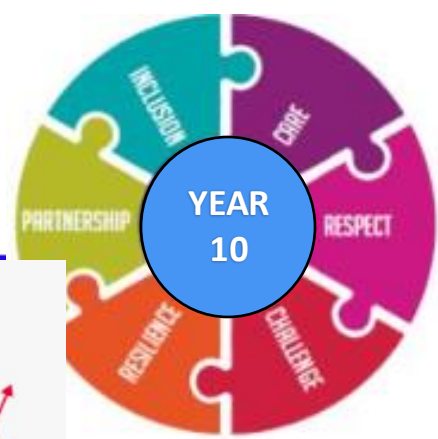


Year 10 Foundation - Mathematics

Links to careers/SMSC/Personal Development:

The National Career Service, Prospects, UCAS, STEM, MindTools, TeenLife and Mathematics Enrichment, UKMT Maths Challenge provides a wealth of information on various careers, including job profiles, salary expectations, and required qualifications. These resources can help Year 10 math students explore potential career paths, develop essential life skills, and foster personal growth. Encourage them to actively engage with these resources to prepare for their future academic and professional journeys. Year 10 work experience is about gaining valuable insights into the world of work, understanding the demands of different careers, and building skills and confidence that will serve you well in your future academic and professional endeavours.

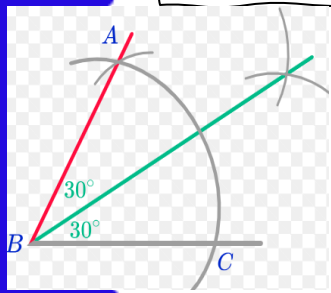
LEARNING JOURNEY



Constructions, loci and bearings

End of year Assessment

End of year review



Cylinders, Cones and Spheres

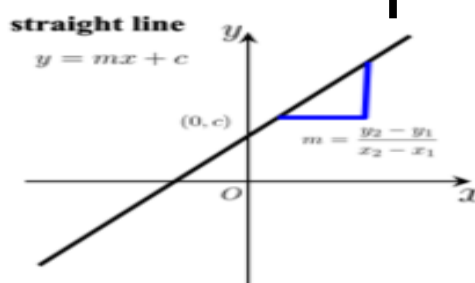
Volume of cylinder

Circles

Area and perimeter of circles

Plans and elevation

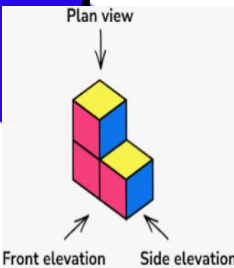
Home learning: Weekly on SPARX



Straight-line graphs

Coordinates and midpoint

Real-life graphs



Solving Quadratic Equations (with re-arrangement)

Solve the following Quadratic Equation by factoring:

$$x^2 + 11x + 34 = 4$$

$$x^2 + 11x + 30 = 0$$

$$(x + 5)(x + 6) = 0$$

$$\therefore x + 5 = 0 \text{ or } x + 6 = 0$$

$$\therefore x = -5 \text{ or } x = -6$$

Example

To solve a Quadratic Equation by factoring, the right-hand side must equal zero. So, subtract 4 from both sides of the equation.

Quadratic equations

Four operation with standard form

Indices and standard form

Laws of Indices

Laws of indices provide us with rules for simplifying calculations or expressions involving powers of the same base. They are:

$$a^m \times a^n = a^{m+n}$$

$$a^{-m} = \frac{1}{a^m}$$

$$a^m \div a^n = a^{m-n}$$

$$a^{\frac{m}{n}} = \sqrt[n]{a^m}$$

$$a^0 = 1$$

$$(a^m)^n = a^{m \times n} = a^{mn}$$

GCSE Higher only

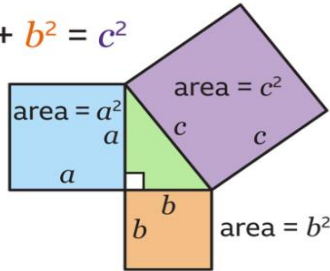
Multiplicative reasoning

Volume of prisms

Progress check: fortnightly

3D and volume

$$a^2 + b^2 = c^2$$



Pythagoras and trigonometry

Trig ratios



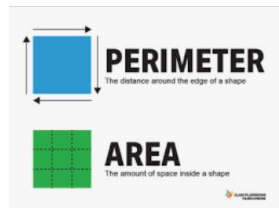
Ratio & Proportion

Recipe problems

2	3	4	5	6	7
3	4	5	6	7	8
4	5	6	7	8	9
5	6	7	8	9	10
6	7	8	9	10	11
7	8	9	10	11	12

Sample space diagrams

Probability



Area of compound shapes

Perimeter, area & volume

Percentage of amount

Fractions, decimals & percentages

Home learning: Weekly on SPARX

Key:
Unit Topics ■
Sub Topics ■



Year 10 learning summary: Rationale

In Year 10 we will explore the following:

Review Number Skills and FDP, Algebra Fundamentals- Geometry and Trigonometry, Statistics and Probability. Receive feedback on progress and areas for improvement. Set goals for Year 11 mathematics and beyond. By following this Year 10 learning journey, students will have a comprehensive understanding of fundamental mathematical concepts, strong problem-solving skills, and the necessary preparation for Year 11 and beyond, whether they plan to continue studying mathematics at an advanced level or pursue other academic or career pathways.

Year 10 Higher - Mathematics

LEARNING JOURNEY



Links to careers/SMSC/Personal Development:

The National Career Service, Prospects, UCAS, STEM, MindTools, TeenLife and Mathematics Enrichment, UKMT Maths Challenge provides a wealth of information on various careers, including job profiles, salary expectations, and required qualifications. These resources can help Year 10 math students explore potential career paths, develop essential life skills, and foster personal growth. Encourage them to actively engage with these resources to prepare for their future academic and professional journeys. Year 10 work experience is about gaining valuable insights into the world of work, understanding the demands of different careers, and building skills and confidence that will serve you well in your future academic and professional endeavours.

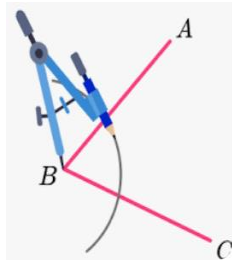
Constructions, loci and bearings

End of year Assessment

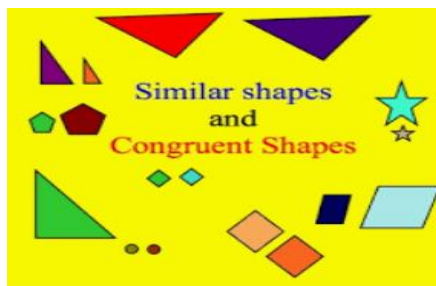
End of year review

Progress check: fortnightly

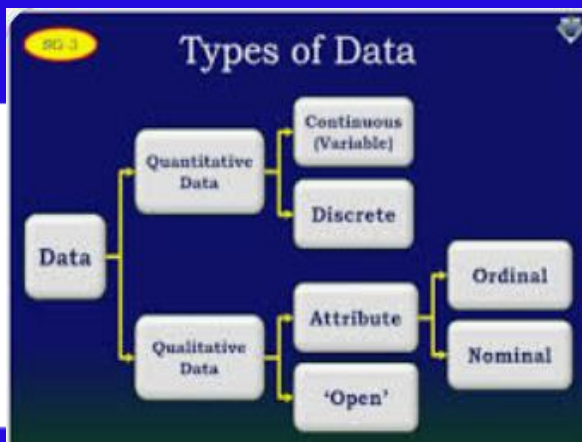
Home learning: Weekly on SPARX



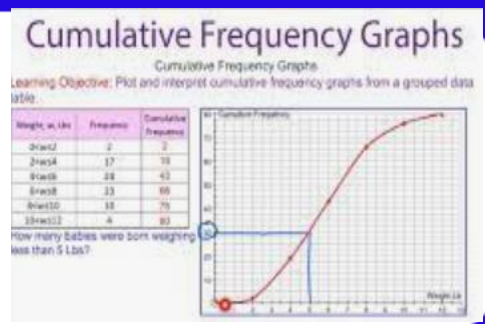
Similarity and congruence in 2D and 3D



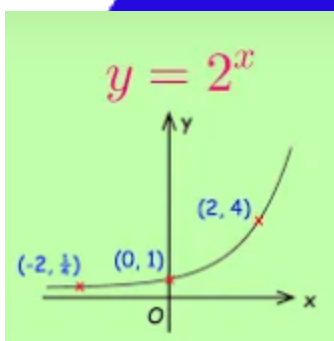
Cumulative frequency, box plots and histograms



Collecting data

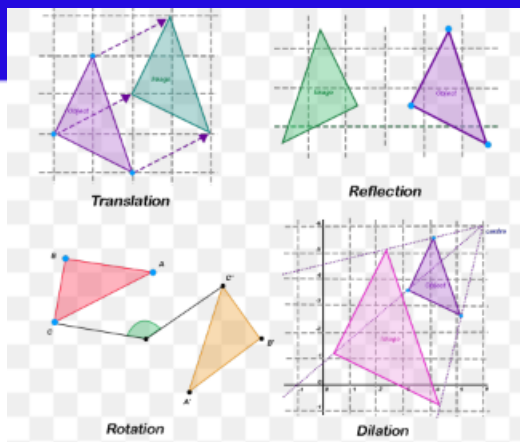


Reciprocal and exponential graphs

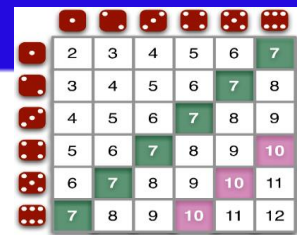


Algebraic proofs

Transformations



Probability



Enrichment: UKMT

Answers to tough questions

$$x^2 + y^2 = 29$$

$$y - x = 3$$

Solving Quadratic and simultaneous equations

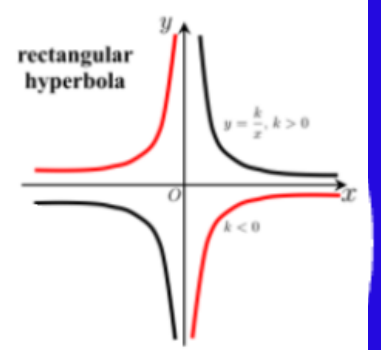
Solving multi-step Inequalities

- Same as solving an equation except:
- Multiply or divide by negative number reverses inequality

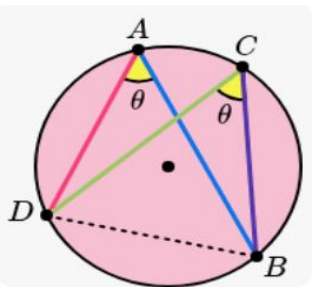
$$\begin{array}{r} 9 + 4x > 21 \\ -9 & -9 \\ \hline 4x > 12 \\ 4 & 4 \\ \hline x > 3 \end{array}$$

How can you check the solution?

Quadratic, cubic and other graphs.



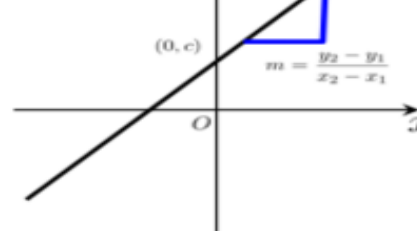
Circle theorems



Multiplicative reasoning

straight line

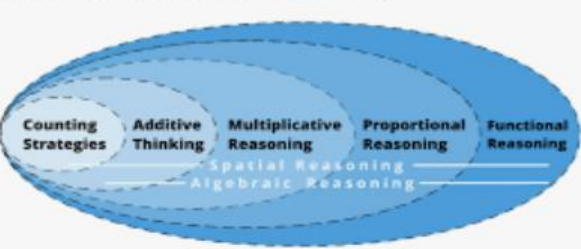
$$y = mx + c$$



Linear graphs and coordinate geometry.

Inequalities

The Development of Mathematical Reasoning



Home learning: Weekly on SPARX

Year 10 learning summary: Rationale

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