

Year 7 Rationale:

- ✓ Essential prerequisite knowledge covered to enable students to access future topics.
- ✓ Build on prior knowledge and attainment allowing students to continue to make rapid progress.
- ✓ DO NOWs consolidate previous skills taught and are recapped using the memory model.
- ✓ Curriculum is sequenced to allow progression and for skills to be constantly revisited.
- ✓ Topics follow a logical progression and are woven into a cumulative curriculum where skills are built up throughout the year, this supports all students including those with SEND.
- ✓ Students have the opportunity to deepen their knowledge throughout, as well as problem solving and reasoning.
- ✓ Planned cultural capital: Using Mathematical skills in real life contexts.

Year 8 Rationale:

- ✓ Topics build on knowledge from Year 7 and prior knowledge outlined is crucial to developing students deeper understanding.
- ✓ DO NOWs consolidate previous skills taught and are recapped using the memory model.
- ✓ Curriculum is sequenced to build on prior learning which enables a deep understanding of the concepts taught.
- ✓ The structure of the lessons allows students to access problem solving and reasoning.
- ✓ Planned cultural capital: Using Mathematical skills in real life contexts linked to careers and problem solving.

Mathematics Curriculum: 5 Year plan

	LP1	LP2	LP3
Year 7	Place Value Rounding Addition and Subtraction Multiplication and Division Negative Numbers Order of Operations Expressions Substitution Solving Equations Time Measures	2D Shapes Perimeter Area Co-ordinates Factors and Multiples Primes Writing and Comparing Fractions Adding and Subtracting Fractions Single Brackets	Drawing and Measuring Angles Angles Averages and Range Tables and Charts Collecting and Presenting Data Proportion Multiplying and Dividing Fractions Fractions of an Amount FDP Theoretical Probability
Year 8	Percentage of Amounts Percentage Change Money Index Laws Solving Equations Sequences Ratio Scale Diagrams	Rounding Significant Figures Coordinates and Midpoints Area and Units Circles – Area and Circumference Standard Form Venn Diagrams Factors, Multiples and Primes Nets Surface Area Volume	Linear Graphs Transformations Angles Statistical Diagrams Inequalities Double Brackets Fractions with Algebra Recurring Decimals
Year 9	Number Sense Factors, Multiples & Primes FDP review Percentage Change Probability Calculations with Standard Form Inequalities Quadratic Equations Rearranging Formula Constructions Circles and Cylinders	Error Intervals 3D Shapes Pythagoras Ratio Proportion Linear Graphs Compound Measures Motion-time Graphs	Quadratic Graphs Angles Bearings Transformations Similarity Congruence Handling Data Statistical Diagrams Column Vectors
Year 10 Foundation	Equations and Inequalities Sequences Linear and Real-Life Graphs Types of Number Perimeter, Area and Volume Expanding and Factorising	Representing Data FDP Angles Construction Averages Transformations	Pythagoras Ratio Proportion Probability HCF & LCM – Venn Diagrams SOHCAHTOA
Year 10 Higher	Indices Algebra Recap Sequences Linear Graphs Quadratic Graphs Perimeter and Area Circles Surds	Representing Data Averages Ratio & Proportion Angles Pythagoras Transformations Bearings Loci & Construction	Solving Quadratics Probability Statistical Diagrams Growth and Decay Direct and Inverse Proportion
Year 11 Foundation	Number Sense Angles Statistical Diagrams Circles Probability Sequences Inequalities Expanding and Factorising	Area and Perimeter Similarity Volume Indices Standard Form Transformations Column Vectors Pythagoras SOHCAHTOA	Responsive Revision
Year 11 Higher	Direct & Inverse Proportion Solving Quadratics Graphs SOHCAHTOA Sine and Cosine Rule Algebraic Fractions Volume Vectors Iteration Circle Theorem	Equation of a Circle Transformation of Graphs Parallel and Perpendicular Lines Functions Inequalities Graphing Inequalities Rearranging Formula Algebraic Proof	Responsive Revision

Year 9 Rationale:

- ✓ Topics build on knowledge from Year 7 and 8 and consolidate core skills needed for GCSE.
- ✓ DO NOWs consolidate previous skills taught and are recapped using the memory model.
- ✓ Curriculum is sequenced to allow cross-topic content to be taught and building blocks provided so all students can access the journey.
- ✓ Exam style questions, problem solving and reasoning prevalent throughout.
- ✓ Students are given many opportunities to link their GCSE learning to real life
- ✓ Planned cultural capital: Using Mathematical skills in real life contexts linked to careers and problem solving.

Year 10/11 Rationale:

- ✓ Students in Year 10 and 11 build on core skills and apply their knowledge in different exam situations to prepare them for their Mathematics GCSE exam.
- ✓ The year 10 curriculum is sequenced to ensure all aspects of the curriculum are with more emphasis on exam style questions and problem solving.
- ✓ Year 11 is focused on the separate knowledge and skills required for foundation or higher depending on the student, ensuring there is effective crossover content for specific classes.
- ✓ Focus on exam practice for year 11 students within responsive revision along with constant revision of concepts through retrieval practice.
- ✓ Through the Edexcel GCSE Curriculum, students in KS4 develop their fluency, reasoning and problem-solving skills.
- ✓ Planned cultural capital: Using Mathematical skills in real life contexts linked to careers and problem solving.

Long term Memory/ Retrieval of Knowledge:

- ✓ All DO NOWs are linked to core skills and include topics from previous lessons. This is long term recall and is linked to the memory model and the science of learning.
- ✓ Testing is used to check student understanding and address misconceptions.
- ✓ Teachers use targeted questioning to checking understanding.
- ✓ AfL opportunities allow for retrieval of knowledge and teachers use this technique to collect data based on the needs of their class.
- ✓ Responsive teaching is used as immediate intervention and teachers provide prompt for students during retrieval tasks.

Pedagogy within the Classroom (meeting student's needs including those with SEND):

- ✓ Clear instructions given to reduce cognitive overload.
- ✓ Use of 'I,WE,YOU' modelling to break down skill and create resilient and independent learners.
- ✓ Regular, low-stakes testing used to create strong bonds with the long-term memory.
- ✓ Provide every opportunity for students to engage in purposeful discussion and develop their use of Mathematical vocabulary.
- ✓ Provide links to students' past learning, across faculties and in the outside wider world allowing students to have a broader understanding of the subject.

Mathematics lessons at The Birkenhead Park School

Multiplying Decimals Monday, 06 November 2023

Do Now!

Q1 Calculate 6×13 9×7	Q2 Work out $3.54 + 21.43$
Q3 Write down a number which is a factor of 20 and a multiple of 5	Q4 Round 13.2 to the nearest integer

You do

Calculate

$$0.7 \times 0.6$$

Prerequisite Knowledge

Calculate

$$42 \times 27$$

I do Calculate 2.3×4.5 Calculate 0.7×0.3	We do Calculate the product 3.1×5.6 Calculate 0.4×0.9
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The Aim

Substitution

- Substituting into an expression involving multiplication and addition
- Substituting into an expression involving multiplication and subtraction
- Substituting into an expression involving division and addition
- Substituting into an expression involving a squared variable
- Substituting into an expression involving brackets

$f=7$
 $g=5$
Work out the value of $3f+2g$

(Total for Question 1 is 2 marks)

Discussion

Harry says to calculate $32.4 \div 0.8$

Pippa says to calculate $32.4 \div 0.8$

You can multiply both numbers by 10 and then divide your answer by 100.

You can multiply both numbers by 10 and then divide your answer by 10.

Independent Task

Calculate

a) $14 \div 0.7$

b) $2.4 \div 1.2$

c) $3.5 \div 0.5$

d) $45 \div 1.5$

e) $0.15 \div 0.5$

f) $12.48 \div 0.8$

A sweet costs £0.04
How many sweets can I buy for £20?

Yasmin has £17 in five pence pieces.
How many five pence pieces does she have?

Find the missing numbers

$0.4 \times \square = 20.8$

$0.7 \times \square = 49$

Four children are given £5.50 to share between them.
Write a sentence to describe the problem they will have.

a) Find the first four digits of $10 \div 9$ when it is written as a decimal.
b) What pattern do you see?
Will this pattern continue forever?
Write a sentence to explain your answer.

Apply

The cost of hiring a car for a number of days is calculated using the formula
Hire Cost = $30 \times$ Number of Days + 50

(a) Calculate the cost of hiring a car for 4 days.
(b) Calculate the cost of hiring a car for 9 days.
(c) The hire cost is £110, how many days was the car hired for?
(d) The hire cost is £380, how many days was the car hired for?

The cost of photocopying is given as:
Cost in pence = $3 \times$ number of black & white pages + $15 \times$ number of colour pages

(a) Dile orders 20 black & white pages and 5 colour pages, work out the cost.
(b) Tom orders 400 black & white pages and 20 colour pages, work out the cost.

Have I achieved My Objective?

$f=7$
 $g=5$
Work out the value of $3f+2g$

(Total for Question 1 is 2 marks)

Build-up of Skills:

- ✓ The skills identified for success at GCSE is outlined and planned backwards from Year 11- 7.
- ✓ These skills are built upon each year from year 7.
- ✓ They are age appropriate for each year group and allow students to fully access assessments and low stakes testing.
- ✓ The language is similar to allow students to become familiar and build up a layer of skills each year- to review and refine these at regular intervals to become independent and resilient learners.

Assessment:

- ✓ Assessment takes place regularly. 'AMP' assessments are used to allow teachers to test student performance but are clear this does not show 'learning' from the long-term memory.
- ✓ Summative assessments are completed at designated times of the year and are planned to test current and prior knowledge.
- ✓ Assessment QLA is used to address student's misconceptions and re-test rather than re-teach.
- ✓ Teachers are responsive and will use cross topic questions and do now's to support students in retrieving knowledge to build upon.