

Mathematics

Intermediate Checklist



Content that is for GCSE Mathematics only is highlighted in green.

	Hegarty Clip	Red	Amber	Green	
9	<ul style="list-style-type: none"> • Unit 1: Number <ul style="list-style-type: none"> ○ Add, subtract, multiply, and divide ○ Multiply / divide by multiples of 10 ○ Add, subtract, multiply, and divide negative numbers ○ Order directed numbers ○ BIDMAS / BODMAS ○ Use of inverse operations 	18,19,21,22			
		15,16			
		39,40,42,43			
		37			
		24,44			
		7,8,38			
	<ul style="list-style-type: none"> • Unit 2: Types of number and use of index notation <ul style="list-style-type: none"> ○ Odds, evens, multiples, factors, primes, squares, cubes, and reciprocals. ○ Indices – writing in index form ○ Find vales of indices, eg. 6^3 ○ Multiply and divide index numbers ○ Zero index ○ Negative indices (integers only) ○ Positive fractional indices ○ Simplifying rules of indices ○ Powers and roots ○ Use a calculator for powers and roots ○ Prime factors in index form ○ Use prime factors to make a perfect square and find square roots, HCF, and LCM. 	25,26,27,28,33,99,100,			
		102			
		103			
		105,106			
		103			
		104			
		108			
		101			
		29,30			
		32,35,36			

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9	<ul style="list-style-type: none"> • Unit 3: Drawing angles and angle facts <ul style="list-style-type: none"> ○ Understand that angles are part of a turn ○ Name and recognise angles ○ Estimate, draw and measure angles, including reflex angles ○ Use of correct notation ○ Basic angle facts ○ Properties of triangles and quadrilaterals ○ Angles in triangles and quadrilaterals ○ Angles in parallel lines ○ Interior and exterior angles of polygons ○ Use angle facts for tessellating shapes • Unit 4: Constructions <ul style="list-style-type: none"> ○ Construct triangles and 2-D shapes accurately ○ Draw plans and elevations of any 3-D solid ○ Using a ruler and a pair of compasses to do constructions: <ul style="list-style-type: none"> ▪ Bisect a given line ▪ Bisect a given angle ▪ Construct angles of 60°, 30°, 90°, and 45° 				
		455,456			
		457,458,459,460,461,			
		456			
		477,478,812,813,814,479,480			
		484,823,824,825,826			
		485,486,487,560			
		481,482,483			
		561,562,563,564			
		683			
		837-844			
		660			
	661				
	664,665				

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9	<ul style="list-style-type: none"> • Unit 5: Locus/loci <ul style="list-style-type: none"> ○ Find the path of a point under given criteria ○ 4 main loci: <ul style="list-style-type: none"> ▪ Fixed distance from a point ▪ Fixed distance from a line ▪ Equidistant from 2 points ▪ Equidistant from 2 lines which meet at a point ○ Identify regions satisfied by the criteria of the locus ○ Loci questions involving inequalities 	674			
		674			
		674			
		674			
		674			
		675,676,678			
		679			
	<ul style="list-style-type: none"> • Unit 6: Decimals <ul style="list-style-type: none"> ○ Place value and order decimals ○ Add and subtract whole numbers and decimals ○ Multiply and divide whole numbers and decimals by a decimal number 	45,46			
		47			
		48,49,50			
	<ul style="list-style-type: none"> • Unit 7: Round to an appropriate degree of accuracy <ul style="list-style-type: none"> ○ Round to any given number of decimal places ○ Round to any given number of significant figures ○ Estimate answers ○ Know when to round up or down as appropriate ○ Round an answer to a reasonable degree of accuracy considering the context ○ Recognise limitations on the accuracy of data and measurements ○ Knowledge of rounding to an appropriate degree of accuracy 				
		56			
		130			
		131			
		132			
		131,132			
		131,132,			
		131,132			

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		Hegarty Clip	Studied	Red	Amber	Green
9	<ul style="list-style-type: none"> • Unit 8: Fractions <ul style="list-style-type: none"> ○ Equivalent fractions, top heavy to mixed & vice versa ○ Ordering fractions ○ Fractions of quantities ○ One number as a fraction of another ○ 4 rules of fractions ○ Calculate fractional changes (increase & decrease) ○ Problems involving fractions 	57,58,59,61,63,64				
		60				
		77				
		62				
		65,66,68,69,70,71				
		79				
		80				
	<ul style="list-style-type: none"> • Unit 9: Percentages <ul style="list-style-type: none"> ○ Percentages of quantities with & without a calculator ○ One number as a percentage of another with & without a calculator ○ Percentage increase/decrease ○ Use of multipliers for increase & decrease ○ Profit/loss as a percentage of the original ○ Simple/compound interest including depreciation ○ Repeated proportional changes (use of formula $P \times (1 \pm r/100)^n$) 	84,85,86,87				
		88,90				
		89				
		90				
		91,93,94				
		92,94,95				

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	Hegarty Clip	Red	Amber	Green	
9	<ul style="list-style-type: none"> Unit 10: Simplifying in Algebra <ul style="list-style-type: none"> Directed numbers Collect like terms (add & subtract) Multiply & divide, including rules of indices Remove/expand brackets Remove/expand touching brackets Remove/expand brackets such as $(x + 3)^2$ Function machines Write algebraic expressions for worded problems Distinguish in meaning between equations, formulae and expressions Form, simplify expressions involving sums, differences, products & powers 	38,39,			
	156,157				
	158,159,174,175				
	160,161				
	162,163,164				
	165				
	153				
	154,155				
	<ul style="list-style-type: none"> Unit 11: Substitution in Algebra <ul style="list-style-type: none"> Substitution of positive & negative whole numbers, fractions & decimals into simple formulae expressed in words or symbols 	780,781,782,783,784,785,786,787			
	<ul style="list-style-type: none"> Unit 12: Solve linear equations <ul style="list-style-type: none"> Solve linear equations including brackets Form & solve equations Form & solve linear equations in solving problems set in real-life contexts 	178,179,180,181,182,184,185,186			
	176				
188,189					
<ul style="list-style-type: none"> Unit 13: Change the subject of a formula <ul style="list-style-type: none"> Change the subject of a formula when the subject appears in one term 	280,281,282,283				

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	Hegarty Clip	Red	Amber	Green	
9	<ul style="list-style-type: none"> • Unit 14: Pythagoras' Theorem <ul style="list-style-type: none"> ○ Find the hypotenuse ○ Find a shorter side ○ Test for right angled triangles ○ Problems involving Pythagoras' Theorem 	498			
		499			
		497			
		503,504			
	<ul style="list-style-type: none"> • Unit 15: Congruent shapes <ul style="list-style-type: none"> ○ Identify congruent shapes 	680			
	<ul style="list-style-type: none"> • Unit 16: Everyday Maths <ul style="list-style-type: none"> ○ Exchange rates & commissions ○ TV schedules ○ Bus and rail timetables ○ Holiday bookings ○ Distance charts ○ Best buys ○ Personal and household finance including fuel and other bills ○ Hire purchase ○ Discount & VAT ○ Tax ○ Wages and salaries ○ Loan repayments ○ Mortgages ○ Budgeting ○ Enterprise, saving and borrowing 	707,708			
		422,423,424			
		763- 772			
		750,751,752,753,754,			
		758			
		756			
		755			
		757			
		757			
	<ul style="list-style-type: none"> • Unit 17: Units <ul style="list-style-type: none"> ○ Metric conversions for length, weight & capacity ○ Convert between metric & imperial units ○ Time 	691-704			
		705,706			
	709,710,711				

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9	<ul style="list-style-type: none"> Unit 18: Perimeter, area, volume, and density <ul style="list-style-type: none"> Find perimeters of shapes Find areas of shapes Parts of a circle Find the circumference & area of circles Problems involving the above to include inverse problems & semicircles etc. Surface area of cubes, cuboids, prisms & cylinders Volume of cubes, cuboids, prisms & cylinders Problems involving density, mass & volume 				
		548-552			
		553-559			
		592			
		534-543			
		584,585,586			
		567-574			
		732,733			
	<ul style="list-style-type: none"> Unit 19: Ratio and proportion <ul style="list-style-type: none"> Simplify ratios Use ratios to find unknown quantities eg as in scale diagrams or maps Division in a given ratio Number based direct/inverse proportion Recognise and interpret graphs that illustrate direct and inverse proportion 				
		328,329			
		331-337			
		739-742			
		332-334			
		339,340,341			
		343-347			
		342,348			
	<ul style="list-style-type: none"> Unit 20: Fractions, decimals, ratios, and percentages <ul style="list-style-type: none"> Interchange between fractions, decimals, percentages & ratios Use equivalences between decimals, fractions, ratios & percentages Order & compare sizes of fractions, decimals, ratios & percentages Recognise that recurring decimals are exact fractions Recognise that some exact fractions are recurring decimals 				
		52,55,73-76,82,83			
		52,55,73-76,82,83			
		52,55,73-76,82,83			
	53,54				
	53,54				

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9	<ul style="list-style-type: none"> • Unit 21: Bearings and scale drawings <ul style="list-style-type: none"> ○ Compass directions ○ Understand & use (draw & measure) 3-figure bearings ○ Understand scales written in various forms eg 1cm represents 500m or 1:500 ○ Interpret & construct scale drawings ○ Use & interpret maps ○ Problems involving bearings & scale diagrams 				
		492-496			
		869			
		870,871			
		496			

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10	<ul style="list-style-type: none"> Unit 22: Trigonometry <ul style="list-style-type: none"> Label the sides of a right-angled triangle Sine, cosine & tangent formulae Use of SOHCAHTOA Calculate the length of sides Calculate the size of angles Angles of elevation & depression Problems involving Trigonometry & Pythagoras' Theorem, including the use of bearings 	508			
		509			
		509,510			
		511,512			
		515			
		513,514			
	<ul style="list-style-type: none"> Unit 23: Draw accurately and interpret pie charts <ul style="list-style-type: none"> Draw pie charts by calculating angle size Calculate angles from percentages on chart Extract information from pie charts Find frequencies from given angles on pie charts 				
		427			
		428			
		427			
		429			
	<ul style="list-style-type: none"> Unit 24: Questionnaires <ul style="list-style-type: none"> Design, criticise questions on questionnaires to include 'fairness' & 'bias' Test hypotheses, taking into account the limitations of the data available Specify the data needed and consider potential sampling methods. 				
		399,400			
		394			
<ul style="list-style-type: none"> Unit 25: Sampling <ul style="list-style-type: none"> Systematic sampling Random sampling Consider the effect of sample size and other factors that affect the reliability of conclusions drawn 					
	395				
	395				
	394				

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10	<ul style="list-style-type: none"> Unit 29: Solve fractional linear equations <ul style="list-style-type: none"> Recap solving linear equations including brackets Solve equations with fractions that have only numbers as denominators Eg. $\frac{x-2}{2} - \frac{2x-1}{3} = 1$ Form & solve equations Form & solve linear equations in solving problems set in real-life contexts 	179-182			
		187			
		188			
		188			
	<ul style="list-style-type: none"> Unit 30: Averages/representing data <ul style="list-style-type: none"> Find mean, median, mode & range for a set of numbers Modal for qualitative data Find the total when given the mean of a set of numbers Find mean, median & mode from a frequency table Estimate the mean, find the median & modal class from a grouped frequency table Draw grouped frequency diagrams Draw frequency polygons Comparison of 2 distributions 	404-410			
		407			
		414-418			
		414-418			
		441			
		413			
	<ul style="list-style-type: none"> Unit 31: Cumulative frequency <ul style="list-style-type: none"> Complete a cumulative frequency table Draw a cumulative frequency diagram Find the median, upper/lower quartiles & interquartile range from the diagram Answer questions based on graph (less/more than) Comparison of 2 or more distributions 	402,403			
		437			
		438,439, 411,412			
		438,439			
		438,439			

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10	<ul style="list-style-type: none"> Unit 32: Box and whisker plots <ul style="list-style-type: none"> Produce box & whisker plots. Use box & whisker plots to compare distributions. 	434,435,436			
		440			
	<ul style="list-style-type: none"> Unit 33: Simultaneous equations <ul style="list-style-type: none"> Solve simultaneous equations algebraically by the method of elimination Problems – form & then solve simultaneous equations 	190-193			
		194,195			
	<ul style="list-style-type: none"> Unit 34: Straight line graphs <ul style="list-style-type: none"> Plot coordinates & set up x & y axes Draw, interpret, recognise & sketch the graphs of $x = a, y = b, y = ax + b$ Tables of values & drawing linear graphs of type $y = ax + b$ Gradients of parallel lines The gradient(m) & y-intercept(c) Find the equation of the line, using $y = mx + c$, when given either the points on the line or given the line Identify equations of lines parallel or perpendicular to a given line to satisfy given conditions Solve simultaneous equations graphically Find the coordinates of the mid-point of a line 	199			
		205			
		206,207			
		201-204			
		201-204			
		206,207			
		214,215,216			
		218,219			
		200			
	<ul style="list-style-type: none"> 35: Compound measures <ul style="list-style-type: none"> Use of speed = distance \div time Use of miles per gallon Use of density Use of population density 	716-724			
		738			
		725-731			
		738			

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11	<ul style="list-style-type: none"> • Unit 39: Dimensions of formulae <ul style="list-style-type: none"> ○ Considerations of dimensions in order to determine between perimeter (1D), area (2D) & volume (3D) 				
	<ul style="list-style-type: none"> • Unit 40: Similar shapes <ul style="list-style-type: none"> ○ Understand & use mathematical similarity, knowing that angles remain unchanged & that sides are in the same ratio ○ Use the knowledge that for 2 similar 2D or 3D shapes one is an enlargement of the other ○ Use the knowledge that in similar shapes corresponding dimensions are in the same ratio ○ Prove that shapes are similar by looking at corresponding sides ○ Find the lengths of missing sides using scale factors and the ratio of corresponding sides 	608,611			
		609,610,618			
		610,611,612,613,614			
		610,611,612,613,614			
		610,611,612,613,614			
	<ul style="list-style-type: none"> • Unit 41: Error approximation/limits of accuracy <ul style="list-style-type: none"> ○ Upper & lower bounds ○ Upper & lower bounds used in calculations (+ -) ○ Use of min,min & max,max for +/- ○ Percentage errors 				
		137			
		138,139			
		774,775,776,777			
		7			

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11	<ul style="list-style-type: none"> Unit 42: Probability <ul style="list-style-type: none"> Definition of probability Calculate theoretical probabilities using scale 0-1 Use of $P(\text{event not occurring}) = 1 - P(\text{event occurs})$ List all possible outcomes Possibility space diagrams & calculate probabilities Estimate the probability of an event as the proportion of times it has occurred Relative frequency The AND & OR rules Solve basic problems without tree diagrams e.g. $P(\text{H on a coin and 6 on a dice})$ Probability trees 	349,350				
		350, 351,352,				
		353				
		358,359				
		358,359				
		356				
		356				
		360				
		358,359				
		360,361				
		<ul style="list-style-type: none"> Unit 43: Venn diagrams <ul style="list-style-type: none"> Understand and use Venn diagrams to solve problems Understand and interpret set notation 	370,371,			
			378,383,			
		<ul style="list-style-type: none"> Unit 44: Inequalities <ul style="list-style-type: none"> Concept of an inequality Symbols used The number line & representation of inequalities Solve linear inequality equations, including fractional ones Solve linear double inequality equations 	265,			
			266			
		267,268				
		269,270,271				
		272				

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		Hegarty Clip	Red	Amber	Green
11	<ul style="list-style-type: none"> Unit 45: Curved algebraic graphs <ul style="list-style-type: none"> Tables of values & plotting points Draw, interpret, recognise & sketch graphs of $y = ax^2 + b$ Draw & interpret quadratic ($y = ax^2 + bx + c$) Draw and interpret graphs when y is given implicitly in terms of x. Solve equations using graphs (by drawing lines such as $y = 3$) 	251			
		251			
		251			
		253			
	<ul style="list-style-type: none"> Unit 46: Algebra - factorising <ul style="list-style-type: none"> Factorise common factors Factorise simple quads eg $x^2 + 7x + 12$ 	221,222			
		223,224			
	<ul style="list-style-type: none"> Unit 47: Solve quadratic equations <ul style="list-style-type: none"> Solve quadratic equations by factorising first using <ol style="list-style-type: none"> common factors quadratics with 1 as the coefficient of x^2 	230			
	<ul style="list-style-type: none"> Unit 48: Circle theorems <ul style="list-style-type: none"> Angle subtended at centre is twice one at circumference Angle subtended at the circumference in a semicircle is a right angle Angles in the same segment are equal (angles that are at the circumference and are subtended from the same arc) Opposite angles in a cyclic quadrilateral add to 180° Tangent at any point to the circle is perpendicular to the radius Tangents from one point outside the circle are equal in length A line drawn from the radius to a chord at 90° bisects the chord Use of equal radii and tangents to create isosceles triangles 	594			
		595			
		596			
		597			
		599			
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		599			
		600			