SUBJECT

Mathematics: Curriculum Intent

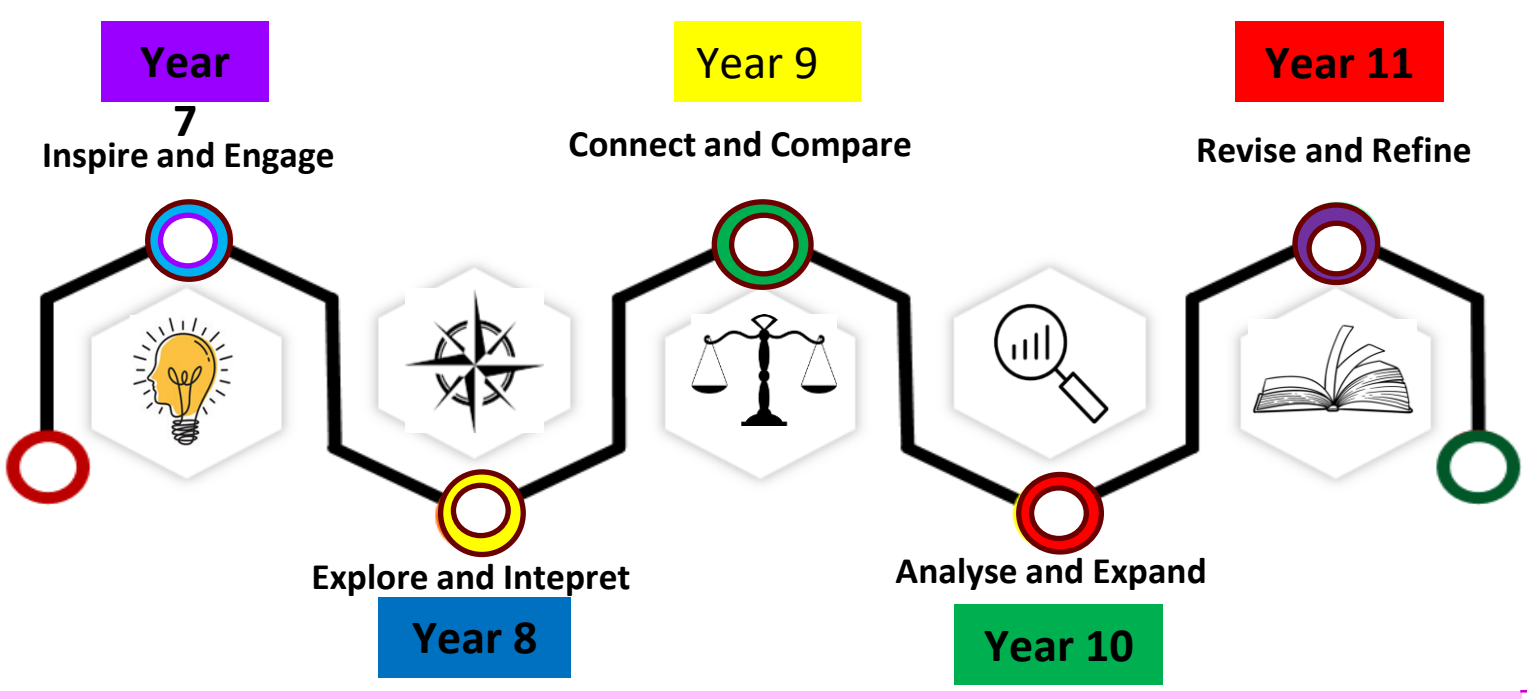
In maths the powerful knowledge and skills we aim to impart onto our students over their 7 year journey at West Lakes Academy, is the ability to be analytical, critical thinkers and problem solving young adults. The maths department's intent is to ensure all students have equal access to enthusiastic and passionate teachers and acquire a love for maths. We have high expectations of all our students, both for the work they produce, and their behaviour for learning. Students are expected to be resilient with their learning and dedication to achieve.

CURRICULUM LESSONS ALLOCATED OVER THE WEEKLY TIMETABLE

Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13
4	4	4	4	4	5 (A level) +3 (Further) Resit unknown	5 (A level) +3 (Further) Resit unknown

INSPIRE	MOTIVATE	ACHIEVE
How will lessons engage students? How will teachers engage students? How will lessons INSPIRE students in your subject? How will your team INSPIRE students to Teachers continually develop their specialist knowledge for teaching mathematics, working collaboratively to refine and improve their teaching. Curriculum offered to all students is appropriately challenging – not restricted or limited to certain students. Curriculum design ensures a coherent and detailed sequence of essential content to support sustained progression over time.	What does a motivated learner look like? Mathematical learning behaviours are developed such that pupils focus and engage fully as learners who reason and seek to make connections. High expectations are communicated – consciously and unconsciously – language, pitch of lessons, problem solving, engage with maths.	What does success look like in this subject? What does a linguist look like? What skills do they have? How are these skills evidenced in the curriculum? Significant time is spent developing deep understanding of the key ideas that are needed to underpin future learning. What does a linguist look like? What skills do they have? Use of precise mathematical language enables all pupils to communicate their reasoning and thinking effectively. How are these skills evidenced in the curriculum?

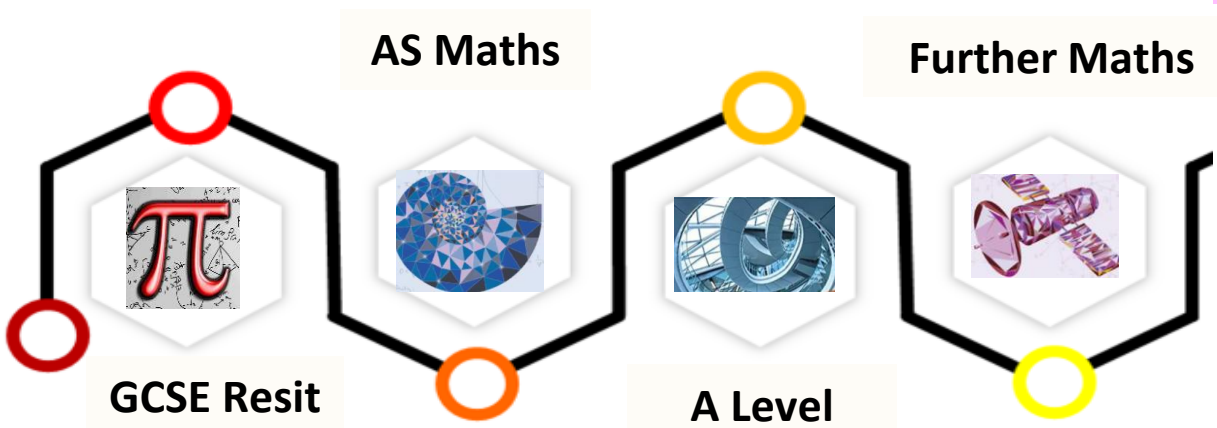
SUBJECT CURRICULUM THEMES



Cross Curricular links

- Students will be using mathematical skills in a large number of other subjects. Particularly: the sciences, computer science, engineering and geography.
- "Real-life" maths or contextual problems are set to deliberately relate to realistic pathways and broaden horizons of other possibilities.

CONTINUING THE CURRICULUM PATH



Future Pathways

- Within WLA students have access to apply for a variety of maths courses: A level maths, further maths and AS maths. Opportunities for GCSE maths resit are provided for those who have not yet achieved a grade 4.
- Students should leave the school with the numberacy and mathematical skills required for a broad range of post-16 courses of all

WLA Maths

Curriculum theme:

Inspire and Engage

*The focus in **Year 7** is to*

Golden Thread:

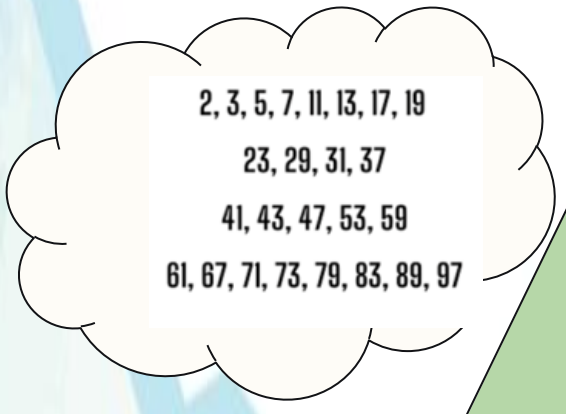
Reasoning and Thinking

7

6. Reasoning with Number

- **Developing number sense**
- **Sets and probability**
- **Prime numbers and proof**

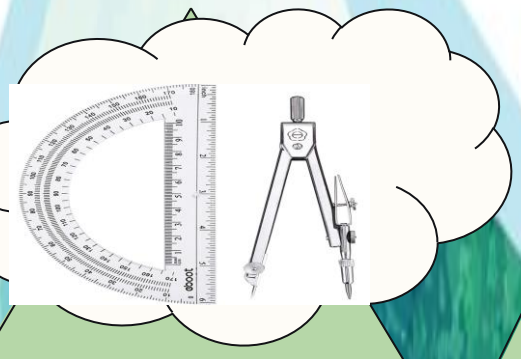
Assessment: Continuous assessment at the end of each step
Real outcome: Understand that prime numbers are the alphabet of maths and use in problem solving



5. Lines and Angles

- **Constructing, measuring and using geometric notation**
- **Developing geometric reasoning**

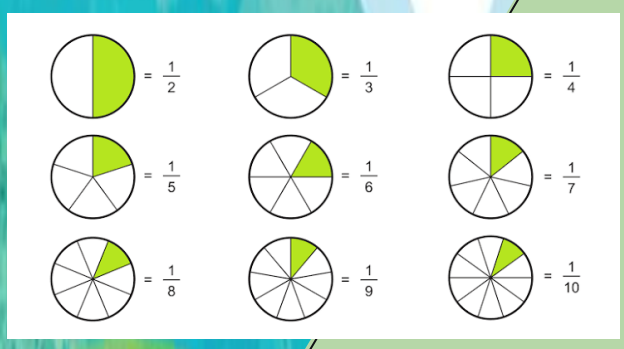
Assessment: Continuous assessment at the end of each step
Real outcome: Design and engineering, navigation, technical drawing, robotics

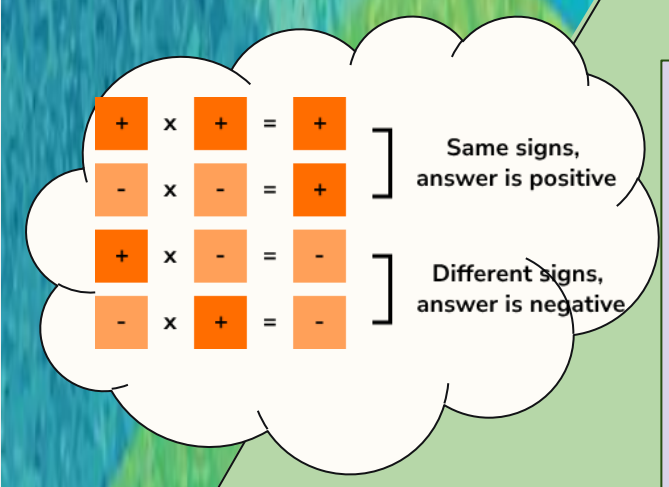


4. Directed Number and Fractional Thinking

- Operations and equations with directed number
- Addition and subtraction of fractions

Assessment: Continuous assessment at the end of each step (reasoning)
Real outcome: Understand temperature, account balances, time zones





3. Applications of Number

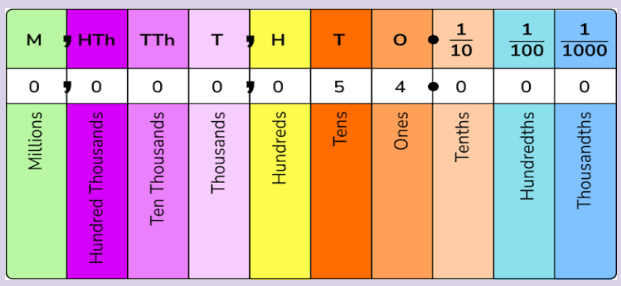
- **Problem solving with addition and subtraction**
- **Problem solving with multiplication and division**
- **Fractions and percentages of amounts**

Assessment Continuous assessment at the end of each step
Real outcome: To apply number to problem solving

2. Place Value and Proportion

- **Place value**
- **Ordering integers and decimals**
- **Fraction, decimal and percentage equivalence**

Assessment: Continuous assessment at the end of each step
Real outcome: Confidence with numeracy



1. Algebraic Thinking

- **Sequences**
- **Understand and use algebraic notation**
- **Equality and equivalence**

Assessment: Continuous assessment at the end of each step
Real outcome: Understand how maths is all around us

WLA Maths

Curriculum theme:

Explore and Interpret

Following an inspirational Year 7, students will continue to develop their knowledge and skills ***in Year 8*** *.*

Golden Thread:

Representation and Reasoning

8

6. Reasoning with data

- **The data handling cycle**
- **Measures of location**

Assessment: Continuous assessment at the end of each step
Real outcome:

5. Developing geometry

- **Angles in parallel lines and polygons**
- **Area of trapezia and circles**
- **Line symmetry and reflection**

Assessment: Continuous assessment at the end of each step
Real outcome:

4. Developing number

- **Fractions and percentages**
- **Standard index form**
- **Number sense**

Assessment: Continuous assessment at the end of each step
Real outcome:

3. Algebraic techniques

- **Brackets, equations and inequalities**
- **Sequences**
- **Indices**

Assessment: Continuous assessment at the end of each step
Real outcome:

2. Representations

- **Working in the Cartesian plane**
- **Representing data**
- **Tables and probability**

Assessment: Continuous assessment at the end of each step
Real outcome:

1. Proportional Reasoning

- **Ratio and scale**
- **Multiplicative change**
- **Multiplying and dividing fractions**

Assessment: Continuous assessment at the end of each step
Real outcome:

Year 7 recap

Maths builds on from what is previously learnt. All units will review a variety of content studied in previous years. The topics above highlight content for year 8.

WLA Maths

Curriculum theme:

Connect and Compare

*The focus in **Year 9** is to develop skills . The content of the Year 9 curriculum is*

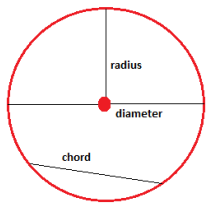
Golden Thread:

Problem Solving

9

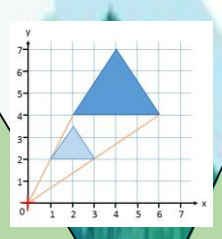
6. Representations and geometry

- **Probability**
- **Algebraic representations**
- **Circle geometry**
- **Polygon geometry**



Assessment: End of KS3 exams
Real outcome: Setting for GCSE's

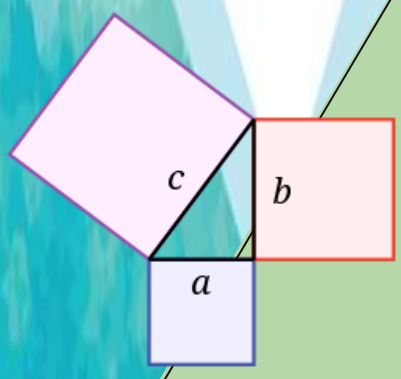
5. Reasoning with proportion



- **Enlargement and similarity**
- **Solving ratio and proportion problems**
- **Rates**

Assessment: Continuous assessment at the end of each step
Real outcome:

4. Reasoning with geometry



- **Deduction**
- **Rotation and translation**
- **Pythagoras' theorem**

Assessment: Continuous assessment at the end of each step
Real outcome:

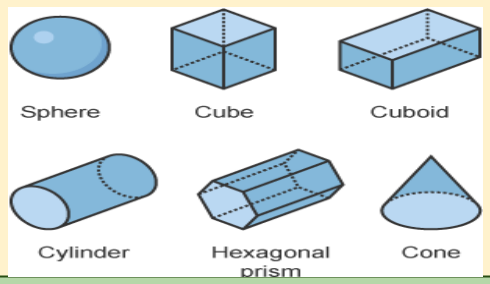
3. Reasoning with number

- **Numbers**
- **Using percentages**
- **Maths and money**

Assessment: Continuous assessment at the end of each step
Real outcome:

2. Constructing in 2 and 3 dimensions

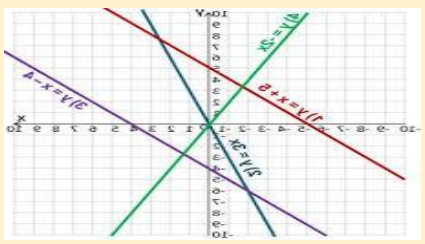
- **Three dimensional shapes**
- **Construction and congruence**



Assessment: Continuous assessment at the end of each step
Real outcome:

1. Reasoning with algebra

- **Straight line graphs**
- **Forming and solving equations**
- **Testing conjectures**



Assessment: Continuous assessment at the end of each step
Real outcome:

Year 8 recap

Maths builds from what is previously learnt. All units will review a variety of content studied in previous years. The topics above highlight content new to year 9.

WLA Maths

Curriculum theme:

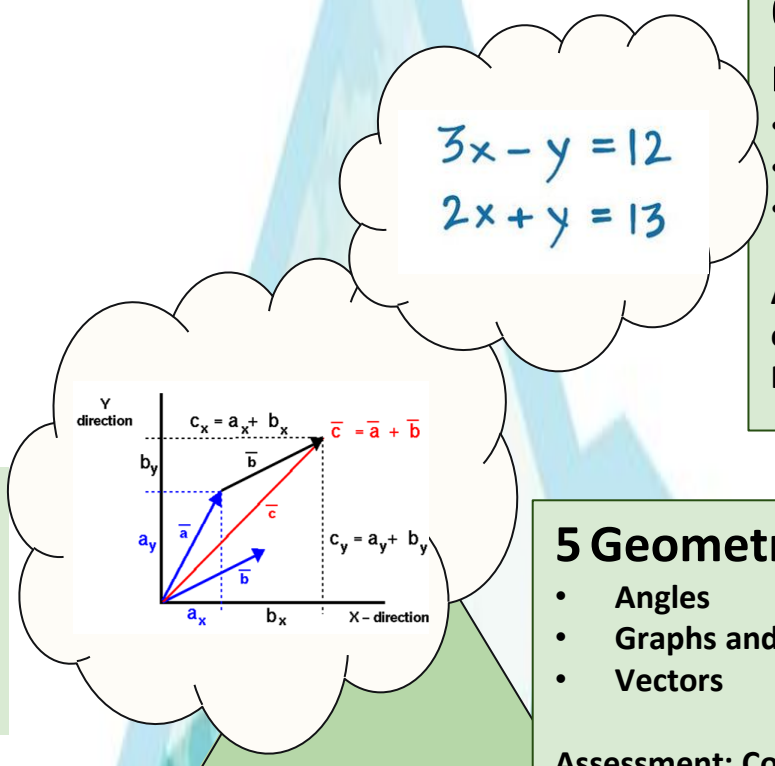
Analyse and Expand

Starting the GCSE courses either foundation tier or higher. Many students will begin the "higher" scheme of work and study topics that appear on both tiers during Y10.

Towards the end of year 10 and beginning of year 11 a decision will be made to refocus students onto the foundation tier if they do not have the prerequisite knowledge to continue onto higher tier examinations.

Golden Thread:

Expand



6 Number, geometry and measure, algebra

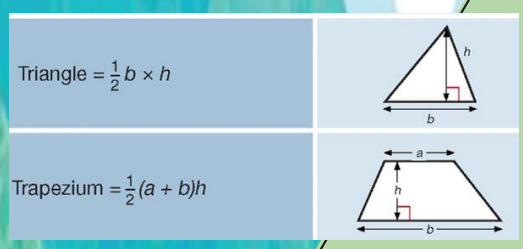
- Factors and powers
- Pythagoras and trigonometry
- Simultaneous equations

Assessment: Continuous assessment at the end of each step
Real outcome:

5 Geometry and measure, statistics

- Angles
- Graphs and diagrams
- Vectors

Assessment: Continuous assessment at the end of each step; Mocks
Real outcome:



4 Geometry and measure, statistics, algebra

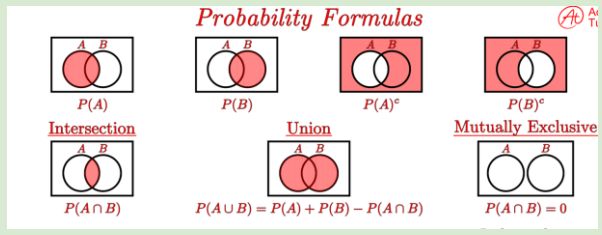
- Perimeter, area and volume
- Interpret and represent data
- Non-linear graphs

Assessment: Continuous assessment at the end of each step
Real outcome:

3 Number, algebra and probability

- Non-calculator methods
- Straight line graphs
- Probability
- Estimation

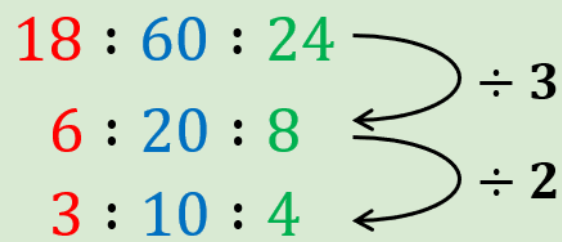
Assessment: Continuous assessment at the end of each step
Real outcome:



2 Number and ratio

- Percentages
- Ratio and scale
- Work with fractions

Assessment: Continuous assessment at the end of each step
Real outcome:



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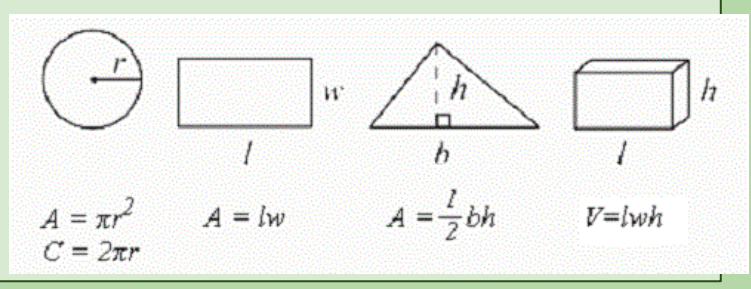
1 Algebra

- Algebraic manipulation
- Equations, inequalities and formulae
- Quadratic expressions and equations

Assessment: Continuous assessment at the end of each step
Real outcome:



Year 9 recap

Maths builds from what is previously learnt. All units will review a variety of content studied in previous years. The t above highlight content new to the GCSE.

WEST LAKES ACADEMY

WLA Maths: Functional Skills

Curriculum theme:

Revise and Refine

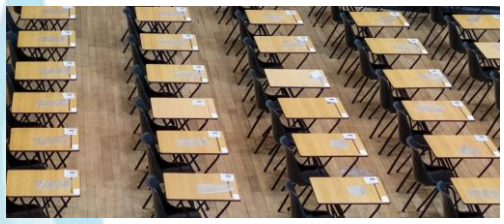
Golden Thread:

Problem solving and Fluency

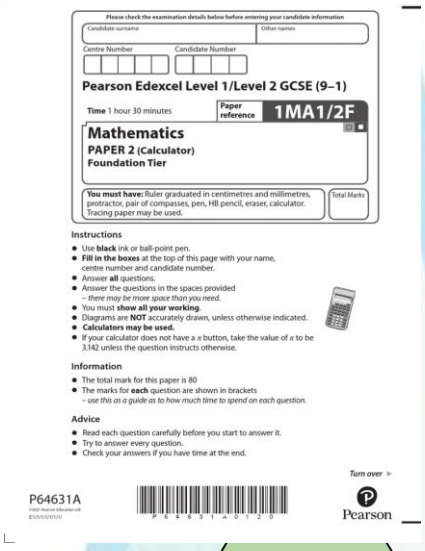
Potential destinations

6th Form

Apprenticeships



6 Exams



Please check the examination details below before entering your candidate information

Candidate surname | Other names

Centre Number | Candidate Number

Pearson Edexcel Level 1/Level 2 GCSE (9–1)

Time 1 hour 30 minutes | Paper reference 1MA1/2F

Mathematics

PAPER 2 (Calculator)

Foundation Tier

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- You must **show all your working.**
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- **Calculators may be used.**
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.

Information

- The total mark for this paper is 80
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over

P64631A

Pearson

5 Exam technique and revision

- **Fluency in problem solving**
- **How ro approach problems involving multiples areas of maths**
- **Using Formulae**

Assessment: Past papers, P1

Real outcome: Fluency in solving exam questions

4 Exam technique and revision

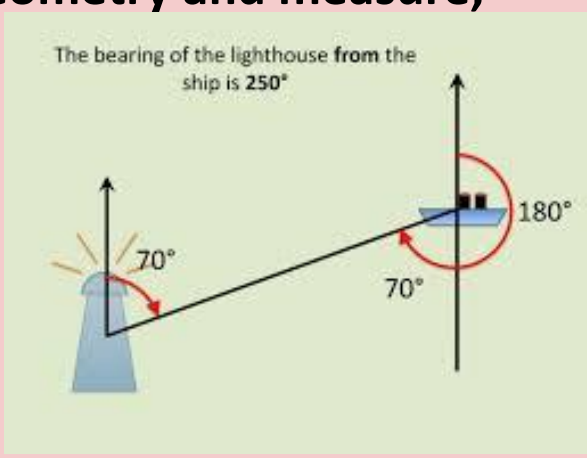
- **Problem Solving and Mathematical Reasoning**
- **Identifying Formulae to use**
- **How to extract the key elements of an exam question**

Assessment: Past papers

Real outcome: Build confidence in approaching exam questions

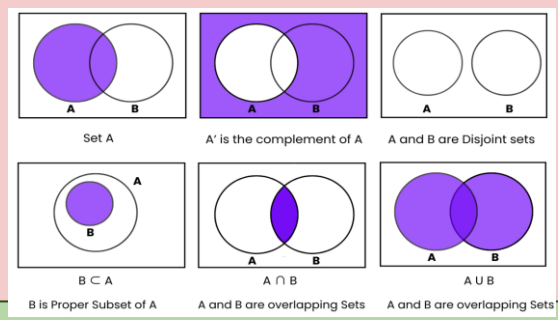
3 Algebra, ratio and proportion, geometry and measure, statistics

- **Multiplicative reasoning (F)**
- **Functions and graphs**
- **Equations and formulae**
- **Rates**
- **Angles, bearings anf Pythagoras/trigonometry**
- **Constructions and loci**
- **Transformations**



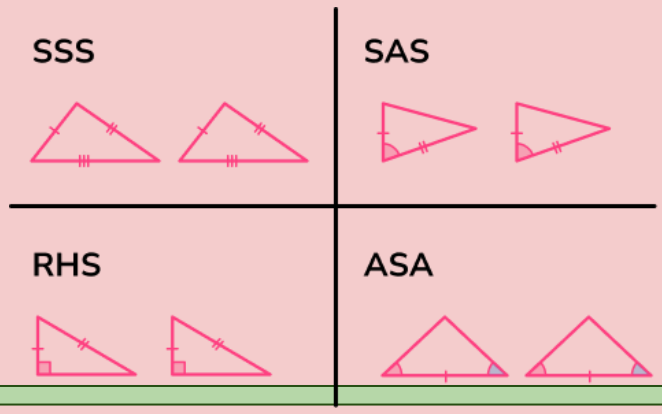
2 Statistics, Geometry, Time and Money

- Using Statistics
- Shape and Space
- Time
- Money and Budgeting
- Sample Assessment Materials (SAMs)



1 Algebra, Number and Proportion

- **Algebra: Expressions and Formulae**
- **Algebra: Equations**
- **Algebra: Graphs**
- Number Skills and Calculations
- **Ratio and Proportion**



Year 10 recap

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WEST LAKES ACADEMY

WLA Maths

Curriculum theme:

Revise and Refine

Golden Thread:

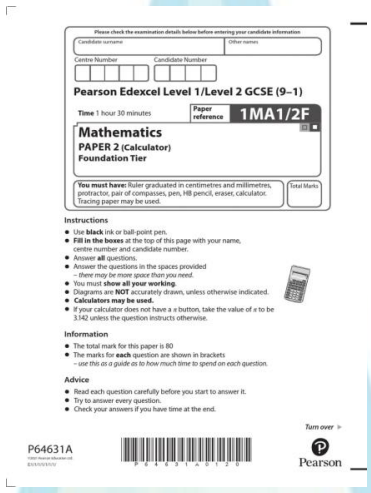
Problem solving and Fluency

Potential destinations

6th Form
Apprenticeships

11

6 Exams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Candidate surname | Other names

Centre Number | Candidate Number

Pearson Edexcel Level 1/Level 2 GCSE (9–1)

Time 1 hour 30 minutes | Paper reference 1MA1/2F

Mathematics
PAPER 2 (Calculator)
Foundation Tier

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Turn over ▶

P64631A

Pearson

5 Exam technique and revision

- **Fluency in problem solving**
- **How ro approach problems involving multiples areas of maths**
- **Using Formulae**

Assessment: Past papers, P1
Real outcome: Fluency in solving exam questions

4 Exam technique and revision

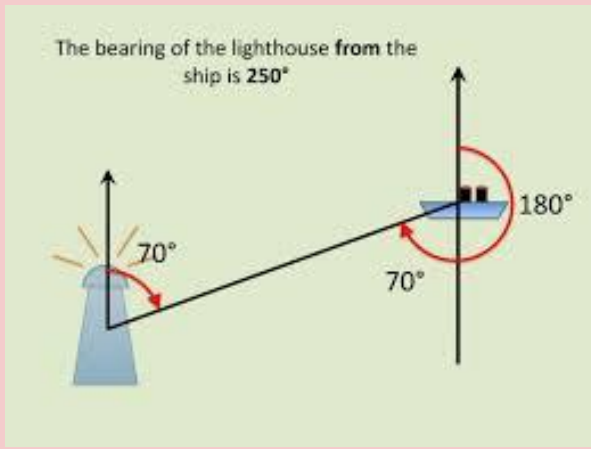
- **Problem solving**
- **Identifying Formulae to use**
- **How to extract the key elements of an exam question**

Assessment: Past papers, P2 and P3
Real outcome: Build confidence in approaching exam questions

3 Algebra, ratio and proportion, geometry and measure, statistics

- **Multiplicative reasoning (F)**
- **Functions and graphs**
- **Equations and formulae**
- **Rates**
- **Angles, bearings anf Pythagoras/trigonometry**
- **Constructions and loci**
- **Transformations**
- **Histograms, cumulative frequency (H)**

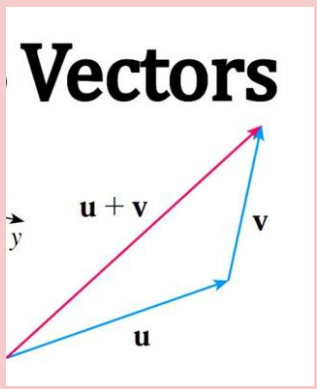
Assessment: Exam questions



2 Number, Geometry and measure, probability

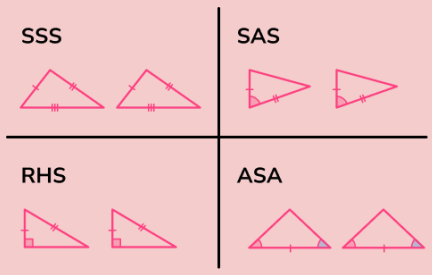
- **Standard form**
- **Circles**
- **Sets**
- **Vectors**
- **Plans and elevations (F)**

Assessment: Continuous assessment at the end of each step



1 Ratio, geometry and measure, algebra

- **Pythagoras and trigonometry**
- **Simultaneous equations**
- **Ratio and proportion**
- **Area and volume**
- **Similarity and congruence**
- **Sequences**



$$3x - y = 12$$
$$2x + y = 13$$

Assessment: Continuous assessment at the end of each step

Year 10 recap

Maths builds from what is previously learnt. All units will review a variety of content studied in previous years. The topics above highlight content new to year 11.

WEST LAKES ACADEMY

WLA Further Maths L2

Curriculum theme:

Revise and Refine

Golden Thread:

Problem solving and Fluency

Potential destinations

6th Form

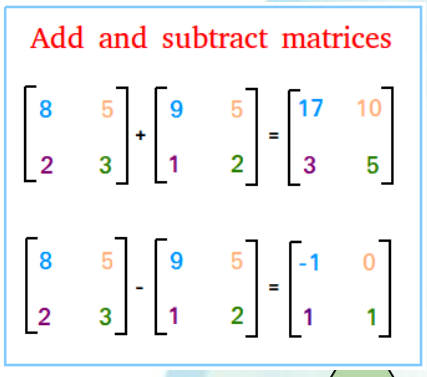
Apprenticeships

11

6 Exams

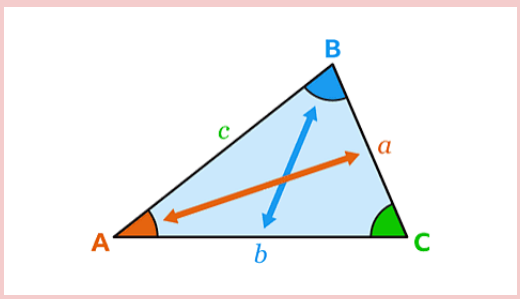
5 Algebra, Matrices and Further Trig.

- **Algebraic Fractions**
- **Binomial Expansion**
- **Matrices**
- **Product Rule for Counting**
- **Further Trigonometry**



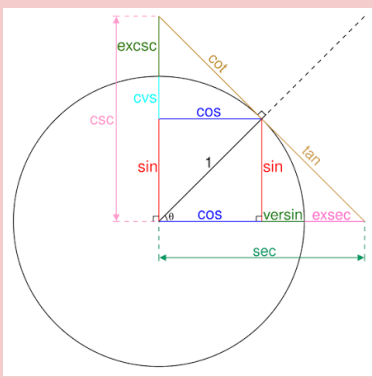
4 Algebra, Geometry and Calculus

- **Transforming Functions**
- **Sine and Cosine Rules**
- **Sine and Cosine Rules**
- **Factor Theorem**
- Circle Theorems and Geometric Proof
- **Calculus**



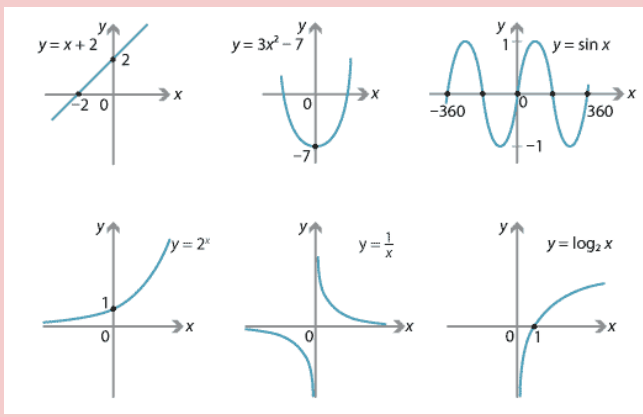
3 Algebra, Proportion and Geometry

- Inequalities
- Pythagoras Theorem and Basic Trigonometry
- Pythagoras Theorem and Trigonometry in 3D
- Growth and Decay
- Vectors



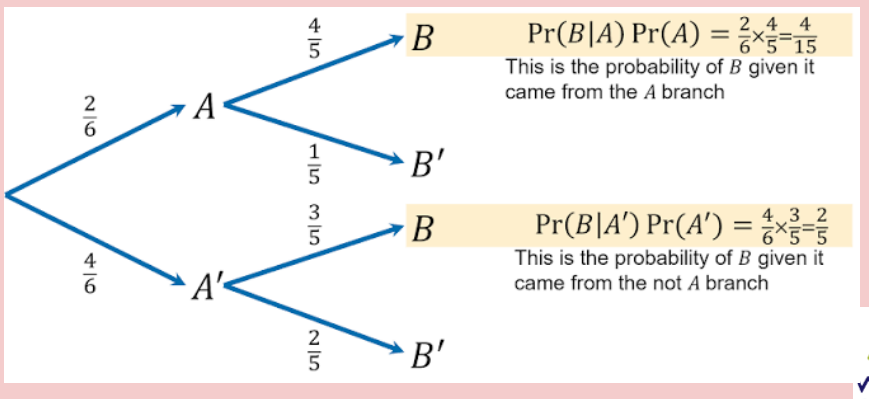
2 Algebra

- Drawing and Sketching Functions
- **Further Equations and Drawing and Sketching Functions**
- Simultaneous Equations
- **Simultaneous Equations in Two and Three Unknowns**
- Sketching Graphs Functions
- Direct and Inverse Proportion



1 Probability, Geometry, Algebra and Statistics

- Probability
- Volume
- Algebra: Quadratics, rearranging formulae and identities
- Scatter Graphs
- Numerical Methods
- Equation of a Circle
- Further Equations and Graphs



WEST LAKES ACADEMY

YEAR 12 Maths

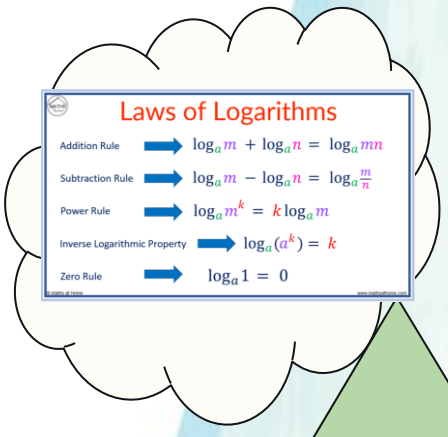
12

WLA Mathematics

Curriculum theme:

Argument, proof, problem solving and modelling.

*The **Edexcel A-Level Mathematics** course is assessed with 4 exams at the end of Year 13: Pure paper 1, Pure paper 2, Mechanics and Statistics. Throughout both yr 12 and 13, chapters from Pure will be spaced with chapters from Mechanics and Statistics. The purpose of this is to allow students to frequently revisit different modules and topics with the aim to improve embedding learning in student's long term memory. Topic tests for each chapter will be taken at a delay again forcing students to revise and revisit learning.*



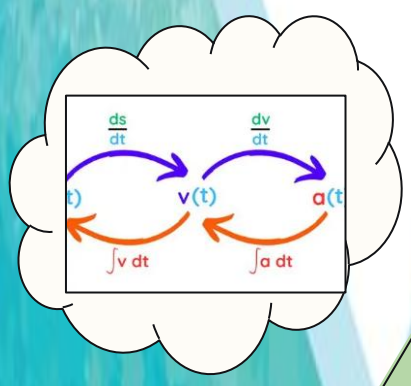
6 Trial Exams
Review and reteach

5 Pure:

P1-13 Integration **Assessment: Topic test**
P1-14 Exponentials & Logarithms **Assessment: Topic test**

Applied:

S1-7 Hypothesis Testing **Assessment: Topic test**
M1-11 Variable Acceleration **Assessment: Topic test**

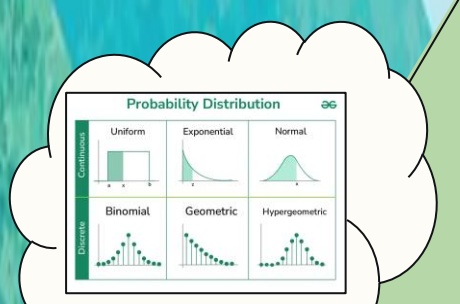


4 Pure:

P1-12 Differentiation **Assessment: Topic test**

Applied:

S1-6 Statistical Distributions **Assessment: Topic test**
M1-11 Variable Acceleration **Assessment: Topic test**

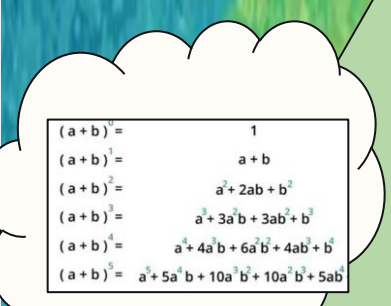


3 Pure:

P1-10 Trigonometric Identities & Equations **Assessment: Topic test**
P1-11 Vectors **Assessment: Topic test**

Applied:

S1-4 Correlation **Assessment: Topic test**
S1-5 Probability **Assessment: Topic test**
M1-10 Forces and Motion **Assessment: Topic test**

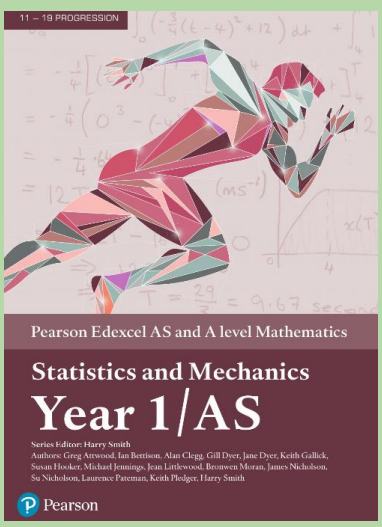


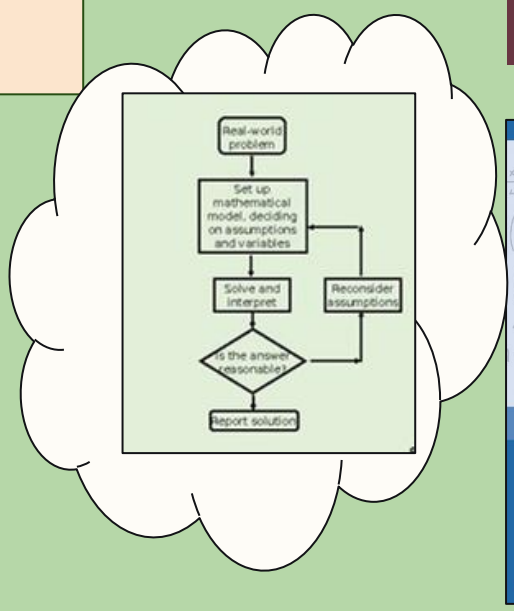
2 Pure:

P1-6 Circles **Assessment: Topic test**
P1-7 Algebraic Methods **Assessment: Topic test**
P1-8 The Binomial Expansion **Assessment: Topic test**
P1-09 Trigonometric Ratios **Assessment: Topic test**

Applied:

1-2 Measures of Location & Spread **Assessment: Topic test**
S1-3 Representations of Data **Assessment: Topic test**
M1-9 Constant Acceleration **Assessment: Topic test**



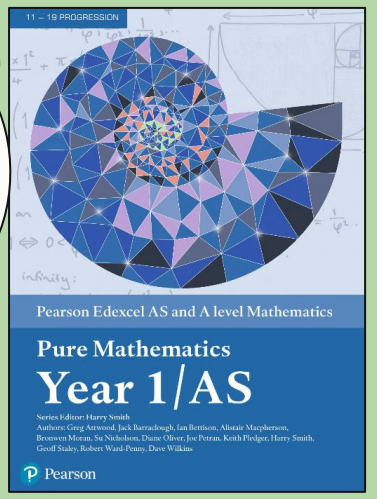


1 Pure:

P1-1 Algebraic Expressions **Assessment: Topic test**
P1-2 Quadratics **Assessment: Topic test**
P1-3 Equations & Inequalities **Assessment: Topic test**
P1-4 Graphs & Transformations **Assessment: Topic test**
P1-5 Straight Line Graphs **Assessment: Topic test**

Applied:

S1-1 Data Collection **Assessment: Topic test**
M1-8 Modelling in Mechanics **Assessment: Topic test**



GCSE recap

GCSE higher tier concepts need to be thoroughly embedded. A summer task called a 'step task' is vital to ensure higher tier GCSE concepts are readily available to the learner.

WLA Mathematics

Curriculum theme:

Argument, proof, problem solving and modelling.

*The **Edexcel A-Level Mathematics** course is assessed with 4 exams at the end of Year 13: Pure paper 1, Pure paper 2, Mechanics and Statistics. Throughout both yr 12 and 13, chapters from Pure will be spaced with chapters from Mechanics and Statistics. The purpose of this is to allow students to frequently revisit different modules and topics with the aim to improve embedding learning in student's long term memory. Topic tests for each chapter will be taken at a delay again forcing students to revise and revisit learning.*

YEAR 13 Maths

13

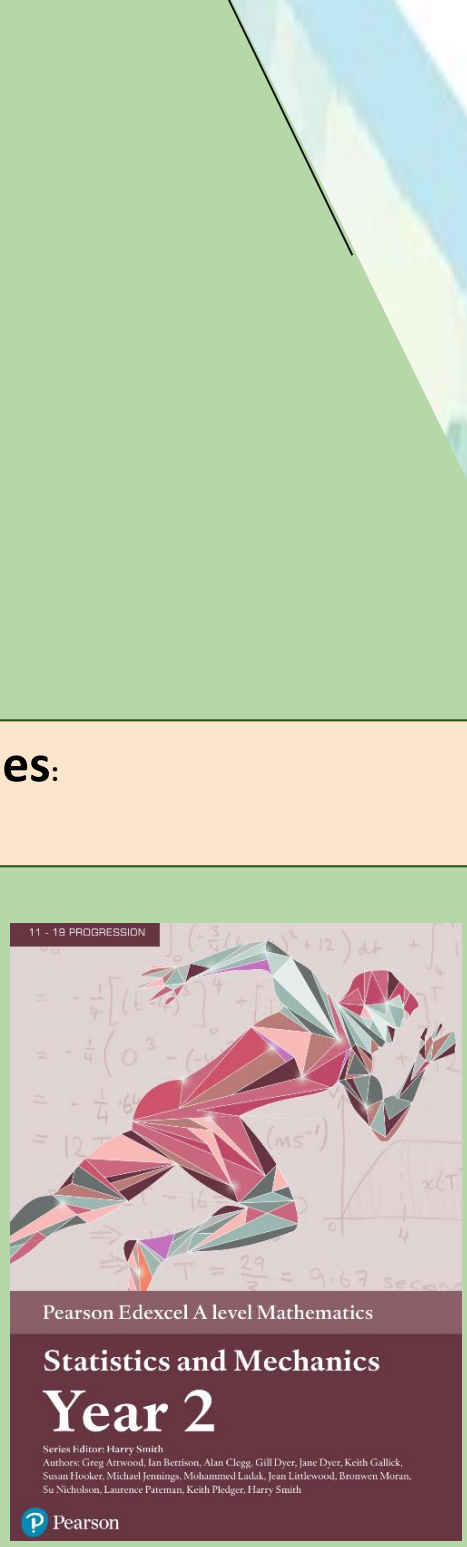
4 Exam Techniques:

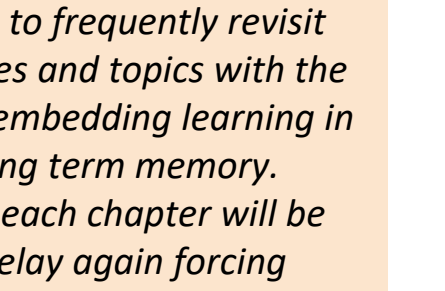
3 Pure:

P2-9 Differentiation Assessment: Topic test
P2-10 Numerical Methods Assessment: Topic test
P2-12 Vectors Assessment: Topic test

Applied:

S2-3 The Normal Distribution Assessment: Topic test
M2-7 Application of Forces Assessment: Topic test
M2-8 Further Kinematics Assessment: Topic test



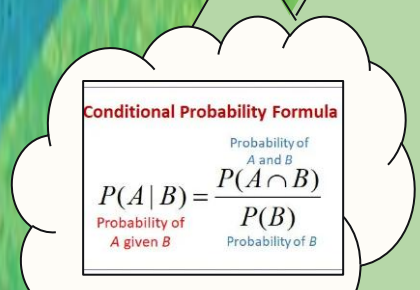


2 Pure:

P2-5 Radians Assessment: Topic test
P2-6 Trigonometric Functions Assessment: Topic test
P2-7 Trigonometry & Modelling Assessment: Topic test
P2-8 Parametric Equations Assessment: Topic test

Applied:

S2-2 Conditional Probability Assessment: Topic test

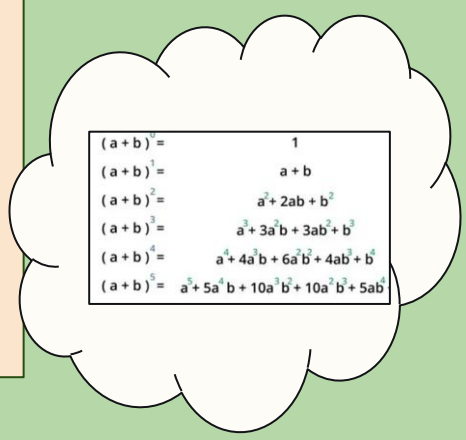


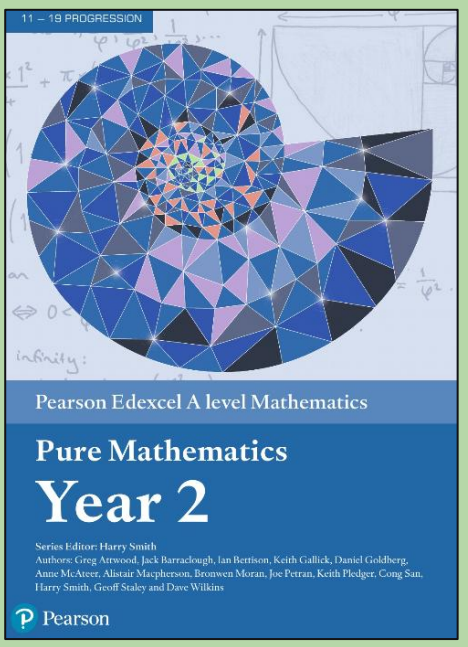
1 Pure:

P2-1 Algebraic Methods Assessment: Topic test
P2-2 Functions & Graphs Assessment: Topic test
P2-3 Sequence & Series Assessment: Topic test
P2-4 Binomial Expansion Assessment: Topic test

Applied:

S2-1 Regression Assessment: Topic test





Y12 recap

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