

# Knowledge Mat: Mathematics

## Key Knowledge for Year 9

- Apply knowledge of prime numbers and factors to find HCF and LCM.
- Expand single and double brackets.
- Work out angles in parallel lines.
- Use conversions to work out map scales.
- How to use sampling methods to analyse large groups of data.
- Understand proportional links between speed, distance and time.
- How to use Pythagoras' Theorem.

## 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?

## 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 – e.g. 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 e.g. 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 e.g. 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), e.g. 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 e.g.  $4x$*   
*An unknown number represented by a letter.*  
*Perform one or a set of steps or calculations to arrive at an answer.*