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Note: Slides from all workshops will be shared after the evening.

Mathematics in S1 – S2

Miss Hay (Curriculum Leader)

Thinkers
a collection of activities to provoke mathematical thinking

Example Thinker Question:

Give me an example of a set of three numbers whose sum is 0; and another, and another.

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Session Aims

We aim to cover the following this evening:

- Curriculum and Pathways
- Events and Challenges
- Support

Please Note: Our website is currently being updated with this year's timelines and resources.

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S1

- During S1, the majority of learners come in starting to or already working at level 3 of the Curriculum for Excellence.
- This means that the majority of learners will work through level 3 skills in S1 (with some level 2/4 where appropriate).
- Those who start S1 at level 2 or lower will follow an adapted curriculum which meets their needs, focusing largely on developing numerical fluency.
- We build and extend on what they have learned in primary and check their prior learning.
- We use concrete materials to develop understanding, including Integer Tiles and Algebra Tiles.
- We have also introduced technology by using basic excel with Money and Data.
- We complete short topic check-ups throughout the year to assessment understanding with one longer mixed assessment in February.

Term 1 (Aug – Oct):

- Multiples, Factors, Primes and Powers
- Order of Operations – BODMAS/BOMDAS
- Integers 1 – Addition and Subtraction only using integer tiles, coordinates
- Maths Week Scotland – Impact of Maths Research and Presentations
- Number Line 1 – Place Value of whole numbers and decimals, Addition/Subtraction of whole and decimals
- Intro to Ratio Tables

Term 2 (Oct – Dec):

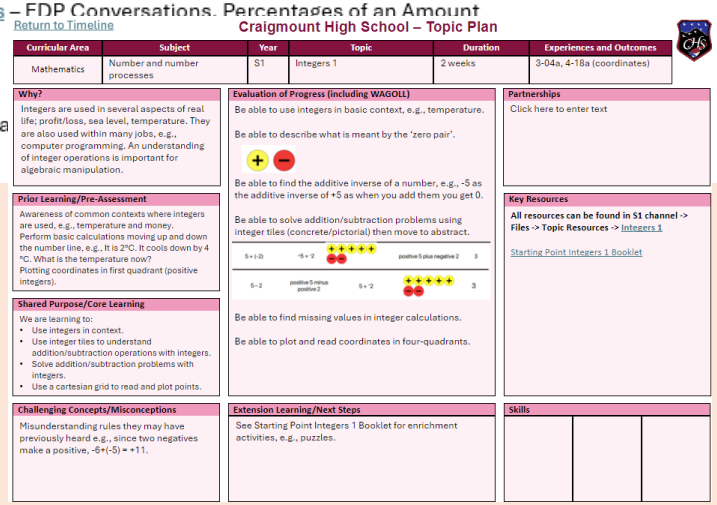
- Data – Interpreting Charts, Using Excel, Drawing Scatter Graphs, Averages
- Decimals – Multiply/Divide, Rounding to decimal places
- Converting Units and Tolerance
- Time 1 – 12/24-hr time

Term 3 (Jan – Mar):

- Numeracy Line 2 – Proper Fractions, Improper Fractions, Mixed Numbers
- Fractions 1 – Fractions of an Amount, Addition and Subtraction only
- Algebra 1 – Patterns, Sequences, Substitution, Simplifying Expressions (collecting like terms) algebra tiles
- Percentages – FDP Conversations, Percentages of an Amount

Term 4 (Apr – May):

- Angles
- Money 1 – Sa



Return to Timeline

Craigmount High School – Topic Plan

Curricular Area	Subject	Year	Topic	Duration	Experiences and Outcomes
Mathematics	Number and number processes	S1	Integers 1	2 weeks	3-04a, 4-18a (coordinates)

Why?
Integers are used in several aspects of real life; profit/loss, sea level, temperature. They are also used within many jobs, e.g., computer programming. An understanding of integer operations is important for algebraic manipulation.

Evaluation of Progress (including WAGOLL)
Be able to use integers in basic context, e.g., temperature.
Be able to describe what is meant by the 'zero pair'.
Be able to find the additive inverse of a number, e.g., -5 as the additive inverse of +5 as when you add them you get 0.
Be able to solve addition/subtraction problems using integer tiles (concrete/pictorial) then move to abstract.
Be able to find missing values in integer calculations.
Be able to plot and read coordinates in four-quadrants.

Partnerships
Click here to enter text

Prior Learning/Pre-Assessment
Awareness of common contexts where integers are used, e.g., temperature and money.
Perform basic calculations moving up and down the number line, e.g., It is 2°C. It cools down by 4 °C. What is the temperature now?
Plotting coordinates in first quadrant (positive integers).

Key Resources
All resources can be found in S1 channel -> Files -> Topic Resources -> Integers 1
Starting Point Integers 1 Booklet

Shared Purpose/Core Learning
We are learning to:
- Use integers in context.
- Use integer tiles to understand addition/subtraction operations with integers.
- Solve addition/subtraction problems with integers.
- Use a cartesian grid to read and plot points.

Challenging Concepts/Misconceptions
Misunderstanding rules they may have previously heard e.g., since two negatives make a positive, -6+(-5) = +11.

Extension Learning/Next Steps
See Starting Point Integers 1 Booklet for enrichment activities, e.g., puzzles.

Skills

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S2

- S2 continues naturally from S1, with the majority of learners working mainly on level 4 concepts. Some will work predominantly in level 2/3.
- At the end of S2, pupils will specialise into a pathway with recommendations from their teacher. These decisions are made with pupils in Jan – Mar.
- We complete short topic check-ups throughout the year to assess understanding with two longer mixed assessments in November (non-calculator) and January (calculator).

Change of Timetable (June):

- Properties of 2D/3D Shapes – Including Reflective and Rotational Symmetry
- Area 1

Term 1 (Aug – Oct):

- Integers 2 – Multiplication and Division using integer tiles
- Fractions 2 – Multiplication and Division
- Maths Week Scotland
- Rounding – Significant Figures
- Algebra 1 – Expanding Brackets

Term 2 (Oct – Dec):

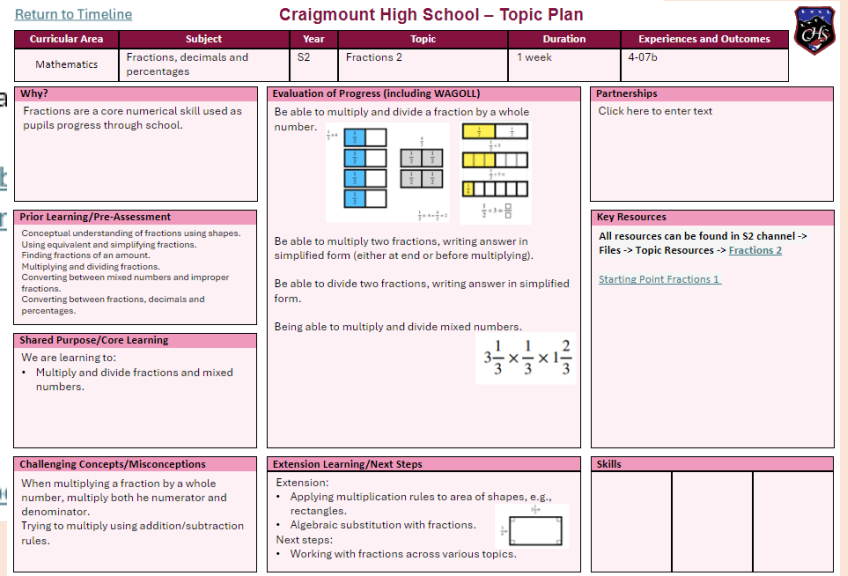
- Algebra 2 – Solving Equations
- Ratio and Proportion – Ratio Tables, Foreign Exchange
- Powers, Roots and Pythagoras

Term 3 (Jan – Mar):

- Time 2 – Speed, Distance a
- Gradient
- Algebra 3 – Change the Sub
- Perimeter and Circumferer
- Probability
- Area of a Circle

Term 4 (Apr – May):

- Surface Area
- Money 2
- Volume – Prisms (e.g., cub



Return to Timeline

Craigmount High School – Topic Plan

Curricular Area	Subject	Year	Topic	Duration	Experiences and Outcomes
Mathematics	Fractions, decimals and percentages	S2	Fractions 2	1 week	4-07b

Why?
Fractions are a core numerical skill used as pupils progress through school.

Evaluation of Progress (including WAGOLL)
Be able to multiply and divide a fraction by a whole number.

Be able to multiply two fractions, writing answer in simplified form (either at end or before multiplying).

Be able to divide two fractions, writing answer in simplified form.

Being able to multiply and divide mixed numbers.

$3\frac{1}{3} \times \frac{1}{3} \times 1\frac{2}{3}$

Partnerships
Click here to enter text

Prior Learning/Pre-Assessment
Conceptual understanding of fractions using shapes.
Using equivalent and simplifying fractions.
Finding fractions of an amount.
Multiplying and dividing fractions.
Converting between mixed numbers and improper fractions.
Converting between fractions, decimals and percentages.

Key Resources
All resources can be found in S2 channel -> Files -> Topic Resources -> Fractions 2

Starting Point Fractions 1

Shared Purpose/Core Learning
We are learning to:
- Multiply and divide fractions and mixed numbers.

Challenging Concepts/Misconceptions
When multiplying a fraction by a whole number, multiply both he numerator and denominator.
Trying to multiply using addition/subtraction rules.

Extension Learning/Next Steps
Extension:
- Applying multiplication rules to area of shapes, e.g., rectangles.
- Algebraic substitution with fractions.

Next steps:
- Working with fractions across various topics.

Skills

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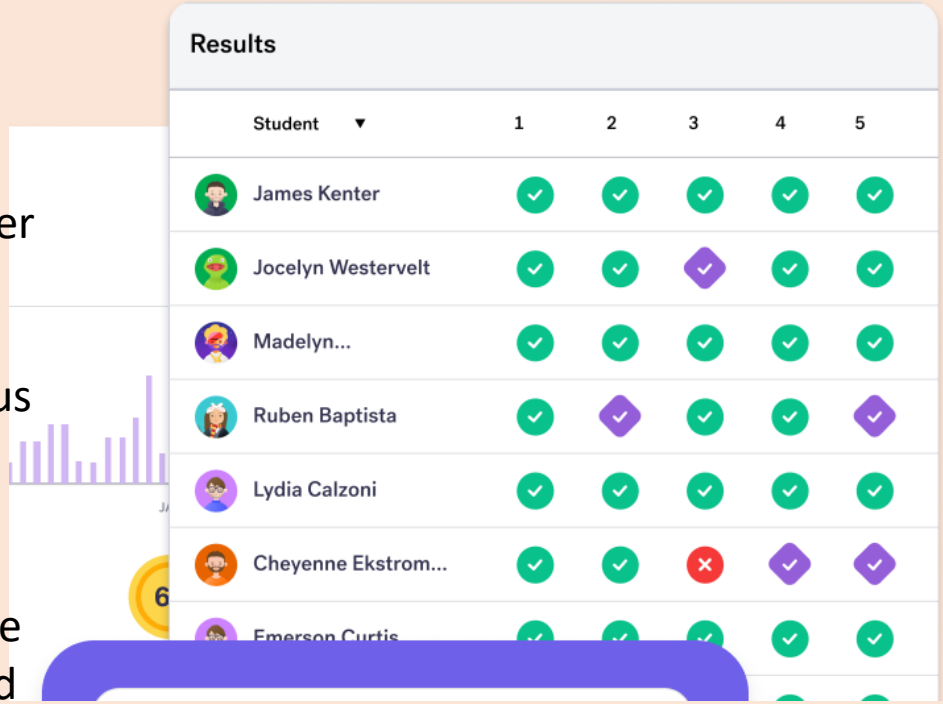
Eedi Homework

In 2025-26 we are trialling the use of Eedi for weekly homework. This is an online platform which provides support for pupils as they complete the homework.

Homework will consist of:

1. Topic quizzes with 5 questions. If learners are unsure of answers, the platform will provide support videos and further questions with the aim of fixing the misconception.

2. Retrieval (mixed topic) quizzes focused on recapping previous learning.



Eedi also provides an 'Independent Learning' section where learners can further their own mathematical skill and knowledge at home. Parents are able to set up accounts linked to their child to view progress.

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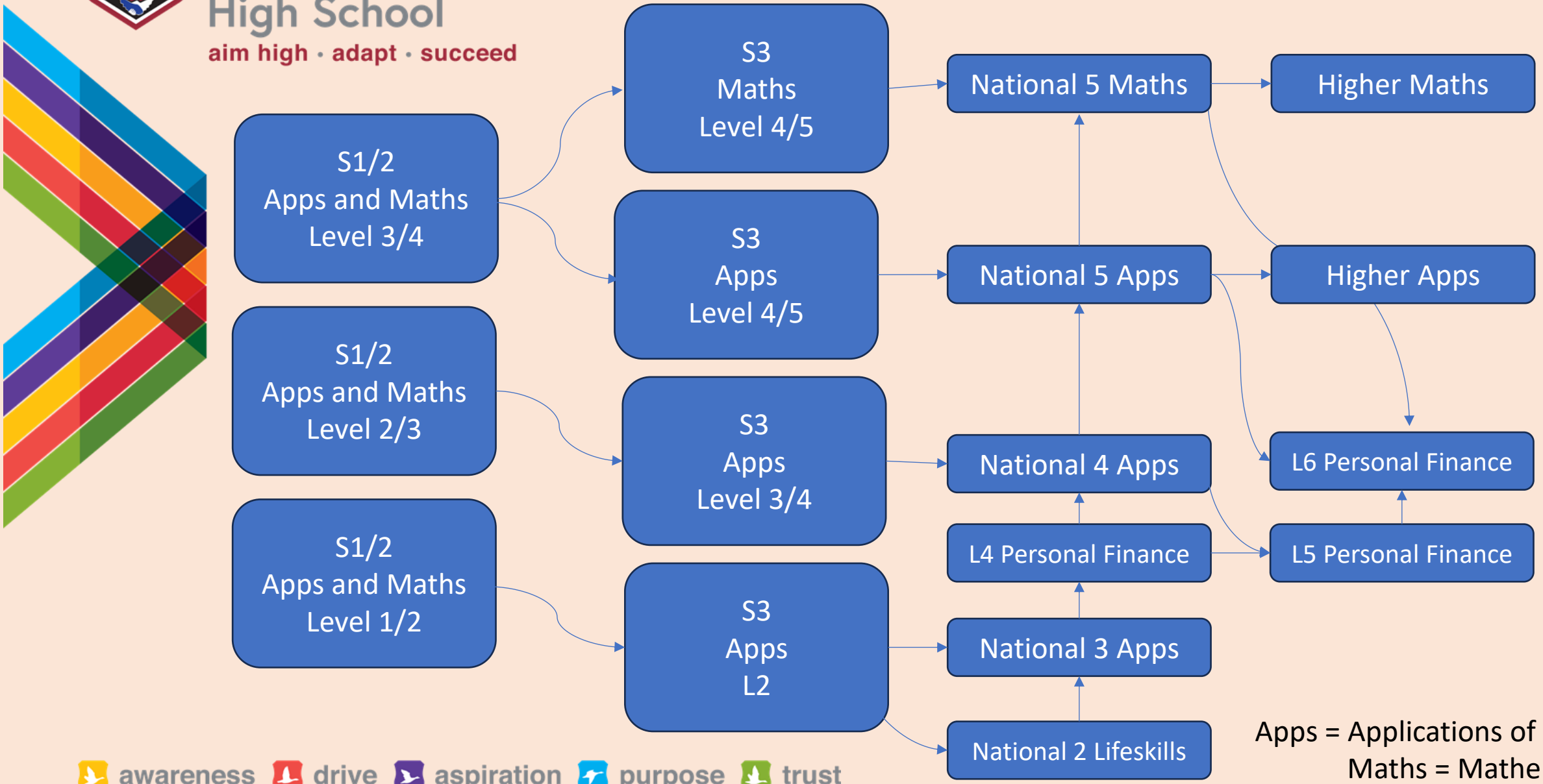
Our Pathways



Apps = Applications of Maths
Maths = Mathematics

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Applications of Maths vs Maths

- Our S1-2 curriculum prepares learners to study any of our pathways. In S3, they will specialise into one pathway. We now offer National 5 and Higher in two maths pathways:
  - Applications of Mathematics
    - Managing finances
    - Analysing statistics, data and probability
    - Working with geometry and measures
    - All questions are based in a context where learners need to decide what operations and skills they need to use to solve the problem.
    - Higher Apps includes computer work to extend on financial and statistical analysis. We use Excel and R Studio to do this.
  - Mathematics
    - Applying skills with algebra, geometry, trigonometry and (some statistics only at N5).
    - Using and understanding patterns and relationships.
    - Questions are more abstract.
    - Compulsory for some (but not all) STEM subjects.

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Applications of Maths vs Maths

Time for you to decide – are the questions N5 Maths or Apps?
Put your answer on your whiteboard.

1. Evaluate $2\frac{1}{6} \div \frac{8}{9}$.

   Give your answer in its simplest form.

N5 MATHS

1. A lake had a volume of 14 730 000 litres.

   Due to decreasing rainfall the volume of the lake is expected to decrease by 2.8% annually.

   Calculate the expected volume of the lake after 3 years.

   Give your answer to **3 significant figures.**

National 5 Applications Of Maths

The votes in a school for a class representative were split as follows

- $\frac{2}{5}$ for Sam
- $\frac{4}{9}$ for Ashley
- the remaining votes were for Lesley.

Calculate the fraction of votes that were for Lesley.

National 5 Applications Of Maths

1. A caravan was bought for £20,000.

   It depreciated by 11% in the first year.

   It then depreciated by a further 6% each year over the next two years.

   Calculate the value of the caravan three years after it was bought.

N5 MATHS

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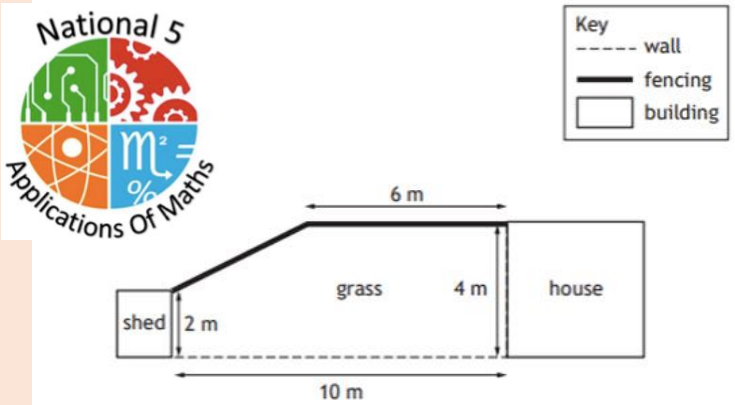
Applications of Maths vs Maths

Time for you to decide – are the questions N5 Maths or Apps?
Put your answer on your whiteboard.

A property developer has the garden plans for a new housing project.



The fencing is at a right angle to the house.

The wall is at a right angle to the house and the shed.

Fencing panels are sold in 2 m sections costing £21·40 each.

(a) Calculate the minimum cost of buying fencing.

1. Josh earns £9 per hour and works 30 hours a week.

His weekly outgoings are £220 a week.

Josh saves all his remaining money.

He books a holiday costing £566.

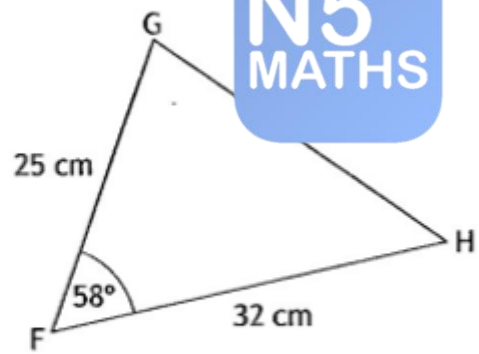
He will take £800 spending money with him.

Calculate the minimum number of weeks it will take him to save the total amount.

Change the subject of the formula $P = \frac{1}{3}mn - r$ to m.

The diagram shows triangle FGH.

- FG = 25 centimetres
- FH = 32 centimetres
- Angle GFH = 58°



Calculate the area of triangle FGH.

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Applications of Maths vs Maths

In S2, when selecting Applications of Maths or Maths, pupils need to:

- Listen to their teacher's recommendation. We use work in S1-2 to support our decisions about what pathway each pupil would be **most successful** in. This will be discussed in January.
- Consider which pathway would be **most relevant** to the pupil's career options and life. Research into the following areas is recommended:
  - Job requirements
  - Apprenticeship requirements
  - College entry requirements
  - University entry requirements
- If unsure, you should contact some of the above to ask for clarification.

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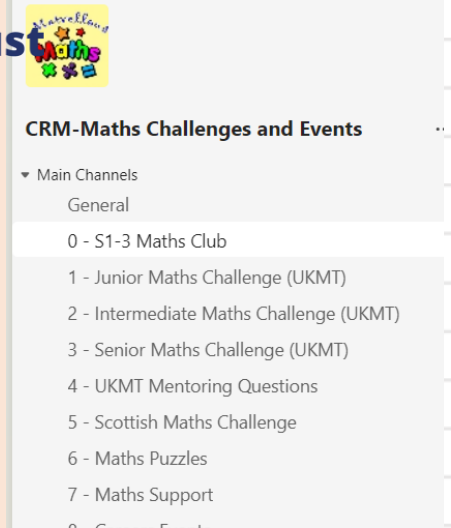
Events and Challenges

- We challenge our learners in each topic by extending ideas or providing problem solving questions.
- We also offer a number of events and challenges throughout the year – our stall in the Concourse shows our calendar.
- Your child can join our **new** Maths Challenge Team using the code: **7dujmpy**. On this team, we share information about the different maths challenges, puzzles, any extra events. If the code does not work for your child, please leave their name at our stall in the Concourse this evening or ask your child to speak with their teacher.

Maths Week Scotland

DYW

UK Maths Trust



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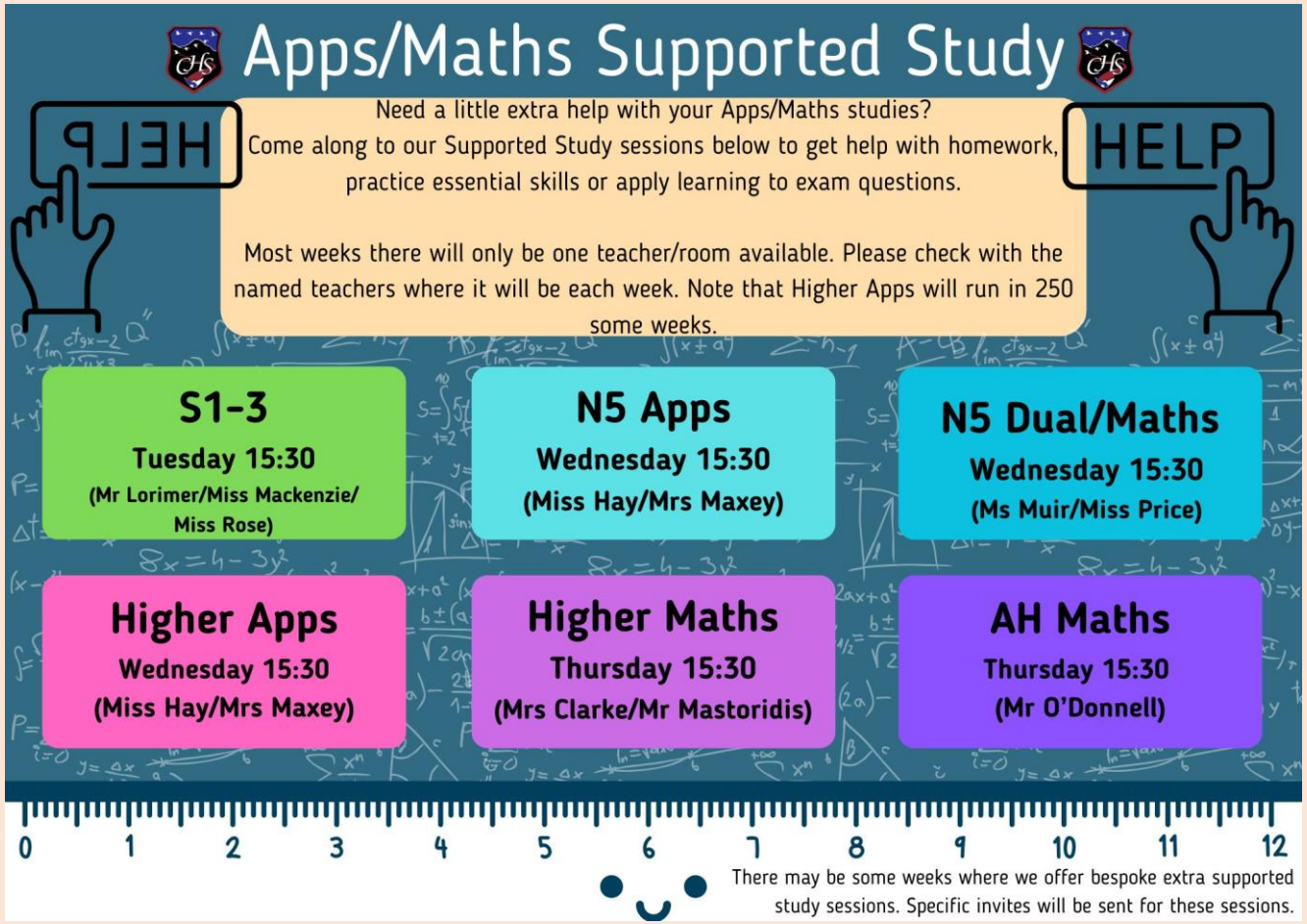
Support

- Class Teacher
- Teams
- Supported Study



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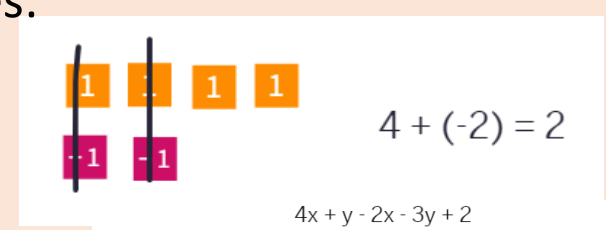
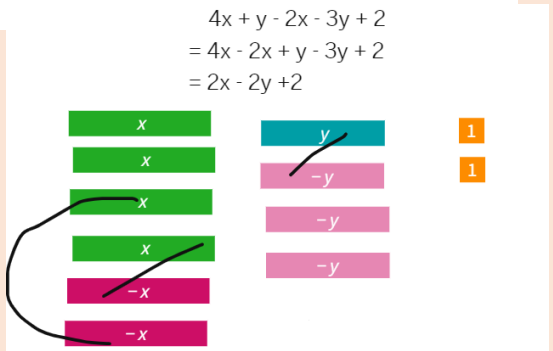
Resources & Strategies

We use a number of resources and strategies in class to support learning.
This includes:

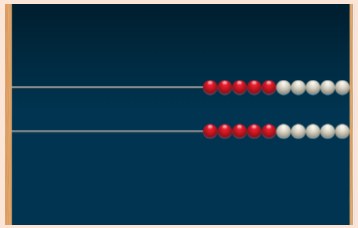
- Concrete materials and digital manipulatives for conceptual understanding – not just rote learning the rules:
  - Integer tiles



  - Algebra tiles



  - Rekenrek (number rack)



The MATH LEARNING CENTER

The Maths Learning Centre

Mathigon
Polypad
Virtual Manipulatives

Polypad

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Resources & Strategies

We use a number of resources and strategies in class to support learning.
This includes:

- Variety of questions from websites, created by ourselves and textbooks.
  - Maths Bot
  - Maths Whiteboard
  - Free N5 Maths Website – provides for all levels
  - Mathsbox (teacher only login)
  - DESMOS (iPad app):
    - Graphing Calculator
    - ART

MathsBot.com
Tools for Maths Teachers

national5maths.co.uk

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How can you support?

1) Help with consolidating/developing number fluency (regular practice)

- Education Scotland Parentzone
- National Numeracy Family Toolkit
- BBC Bitesize Numeracy
- Factfreaks
- Mental maths games/challenge – e.g., on a car journey
- Kahoot! Multiplication Games

2) Support with getting a Casio Scientific Calculator

- It is very useful to get one early in secondary to become comfortable with all the functions. If looked after, it will last all of secondary and beyond.

3) Support pupils in accessing/completing any homework on time

I= Eedi

4) Speak positively about maths

- It is important for learners to understand that it won't always be easy and will take deep thinking but this is worth it.

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Questions

We thank you for your time this evening.

Our website will be updated shortly, with the timelines and some links for S1/2.

If you have any questions, please scan the QR code.