects and angled mirror lines. Students should also be able to draw lines of symmetry on any given shape. They should also identify the order of symmetry for any shape. Some students may enjoy making their own shapes to test symmetry. |
| Week 2 | Stage 2: Find perimeters of simple shapes. |
| Stage 3: Find areas by counting squares. |
| Stage 3: Know the formula for the area of a rectangle and triangle. |
| Notes: | First recap all knowledge. Then move on to finding areas and perimeters of any shapes, including compound shapes involving triangles and parallelograms, rhombuses etc. Prove the formulas for areas of triangles and parallelograms by cutting out card. |
| Week 3 | Stage 5: Know the angle sum of a triangle is 180 degrees and find missing angles in a triangle. |
| Stage 5: Know the angle sum of a quadrilateral is 360 degrees and find missing angles in a quadrilateral. |
| Notes: | After a quick reminder of basic angle rules cut out angles in a triangle to prove they = 180degrees. Repeat for quadrilaterals. Missing angle questions should start with multiples of 10 then any number. |
| Week 4 | Stage 6: Convert between metric measures of length. |
| Stage 6: Convert between metric measures of mass. |
| Stage 6: Convert between metric measures of capacity. |
| Notes: | This is another chance to revisit measure, times 10 and 100 and all things with length, mass and capacity. Students always have some gaps in their knowledge in this topic. Another chance to mention careers including building, tailoring etc, etc. |
| Week 5 | Stage 5: Estimate everyday measurements. |
| Stage 4: Measure length, mass and capacity of varying sizes. |
| Notes: | This is another chance to revisit measure, times 10 and 100 and all things with length, mass and capacity. Students should at least know which unit to use in a measurement. Most should be able to estimate a measurement. |
| Week 6 | Consolidation and end of term test. |
| Advice: Less able pupils may not complete all sections. They can concentrate on understanding simple measurements. Use year 7 SOW if required.  Most able pupils can progress further by solving problems involving angle sums of other polygons.  Many activities can be taught as starters or games at the end of each lesson. | | |

Term 3 Year 8

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| **Data Handling** | Learning Objectives. | Resources. |
| Week 1 | Stage 2: Draw bar charts and pictograms. | Probability lines.  Dice.  Playing cards.  Flip charts.  Textbooks.  Worksheets.  Test sheets.  ICT: Bitesize, Twinkl and many more resources.  s. |
| Stage 3: Interpret information in bar charts and pictograms. |
| Notes: | ORACY for writing conclusions and analysing data. Explain that charts and graphs are much better to look at than plain data. Careers include management, engineering etc. Remember bar charts for discrete data must have gaps. Use simple graphs but ensure that they include correct labelling, equal width bars and gaps etc. |
| Week 2 | Stage 3: Read information in tables and lists. |
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| Stage 3: Draw and describe simple line graphs. |
| Notes: | Explain that these graphs are better at showing trends and are widely used in demonstrations. Make sure that the basics of graph drawing are fully understood. |
| Week 3 | Stage 4: Collect data and record in a frequency table. |
| Stage 4: Analyse data recorded in line graphs and bar charts |
| Notes: | A traffic survey is a good data collection source. Show that six good categories are enough, over 30 entries are good, A good recap is to let students devise their own survey. |
| Week 4 | Stage 5: Find the mode of a set of data. |
| Stage 5: Find the median of a set of data. |
| Stage 5: Find the range of a set of data. |
| Notes: | Start with a discussion on averages, how the media often mentions the average. State that there are 3 averages, and they can easily be used incorrectly. Start with the mode. Then for median stand students in a row from short to tall to show median. The mean comes last. |
| Week 5 | Stage 4: Find probabilities from equally likely events. |
| Stage 7: Find and interpret probabilities from an experiment. |
| Notes: | Discuss prices of car insurance for boys and girls. Explain that the cost depends on the likelihood of the driver having an accident. Careers include the insurance industry, gambling, banking. These are very well-paid jobs. ORACY for likely, certain, impossible, unlikely etc. Write sentences for each word. Then introduce the probability scale and place events on the scale. |
| Week 6 | Consolidation and end of term test. |
| Advice: Less able pupils may not complete all sections. They can concentrate on understanding simple charts and graphs. Use year 7 SOW if required.  Most able pupils can progress further by collecting more sophisticated data or finding the mean.  Many activities can be taught as starters and plenaries. | | |

Term 4 year 8

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| **Number and Algebra** | Learning Objectives. | Resources. |
| Week 1 | Stage 1: Use letters to represent numbers. | Play money.  Number lines.  Dice.  Cubes.  Counters.  Worksheets.  Test sheets.  ICT: Bitesize, Twinkl and many more resources.  s. |
| Stage 3: Begin to form simple algebraic expressions. |
| Notes: | Explain that we use algebra when we don't know the actual number such as how many cars will I sell next week or how many hours will I work. Formulae could include how long to cook a turkey or working out wages. Emphasise that bt using algebra we make things much easier. |
| Week 2 | Stage 2: Simplify expressions by collecting like terms. |
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| Stage 5: Substitute numbers for letters in formulae and evaluate the result. |
| Notes: | Emphasise that 2c + 3c = 5c but 2w and 5t are different terms. Substitution can be simple or use indices and several variables depending on students. |
| Week 3 | Stage 6: Round numbers to nearest 10, 100 and 1000. |
| Stage 7: Round numbers to 1 and 2 decimal places. |
| Notes: | Rounding will recur in many topics. Start with nearest 10 and move on to significant figures for high flies. A good opportunity to practice multiplication and estimation skills. 222x777 becomes 200x 800=160000 |
| Week 4 | Stage 6: Use brackets to correctly solve problems. |
| Stage 6: Use BODMAS to correctly solve problems. |
| Notes: | Show that a simple calculator will incorrectly solve 2 + 9 x 4. Make sure that students understand that BIDMAS is for all mathematical work and not just for this week's work. |
| Week 5 | Stage 7: Recap number work. |
| Stage 7: Approximate the result before multiplying 2 numbers. |
| Notes: | Another good opportunity to practice multiplication and estimation skills. 222x777 becomes 200x 800=160000. Plus, a good week to practice all number work. |
| Week 6 | Consolidation and end of term test. |
| Advice: Less able pupils may not complete all sections. They can concentrate on understanding number and algebra questions. Use year 7 SOW if required.  Most able pupils can progress further by solving problems involving 4 or more digits or even rounding numbers to significant figures.  Many activities can be taught as starters or games at the end of each lesson. | | |

Term 5 Year 8

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| **Number** | Learning Objectives. | Resources. |
| Week 1 | Stage 3: Understand place value up to 1000 | Play money.  Number lines.  Dice.  Fraction disks.  Cubes.  Counters.  Cups for ratio.  Worksheets.  Test sheets.  ICT: Bitesize, Twinkl and many more resources. |
| Stage 4: Use mathematical symbols including = < > correctly. |
| Notes: | Build on all previous knowledge and introduce ≥ ≤. This can be extended grom 7 ≥ 6 to 6to the power 5 is less than 5 to the power 6 or any other level of work. |
| Week 2 | Stage 4: Order negative numbers. |
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| Stage 4: Add and subtract positive and negative numbers to positive and negative numbers.  Stage 5: Multiply and divide negative numbers. |
| Notes: | Revisit and extend previous knowledge to include all negative number work including multiplying and dividing negative numbers. |
| Week 3 | Stage 4: Find factors of a number up to 100. |
| Stage 4: Find the first 5 multiples of any number up to 15. |
| Stage 4: Begin to look at common factors and multiples. |
| Notes: | Introduce factors and multiple of simple numbers with up to 5 factors. ORACY, this will be their first visit of factors and multiples. Introduce HCFs for pairs of simple numbers from lists of factors. Start with 3 and 4 and move on to 8 and twelve for example. Introduce LCM. |
| Week 4 | Stage 4: Recognise equivalent fractions. |
| Stage 4: Cancel a fraction to its lowest term. |
| Stage 4: Place simple fractions in order of size. |
| Notes: | Start with ½ = 2/4 etc. We have a whole range of manipulatives to help with this. Move onto 2/5 =4/10 etc. Use manipulatives for finding lowest terms. Students should be able to place fractions in order of size with and without a calculator. |
| Week 5 | Stage 2: Understand simple ratio. |
| Stage 2: Simplify a ratio. |
| Notes: | This can be quite a tricky concept. Explain that we use ratio in hairstyling, cement mixing, cooking etc. Start with the concept of mixing squash and water in different ratios. Then paint. Then show that 4:8 is the same as 1:2 |
| Week 6 | Consolidation and end of term test. |
| Advice: Less able pupils may not complete all sections. They can concentrate on understanding basic concepts. See year 7 SOW if required.  Most able pupils can progress further by solving problems calculating with fractions and ratio.  Many activities can be taught as starters or games at the end of each lesson. | | |

Term 6 Year 8

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|  | Learning Objectives. | Resources. |
| Weeks 1 and 2 and 3.  Notes | Recap all number and algebra work. To include exam question practice.  This week can be used as catch up for some students or consolidation and mastery for others. | Play money.  Number lines.  Dice.  Cubes.  Counters.  Worksheets.  Test sheets.  ICT: Bitesize, Twinkl and many more resources. |
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| Week 4  Notes | Recap shape and measure work. To include exam question practice.  This week can be used as catch up for some students or consolidation and mastery for others. |
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| Week 5  Notes | Recap data handling work. To include exam question practice.  This week can be used as catch up for some students or consolidation and mastery for others. |
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| Week 6 | Consolidation and end of term test. |
| There will be 3 end of term exams that pupils will take according to their abilities. Therefore all revision can be set at the level of individual. pupil. | | |