YEAR 11 Higher

Autumn Term 1: Shapes & Vectors, Representing & Analysing Data

THE MILTON KEYNES ACADEMY
Creative Education Trust

Key Vocabulary for Lessons – Shapes & Vectors

Adjacent	Next to or adjoining something else, e.g., adjacent sides in a triangle.
Angle Bisector	A line that divides an angle into two equal smaller angles.
Area	The measure of the surface enclosed within a shape, usually in square units.
Bisector	A line or segment that divides something into two equal parts.
Centre of Enlargement	The fixed point from which a figure is enlarged or reduced.
Centre of Rotation	The fixed point around which a figure is rotated.
Column Vectors	Vectors written in a column format, showing horizontal and vertical components.
Composite Shape	A shape made up of two or more simple geometric shapes.
Congruence	When two shapes are exactly the same in size and shape.
Construction Lines	Temporary lines drawn to help in creating a geometric figure or solving a problem.
Coordinates	A pair of numbers (x, y) that define the position of a point on a plane.
Cross-section	The shape obtained by cutting straight through an object, usually perpendicular to its longest axis.
Direction of Rotation	The way in which a figure is rotated (clockwise or counterclockwise).
Edges	The lines where two faces of a 3D shape meet.
Elevation	A side view of a 3D object, often used in technical drawings.
Equation	A mathematical statement that shows the equality of two expressions.
Equi-distant	Equally distant from two or more points.
Exact Trig Values	The exact values of the sine, cosine, and tangent functions for specific angles (0°, 30°, 45°, 60°, 90°).
Faces	The flat surfaces of a 3D shape.
Fractional Scale Factor	A scale factor that is less than 1, used to reduce the size of a figure.
Hemisphere	Half of a sphere, divided by a plane passing through its centre.
Hypotenuse	The longest side of a right-angled triangle, opposite the right angle.
Image	The result of a transformation applied to a shape.
Loci	Plural of locus; multiple sets of points that satisfy specific conditions.
Locus	A set of points that satisfy a particular condition.
Parallel	Two lines or segments that are always the same distance apart and never meet.
Path	A route or course along which something moves.
Perpendicular	Two lines or segments that intersect at a right angle (90 degrees).
Perpendicular Bisector	A line that is perpendicular to a segment and divides it into two equal parts.
Polygons	Closed figures with three or more straight sides

Prism	A solid geometric figure with two identical ends and flat sides.
Pythagoras' Theorem	A theorem stating that in a right-angled triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides ($a^2 + b^2 = c^2$).
Reflection	A transformation that flips a figure over a line to create a mirror image.
Rotation	Turning a figure around a fixed point (centre of rotation).
Scale Factor	The ratio by which a figure is enlarged or reduced.
Similarity	When two shapes have the same shape but not necessarily the same size; their corresponding angles are equal, and their sides are proportional.
Straight Line	A line with no curves that extends infinitely in both directions.
Surface Area	The total area of all the surfaces of a 3D object.
Transformation	A change in the position, size, or shape of a figure.
Translation	Moving a figure from one place to another without rotating, resizing, or changing its shape.
Trigonometry	The branch of mathematics dealing with the relationships between the angles and sides of triangles.
Vector	A quantity that has both direction and magnitude, represented by an arrow.
Vertices	The corners or points where the edges of a 3D shape meet.
Volume	The amount of space occupied by a 3D object, usually in cubic units.
x-intercept	The point where a graph crosses the x-axis (y = 0).
y-intercept	The point where a graph crosses the y-axis (x = 0).

Key Vocabulary for Lessons – Representing & Analysing Data

Average	A value representing the typical value in a dataset, which can be calculated using various measures such as mean, median, or mode.
Bar charts	A graph that represents data with rectangular bars, where the length of each bar represents the value of the data.
Class	A category or group into which data is organized for analysis.
Comparison	The process of examining similarities and differences between two or more things.
Continuous	Data that can take any value within a given range.
Correlation	A statistical measure that describes the strength and direction of a relationship between two variables.
Criticism	The act of analyzing and evaluating the strengths and weaknesses of something.
Discrete	Data that can only take certain distinct values and cannot take on any value within a given range.
Frequency	The rate at which something occurs or is repeated over a particular period of time or in a given dataset.
Frequency	The rate at which something occurs or is repeated over a particular period of time or in a given dataset.
Histograms	A graphical representation of the distribution of numerical data. It consists of bars, where each bar represents the frequency of data within a specific interval.
Interpret	To explain or understand the meaning or significance of something.
Line graph	A graph that displays data using a series of data points connected by straight line segments.
Line of best fit	A straight line that best represents the trend of the data points on a scatter plot.
Mean	The average value of a set of numbers, calculated by adding up all the values and dividing by the number of values.
Median	The middle value in a list of numbers when they are ordered from least to greatest.

Mode	The value that appears most frequently in a data set.
Pie-charts	A circular statistical graphic divided into slices to illustrate numerical proportions.
Primary data	Data collected firsthand by the researcher for a specific purpose.
Proportion	A part, share, or number considered in comparative relation to a whole.
Qualitative/Categorical	Data that can be categorized based on qualities or characteristics rather than numerical values.
Quantitative	Data that is expressed in numerical terms or quantities.
Range	The difference between the highest and lowest values in a dataset.
Scatter diagram	A graph that shows the relationship between two variables by displaying data points on a Cartesian plane.
Secondary data	Data that has already been collected by someone else for a different purpose.
Tally	A mark used to keep a record of counting or scoring.
Time-series graph	A graphical representation of data where the independent variable represents time and the dependent variable represents the value of a variable over time.

Homework

- Homework will be set each week.
- Tasks will alternate between online tasks using Sparx Maths and longer written tasks focused on GCSE-style questions.
- All tasks will be focused on reinforcing the learning in both Year 10 and Year 11.

Additional Opportunities

If you wish to further develop your skills and knowledge for GCSE maths, you can use the following links:

https://corbettmaths.com/contents/

https://metatutor.co.uk/worksheets/

https://www.mathsgenie.co.uk/gcse.html