



**MVC
Mathematics
Department**

This document outlines the main activities you will complete this year. Use this as a guide to prepare for lessons or check your understanding.

E scheme

Name:

Maths teacher(s):

I will:

- work to the best of my ability, showing all my workings
- complete my homework to a good standard by the deadline set
- show tenacity when solving problems
- always have the correct equipment for all lessons

Signed:.....

The MVC Mathematics Department will:

- help you develop fluency in mathematical concepts
- help you develop your mathematical communication and reasoning
- help you develop problem solving skills
- set appropriate homework
- regularly assess your progress
- give you regular feedback and let you know what else you need to do to maintain or increase your progress

Signed: MVC Maths Dept



Online tasks are usually set on www.hegartymaths.com

To access this site you need to enter your name, date of birth and then set your own password. If you have forgotten your password please contact your maths teacher via email.

Every lesson you will need to bring this equipment:

- exercise book
- learning log
- scientific calculator
- black pen × 2
- pencil × 2
- ruler
- eraser
- pencil sharpener
- highlighter
- glue stick

When advised, you will also need to bring:

- protractor
- pair of compasses
- colouring pencils

Optionally:

- colouring pencils

	HW	Objectives Autumn Term	Hegarty Tasks
ENum1	—	Revision: Understand what it means to raise something to the power of 0 and 1	103
		Revision: Know how to multiply and divide powers of a number, eg $10^4 \times 10^3 = 10^{4+3} = 10^7$; $10^4 \div 10^3 = 10^{4-3} = 10^1$	105,106
		Revision: Find a power of a power, eg $(10^4)^3 = 10^{4 \times 3} = 10^{12}$	107
		Understand and use negative indices in number work and in algebra	104
		State the reciprocal of any given number	71
		Read and write numbers in standard form, on paper and on a calculator	122-124
		Convert between ordinary and standard form	
		Do calculations with standard form without a calculator	125-127
		Do calculations with standard form with a calculator	128
		Solve problems in standard form	
powers, indices, index, [reciprocal, BIDMAS, standard form, standard index form, ordinary number, convert			
EAlg1	—	Revision: Factorise an expression into a single pair of brackets, eg $3a^2 + ab = a(3a + b)$	168,169
		Multiply two brackets to form a quadratic expression, eg $(x + 3)(x + 2)$; $(x + 5)^2$	162-164
		Factorise quadratic expressions into two brackets, eg $x^2 - 7x + 12$	223,224
		Solve quadratic equations by factorising eg $x^2 - 7x + 12 = 0$	230
		Recognise the difference of two squares and perfect squares	165,
		Draw the graph of a quadratic function, showing the y - and x -intercepts and the coordinates of the turning point.	251-255
		Solve quadratic equations from a graph	259,260
linear expression, quadratic expression, brackets, factorise, solve, identity, difference of two squares, quadratic equation, solution, roots, quadratic, roots, x -intercepts, y -intercept, turning point, axes, function, table of values, scale, estimate			
EGeom1	—	Use trigonometric ratios sin, cos and tan to calculate lengths in right-angled triangles	508-510
		Use inverse trigonometric ratios to calculate angles in right-angled triangles	511, 512
		Solve problems involving trigonometry and Pythagoras	513,514
		Solve bearings and elevation problems using trigonometry and Pythagoras	515
		Recall or work out the exact values of the trigonometric ratios for angles 0° , 30° , 45° , 60° and 90°	
trigonometry, sine/sin, cosine/cos, tangent/tan, inverse, hypotenuse, similar triangles			
EData1	—	Understand and complete two-way tables. Use two-way tables to sort out information and solve problems	422-424
		Know the difference between a population and a sample	394
		Describe different methods of sampling, and the advantages and disadvantages of each method	395-398
		Know how to carry out a systematic sample for a given data set	
		Infer properties of populations or distributions from a sample	
population, sample, experiment, bias, representative, sample size, random sample, systematic sample, stratified sample, strata, proportion, two way table, convenience sample			

Number	Algebra	Geometry	Data	Revision	Total	
/	/	/	/	/	/	%

	HW	Objectives Spring Term	Hegarty Tasks
ENum2	—	Revision: Solve problems involving speed	716-724
		Revision: Solve problems involving density	725-733
		Solve problems involving pressure	734-737
		Understand how to use the units of compound measures as a way of recalling the formula for working them out	
		Check calculations using estimation, working backwards or sensible size	129
		Find upper and lower bounds of measurements	137-139
		Work out exact answers including π , fractions and square roots	
speed, distance, time, decimal measure, density, volume, mass, weight, pressure, calculation, estimate, order of magnitude, accuracy, rounding, significant figures, decimal places, upper/lower bound, error, maximum, minimum			
EAlg2	—	Solve equations involving fractions eg $\frac{x}{2} - \frac{x}{5} = \frac{3}{4}$	180-181,187
		Rearrange and change the subject of formulae involving fractions	280,281
		Solve linear simultaneous equations by finding the point of intersection of two lines on a graph	218, 219
		Solve linear simultaneous equations using elimination	190-194
		Write and solve simultaneous equations from practical situations	195
fraction, denominator, common denominator, linear equation, simultaneous equation, coefficient, unique solution			
EGeom2	—	Calculate the area of a sector of a circle	546, 547
		Calculate the arc length and the perimeter of a sector	544, 545
		Find the radius or the angle of a sector if I know the area or arc length	
		Calculate the surface area of a prism, cylinder, cone, or sphere	585-588
		Calculate the volume of a prism, cylinder, cone, pyramid, or sphere	571-576,580-581
		Convert between metric units of area, volume and capacity	700-704
area, circumference, radius, diameter, pi π , square cm/cm, arc, sector, volume, prism, pyramid, cone, sphere, surface area			
EData2	—	Use a stem-and-leaf diagram to sort data, explore the modal group and the overall shape of the data and to spot patterns.	430-431
		Use a back-to-back stem-and-leaf diagram to compare two sets of data.	432
		Given data presented in a pie chart or bar chart, work backwards to complete a frequency table	
		Find the mode (or modal group), median (or median group) and mean (or estimated mean) from data presented in a list, stem and leaf diagram or frequency table	
		Be able to use all the evidence from the averages, and shape of distributions on graphs, to reach a conclusion on a hypothesis	
stem, leaf, mode, modal, modal group, median, mean, estimated mean, range, negative skew, positive skew, back to back, split stem, lower/upper quartile, inter-quartile range, pie chart, bar chart, grouped data, ungrouped data			

Number	Algebra	Geometry	Data	Revision	Total	
/	/	/	/	/	/	%

	HW	Objectives Summer Term	Hegarty Tasks
ENum3	—	Convert fractions to decimals	73,74
		Convert terminating decimals and recurring decimals to fractions	53,54
		recurring decimal, terminating decimal	
EAlg3	—	Find a rule from an investigation, using algebra correctly	196
		Understand the difference between a specific example and a proof	325
		Find the equation of a straight line using the gradient and y intercept	211
		Find the equation of a straight line using the gradient and a point on the line	212
		Find the equation of a line parallel or perpendicular to one given	214-216
		Use 3D coordinates	
		Find the midpoint of a line segment (2D and 3D) given the coordinates of the ends.	200
		Use Pythagoras to find the length of a line segment (2D and 3D) given the coordinates of ends.	
		Show inequalities on a graph, with correct lines and shading	273,274
		Be able to combine inequalities graphically to find a region that satisfies all of them and state the coordinates of points within that region (with integer values)	275,276
problem, specific, general, generalisation, straight-line graph, linear graph, gradient, y-intercept, equation, scattergraph, line of best fit, parallel, rate of change, inequality, inequalities, boundary, strict inequality, weak inequality, satisfy, region, integer point, negative reciprocal, perpendicular, 1D, 2D, 3D, midpoint			
ERatio3	—	Understand and calculate simple and compound interest	94
		Calculate repeated percentage changes eg depreciation using the power key on a calculator	95
		Set up, solve and interpret the answers in growth and decay problems and work with other general iterative processes	808
		iteration, multiplier, power, percentage, exponential, growth, decay	
EGeom3	—	Enlarge a shape using a centre of enlargement and positive or negative integer or fractional scale factor	642-647
		Solve problems involving similar and congruent shapes, finding lengths and angles	681
		Show two triangles are congruent using SSS, SAS, ASA, RHS	682
		Use a diagram to represent the sum (resultant) and difference of two vectors, and to find parallel vectors.	625
		Know how to use ratios in vector problems and find the scalar multiple of a vector.	626 628-631
		Be able to apply vector methods to provide simple geometric proofs	632-634
congruent, similar, ratio, resultant, vector, scalar, parallel			
EData3	—	Understand and use the notation $A \cap B$ (intersection), $A \cup B$ (union), A' (compliment) and ξ (universal set). Represent these on a Venn diagram.	372,374, 375
		Draw a probability tree diagram to solve problems involving the outcomes and probabilities of compound events	362-363
		Understand the difference between independent and conditional events. Relate this to selection with or without replacement.	364-365
		Venn diagram, universal set, set notation, complement, intersection, union, probability tree diagram, AND rule, OR rule, conditional, independent, mutually exclusive, outcome, event, compound events, theoretical probability, bias, experimental probability, replacement, relative frequency	

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