

Knowledge Mat: Year 10

Key Knowledge for Year 10 in Maths

- To combine transformations
- Find compound and simple percentage interest
- Use Laws of indices (differentiated to include fractional and negative powers, surds)
- Volume and surface area of prisms including using unknown formulae (differentiated to include finding areas and volumes of similar shapes)
- Use a tree diagram and venn diagram for probability (extend to algebraic diagrams)
- Proportionality (differentiated up to include proportional to square/cube of...)
- Rearranging formulae (differentiated to include the subject appearing twice)
- Trigonometry (extends to non-right angled triangles and 3-D)
- Fractions (extends to algebraic fractions)
- Draw and criticise pie charts, bar charts, pictograms, line graphs (differentiated to histograms, cumulative frequency, box plots)

Wider Experiences / Try To Do...

- Intermediate Maths challenge
- Chess club
- Trips – number systems and ratio
- Mathswatch
- PIXL Maths app

The big questions:

- Can you recall and apply important mathematical facts and techniques to problems rapidly?
- How much will it cost you to pass your driving test?
- When is it better to buy 3 for 2 or Buy One Get One free?
- Is Fairtrade fair? Investigate prices online
- "the top 1 per cent of earners in this country are paying 28 per cent of the tax burden" – "the highest percentage ever"
Is this fair? Is it in proportion with other earners? Develop mathematical thinking so you can critique data.
- What equations must you plot to make a square?
- Can you do the four operations on algebraic fractions?

Vocabulary

Word

Analyse
Assess
Comment
Complete
Conversions

Data
Describe
Estimate
Expand
Factor

Factorise
HCF

LCM

Measure

Multiple

Parallel

Plot

Prime Number

Proportion

Prove

Rotate

Sampling

Show

Simplify

Simplify fully

Solve

Term

Variable

Work out

Meaning

Examine something in detail

Make an informed judgement.

Present a written informed opinion.

Finish a task by adding to given information.

Changing from one form to another – eg converting from miles to kilometres

A collection facts or numbers

Present a written account

Give an approximate value.

Multiply parts of an expression to remove any brackets

A number or algebraic expression that divides exactly into another eg 4 is a factor of 12

Show an expression as two or more factors

Highest Common Factor – the highest number which is a factor of two or more numbers or expressions

Lowest Common Multiple – the lowest number which is a multiple of two or more numbers or expressions

Use a mathematical instrument, such as a ruler or protractor, to establish the size of a length or angle.

A number which is in that particular times table. Eg 12 is a multiple of 4

2 or more lines which remain the same distance apart along the whole length

Mark accurately on a graph.

A number with only 2 factors (itself and 1). Eg 7 is a prime number because the only factors of 7 are 1 and 7

When 2 numbers or values are linked – Direct proportion as one increases, the other increases; Indirect proportion as one increases, the other decreases

Demonstrate something is true based on mathematical rules

Turn around a fixed point.

Selecting some numbers in a set of data

Provide a structured explanation to reach a conclusion

Collect and combine terms of an expression to make the expression shorter

Collect and combine terms of an expression to make the expression as short as it will go

To work out the answer

A single mathematical statement made up of letters and/or numbers eg $4x$

An unknown number represented by a letter

Perform one or a set of steps or calculations to arrive at an answer