

INTERMEDIATE TOPICS

NUMBER AND NUMBER SYSTEM

Use the concepts and vocabulary of : Factors, (divisors) multiples, common factors, highest common factors, least common multiples, prime number and prime factor decomposition.
Use the term square, positive square root , negative square root, cube and cube root.
Index laws of multiplication and division of integer power
Use standard index form
Equivalent fractions, simplifying fractions by cancelling all common factors
Order fractions by rewriting them with a common denominator
Recognise that each terminating decimal is a fraction and recurring decimals are exact fractions
Order decimals
Round to a given number of significant figures or decimal places
Add and subtract fractions by writing them with a common denominator
Multiply and divide a given fraction by an integer and by a general fraction
Perform short division to convert a simple fraction to a decimal
Convert simple fractions of a whole to percentages of the whole and vice versa
Calculate an original amount when given the transformed amount after a percentage change
Percentage increase and decrease
Reverse percentage problems
Use surds and pi in exact calculations without using a calculator
Calculate with standard index form
Simplify and divide a quantity in a given ratio
Compound interest

ALGEBRA

Directed numbers, simplify like terms
Solve linear equations including fractional coefficients and brackets
Solve simultaneous equations using algebra and graphs
Substitute numbers into a formula
Solve equations by trial and improvement
Expand product of two brackets $(x+1)(x+4)$
Factorise expressions and quadratics including difference of two squares
Solve quadratic equations by factorisation
Rules of indices for multiplying and dividing
Changing subject of a formula
Solve linear inequalities in one and two variables
Use linear expression to describe the nth term of a sequence

Graphs

Straight line graphs ($y = mx + c$) including gradient of parallel lines and value of intercept
Plot graphs of quadratic functions and find approximate solutions of quadratic equations from graphs
Plot graphs of simple cubic functions and reciprocal function $y = 1/x$
Discuss and interpret graphs modelling real situations.

Construct graphs of simple loci

SHAPE SPACE AND MEASURES

Understand, recall and use pythagoras theorem

Angles in triangles, quadrilaterals and parallel lines

Calculate and use the sums of the interior and exterior angles of quadrilaterals, pentagons and hexagons etc.

Calculate and use angles of regular polygons

All circle theorems

Areas and perimeter of all 2-D shapes

Circumference of a circle

Solve problems involving surface areas and volumes of prisms and cylinders

Understand the difference between formulae for perimeter, area and volume by considering dimensions.

Similar triangles: Using the rules for similar triangles to find missing lengths

Trigonometry: Use trigonometry to calculate angles and lengths in right angled triangles.

Use trigonometry in bearings problems

Transformation : *reflections, rotations, translations and enlargements.*

Measures and constructions

Constructions of triangles and other 2—D shapes using a ruler and a protractor given information about side lengths and angles. Use ruler and compass to do standard constructions including equilateral triangle with given side

Midpoint and perpendicular bisector of line segment.

Bisector of an angle

DATA HANDLING

Calculate Mean , mode , Median and range of a set of data

Draw scatter graphs and distinguish between positive, negative and zero correlation

Draw stem and leaf diagrams

Draw pie charts

Calculate an appropriate moving average

Draw time series graphs and moving average line of best fit

Cumulative frequency tables and diagrams including box plots

Find the mean, median and modal value from frequency table or grouped frequency table for large set of data.

Calculate probability from theoretical models or from relative frequency

Use tree diagrams to represent outcomes of compound events and calculate probability using tree diagrams