



Year 9 Options Evening: GCSE Mathematics



Aspire Commit Succeed



Year 9 Options- Welcome

Mathematics is a core subject therefore it is **compulsory** that you study it for GCSE.

You will be graded from grades 9-1:

- Foundation tier- Grades 5-1
- Higher tier- Grades 9-1

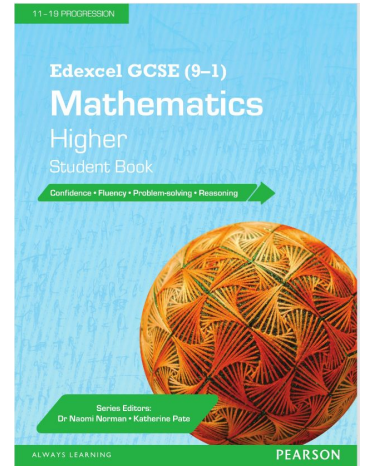
It is a linear course. You will sit the exams after 2 years and will be awarded your final grade in year 11.



Year 9 Options- Course content

Edexcel GCSE 9-1 Higher Content:

You will be given access to the GCSE Higher workbook on Pearson Active Learn:



Contents

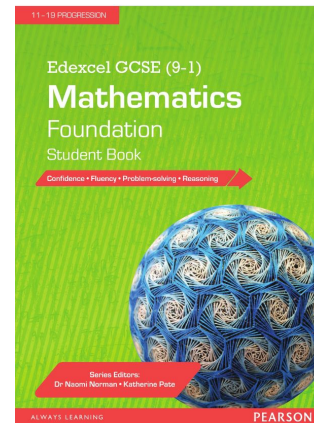
1	Number	1	4.2	Ratios	101	7.4	Circles	213	10.6	Venn diagrams and set notation	321	14	Further statistics	439	17.8	Proof	545	
	Prior knowledge check	1	4.3	Ratio and proportion	103	7.5	Sectors of circles	216		Prior knowledge check	325		Prior knowledge check	439		Prior knowledge check	545	
1.1	Number problems and reasoning	2	4.4	Percentages	105	7.6	Cylinders and spheres	220		Problem-solving: Drug testing	326	14.1	Sampling	440		Check up	549	
1.2	Place value and estimating	4	4.5	Fractions, decimals and percentages	108		Pyramids and cones	222		Check up	328	14.2	Cumulative frequency	443		Strengthen	550	
1.3	HCF and LCM	6		Problem-solving	110		Problem-solving	225		Extend	333	14.3	Box plots	446		Extend	553	
1.4	Calculating with powers (indices)	8		Check up	111	7.7	Check up	227		Knowledge check	335	14.4	Drawing histograms	449		Knowledge check	555	
1.5	Zero, negative and fractional indices	11		Strengthen	112		Extend	229		Unit test	336	14.5	Interpreting histograms	450		Unit test	556	
1.6	Powers of 10 and standard form	14	5	Angles and trigonometry	121		Extend	232	11	Multiplicative reasoning	339	14.6	Comparing and describing populations	453	18	Vectors and geometric proof	557	
1.7	Surds	16		Prior knowledge check	121		Knowledge check	235		Prior knowledge check	339		Problem-solving: Brain training	456		Prior knowledge check	557	
	Problem-solving	19	5.1	Angle properties of triangles and quadrilaterals	122		Unit test	237	11.1	Growth and decay	340		Check up	457	18.1	Vectors and vector notation	558	
	Check up	20	5.2	Interior angles of a polygon	126	8	Transformations and constructions	239	11.2	Compound measures	343		Extend	463	18.2	Vector arithmetic	560	
	Strengthen	22	5.3	Exterior angles of a polygon	128		Prior knowledge check	239	11.3	More compound measures	346		Knowledge check	466	18.3	More vector arithmetic	563	
	Extend	25	5.4	Pythagoras' theorem 1	131	8.1	3D solids	240	11.4	Ratio and proportion	348		Unit test	468	18.4	Parallel vectors and collinear points	566	
	Knowledge check	27	5.5	Pythagoras' theorem 2	134	8.2	Reflection and rotation	242		Problem-solving	351	15	Equations and graphs	471	18.5	Solving geometric problems	568	
	Unit test	28	5.6	Trigonometry 1	136	8.3	Enlargement	245		Check up	352		Prior knowledge check	471		Problem-solving	572	
2	Algebra	30	5.7	Trigonometry 2	139	8.4	Transformations and combinations of transformations	249		Extend	357	15.1	Solving simultaneous equations graphically	472		Check up	574	
	Prior knowledge check	30		Problem-solving	143	8.5	Bearings and scale drawings	253	12	Similarity and congruence	363	15.2	Representing inequalities graphically	475		Strengthen	576	
2.1	Algebraic indices	31		Check up	144	8.6	Constructions 1	259		Prior knowledge check	363	15.3	Graphs of quadratic functions	478		Extend	579	
2.2	Expanding and factorising	33		Extend	147	8.7	Constructions 2	259	12.1	Congruence	364	15.4	Solving quadratic equations graphically	482	19	Proportion and graphs	587	
2.3	Equations	35		Knowledge check	155	8.8	Loxi	262	12.2	Geometric proof and congruence	367		Prior knowledge check	485		Prior knowledge check	587	
2.4	Formulae	37		Unit test	157		Problem-solving: Under construction	265	12.3	Similarity	370	15.5	Graphs of cubic functions	490	19.1	Direct proportion	588	
2.5	Linear sequences	40	6	Graphs	159		Check up	266	12.4	More similarity	374		Problem-solving	490	19.2	More direct proportion	590	
2.6	Non-linear sequences	42		Prior knowledge check	159	9	Equations and inequalities	280	12.5	Similarity in 3D solids	378		Check up	498	19.3	Inverse proportion	592	
2.7	More expanding and factorising	46	6.1	Linear graphs	161		Prior knowledge check	280		Problem-solving	382	16	Circle theorems	501	19.4	Exponential functions	595	
	Problem-solving	48	6.2	More linear graphs	164	9.1	Solving quadratic equations 1	281	13	More trigonometry	399		Prior knowledge check	501	19.5	Non-linear graphs	598	
	Check up	50	6.3	Graphing rates of change	166	9.2	Solving quadratic equations 2	282		Prior knowledge check	399	16.1	Radii and chords	502	19.6	Translating graphs of functions	602	
	Strengthen	51	6.4	Real-life graphs	170	9.3	Completing the square	284	13.1	Accuracy	400	16.2	Tangents	504	19.7	Reflecting and stretching graphs of functions	605	
	Extend	55	6.5	Line segments	174	9.4	Solving simple simultaneous equations	287	13.2	Graph of the sine function	402	16.3	Angles in circles 1	506		Modelling outbreaks	610	
	Knowledge check	58	6.6	Quadratic graphs	176	9.5	More simultaneous equations	289	13.3	Graph of the cosine function	405	16.4	Angles in circles 2	509		Check up	611	
3	Interpreting and representing data	61	6.7	Cubic and reciprocal graphs	180	9.6	Solving linear and quadratic simultaneous equations	291	13.4	The tangent function	408	16.5	Applying circle theorems	512		Strengthen	613	
	Prior knowledge check	61	6.8	More graphs	182	9.7	Problem-solving: Overtaking	296	13.5	Calculating areas and the sine rule	411		Problem-solving	515	17	More algebra	521	
3.1	Statistical diagrams 1	63		Problem-solving: Profit parabolas	186		Check up	297	13.6	The cosine rule and 2D trigonometric problems	415		Check up	517		Prior knowledge check	531	
3.2	Time series	67		Check up	187		Strengthen	298		problems	415	17.1	Rearranging formulae	532	17.1	Rearranging formulae	532	
3.3	Scatter graphs	70		Extend	190	10	Probability	305	13.7	Solving problems in 3D	418	17.2	Algebraic fractions	533	17.2	Algebraic fractions	533	
3.4	Line of best fit	72		Knowledge check	195		Prior knowledge check	305	13.8	Transforming trigonometric graphs 1	421	17.3	Simplifying algebraic fractions	535	17.3	Simplifying algebraic fractions	535	
3.5	Averages and range	75		Unit test	200		Problem-solving: Muddy tracks	307	13.9	Transforming trigonometric graphs 2	423	17.4	More algebraic fractions	537	17.4	More algebraic fractions	537	
3.6	Statistical diagrams 2	78				10.1	Combined events	307		Problem-solving	426	17.5	Surds	539	17.5	Surds	539	
	Problem-solving: Pollution particulates	81				10.2	Mutually exclusive events	310		Check up	427	17.6	Solving algebraic fraction equations	541	17.6	Solving algebraic fraction equations	541	
	Check up	82				10.3	Experimental probability	312		Strengthen	429	17.7	Functions	543	17.7	Functions	543	
	Strengthen	84				10.4	Independent events and tree diagrams	314		Extend	433							
	Extend	89				10.5	Conditional probability	318		Knowledge check	435							
	Knowledge check	94								Unit test	437							
4	Fractions, ratio and percentages	97	7	Area and volume	203													
	Prior knowledge check	97		Prior knowledge check	203													
4.1	Fractions	98	7.1	Perimeter and area	204													
			7.2	Units and accuracy	207													
			7.3	Prisms	210													



Year 9 Options- Course content

Edexcel GCSE 9-1 Foundation Content:

You will be given access to the GCSE foundation workbook on Pearson Active Learn:



Contents

1	Number	1	4.1	Working with fractions	93	7.2	Mode, median and range	185	Unit test	309	14.3	Compound measures	421	Extend	532	
	Prior knowledge check	1	4.2	Operations with fractions	96	7.3	Types of average	188	11	Ratio and proportion	418	14.4	Distance, speed and time	535	Knowledge check	
1.1	Calculations	3	4.3	Multiplying fractions	98	7.4	Estimating the mean	192	Prior knowledge check	313	14.5	Direct and inverse proportion	424	Unit test	536	
1.2	Decimal numbers	5	4.4	Dividing fractions	100	7.5	Sampling	194	11.1	Writing ratios	314	Problem-solving: Second-hand cars	427	18	Fractions, indices and standard form	
1.3	Place value	8	4.5	Fractions and decimals	102		Problem-solving: Watching statistics	197	Check up	316	Check up	428	Prior knowledge check	539		
1.4	Factors and multiples	10	4.6	Fractions and percentages	104		Check up	198	Strengthen	318	Extend	434	18.1	Multiplying and dividing fractions		
1.5	Squares, cubes and roots	12	4.7	Calculating percentages 1	106		Strengthen	199	11.2	Using ratios 1	316	Extend	436	18.2	The laws of indices	
1.6	Index notation	15	4.8	Calculating percentages 2	108		Extend	203	11.3	Ratios and measures	318	Knowledge check	437	18.3	Writing large numbers in standard form	
1.7	Prime factors	18		Problem-solving	111		Knowledge check	205	11.4	Using ratios 2	321	Unit test	437	18.4	Writing small numbers in standard form	
	Problem-solving	20		Check up	112	8	Perimeter, area and volume 1	209	11.5	Comparing using ratios	323	15	Constructions, loci and bearings	439	18.5	Calculating with standard form
	Check up	21		Strengthen	113		Prior knowledge check	209	11.6	Using proportion	326	Prior knowledge check	439	Problem-solving: Space race	552	
	Strengthen	23		Extend	116	8.1	Rectangles, parallelograms and triangles	211	Check up	330	15.1	3D solids	440	Check up	553	
	Extend	26		Knowledge check	118	8.2	Trapezia and changing units	214	Strengthen	335	15.2	Plans and elevations	442	Strengthen	554	
	Knowledge check	28		Unit test	119	8.3	Area of compound shapes	217	Extend	338	15.4	Scale drawings and maps	449	Extend	557	
	Unit test	30	5	Equations, inequalities and sequences	121	8.4	Surface area of 3D solids	220	Knowledge check	340	15.5	Accurate drawings 2	452	Knowledge check	559	
2	Algebra	32		Prior knowledge check	121	8.5	Volume of prisms	222	Unit test	341	15.6	Constructions	454	Unit test	560	
	Prior knowledge check	32		Prior knowledge check	121	8.6	More volume and surface area	225	12	Right-angled triangles	344	15.7	Loci and regions	458	19	Congruence, similarity and vectors
2.1	Algebraic expressions	32	5.1	Solving equations 1	122		Problem-solving	228	Prior knowledge check	344	15.8	Bearings	461	Prior knowledge check	562	
2.2	Simplifying expressions	35	5.2	Solving equations 2	125		Check up	229	12.1	Pythagoras' theorem 1	345	Problem-solving	465	Knowledge check	562	
2.3	Substitution	37	5.3	Solving equations with brackets	127		Strengthen	231	12.2	Pythagoras' theorem 2	348	Check up	466	19.1	Similarity and enlargement	
2.4	Formulae	39	5.4	Introducing inequalities	129		Extend	235	12.3	Trigonometry: the sine ratio 1	351	Strengthen	468	19.2	More similarity	
2.5	Expanding brackets	41	5.5	More inequalities	131		Knowledge check	239	12.4	Trigonometry: the sine ratio 2	354	Extend	472	19.3	Using similarity	
2.6	Factorising	43	5.6	Using formulae	133		Unit test	240	12.5	Trigonometry: the cosine ratio	357	Knowledge check	475	19.4	Congruence 1	
2.7	Using expressions and formulae	45	5.7	Generating sequences	135	9	Graphs	243	12.6	Trigonometry: the tangent ratio	360	Unit test	476	19.5	Congruence 2	
	Problem-solving	47	5.8	Using the <i>n</i> th term of a sequence	136		Prior knowledge check	243	12.7	Finding lengths and angles using trigonometry	364	16	Quadratic equations and graphs	479	19.6	Vectors 1
	Check up	49		Problem-solving: Paediatric medicine	139	9.1	Coordinates	244	trigonometry	364	Prior knowledge check	479	19.7	Vectors 2	576	
	Strengthen	50		Check up	140	9.2	Linear graphs	247	Problem-solving	367	Expanding double brackets	480	Problem-solving	581	579	
	Extend	53		Strengthen	141	9.3	Gradient	250	Check up	368	16.2	Plotting quadratic graphs	483	Check up	582	
	Knowledge check	55		Extend	145	9.4	$y = mx + c$	252	Strengthen	369	16.3	Using quadratic graphs	486	Strengthen	584	
	Unit test	56		Knowledge check	147	9.5	Real-life graphs	254	Extend	373	16.4	Factorising quadratic expressions	489	Extend	586	
3	Graphs, tables and charts	58		Unit test	147	9.6	Distance-time graphs	258	Knowledge check	376	16.5	Solving quadratic equations algebraically	491	Knowledge check	590	
	Prior knowledge check	58	6	Angles	149	9.7	More real-life graphs	262	Unit test	377	Problem-solving	493	Unit test	591	591	
3.1	Frequency tables	60		Prior knowledge check	149		Problem-solving: Dinosaur trackways	266	13	Probability	379	Check up	494	20	More algebra	
3.2	Two-way tables	62	6.1	Properties of shapes	151		Check up	266	Prior knowledge check	379	Check up	496	Prior knowledge check	594	594	
3.3	Representing data	65	6.2	Angles in parallel lines	154		Strengthen	267	Calculating probability	380	Strengthen	499	20.1	Graphs of cubic and reciprocal functions	595	
3.4	Time series	67	6.3	Angles in triangles	157		Extend	271	13.1	Calculating probability	382	Extend	499	20.2	Non-linear graphs	
3.5	Stem and leaf diagrams	69	6.4	Exterior and interior angles	160		Knowledge check	274	13.2	Two events	382	Knowledge check	501	20.3	Solving simultaneous equations graphically	
3.6	Pie charts	71	6.5	More exterior and interior angles	163	10	Transformations	277	13.3	Experimental probability	385	Unit test	502	20.4	Solving simultaneous equations algebraically	
3.7	Scatter graphs	74	6.6	Geometrical problems	166		Prior knowledge check	277	13.4	Venn diagrams	388	17	Perimeter, area and volume 2	504	20.5	Rearranging formulae
3.8	Line of best fit	76		Problem-solving	166		Problem-solving: Dinosaur trackways	277	13.5	Tree diagrams	391	Prior knowledge check	504	20.6	Problem-solving: Breaking even	
	Problem-solving: Worldwide data	79		Check up	170	10.1	Translation	278	13.6	More tree diagrams	394	Circumference of a circle 1	505	Check up	604	
	Check up	80		Strengthen	172	10.2	Reflection	282	Problem-solving: Ciphers, language and probability	398	Circumference of a circle 2	507	Check up	606	609	
	Strengthen	82		Extend	175	10.3	Rotation	285	Check up	399	Area of a circle	509	Strengthen	612	613	
	Extend	85		Knowledge check	178	10.4	Enlargement	288	Strengthen	401	Semicircles and sectors	512	Check up	613	613	
	Knowledge check	87		Unit test	179	10.5	Describing enlargements	291	Extend	405	Composite 2D shapes and cylinders	515	Check up	615	619	
	Unit test	88	7	Averages and range	181	10.6	Combining transformations	293	Knowledge check	407	Pyramids and cones	519	Extend	619	622	
4	Fractions and percentages	92		Prior knowledge check	181		Problem-solving: Exploding shapes	296	Unit test	408	Spheres and composite solids	522	Knowledge check	622	623	
	Prior knowledge check	92	7.1	Mean and range	182		Check up	297	14	Multiplicative reasoning	411	Problem-solving: Designing a pencil case	526	Unit test	623	
							Strengthen	297	Prior knowledge check	411	Check up	527	Extend	622	623	
							Extend	304	Percentages	413	Strengthen	528	Knowledge check	622	623	
							Knowledge check	308	Growth and decay	415			Index			

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Year 9 Options- Assessment

- You will sit **3 exam papers** at the end of the course, for either foundation or Higher tier:

Paper	Calculator or Non-calculator	Marks	Length of exam
Paper 1	Non-Calculator	80 Marks	1 hour 30 Minutes
Paper 2	Calculator	80 Marks	1 hour 30 Minutes
Paper 3	Calculator	80 Marks	1 hour 30 Minutes

The assessments will cover the following headings:

- 1 Number**
- 2 Algebra**
- 3 Ratio, proportion and rates of change**
- 4 Geometry and measures**
- 5 Probability**
- 6 Statistics**

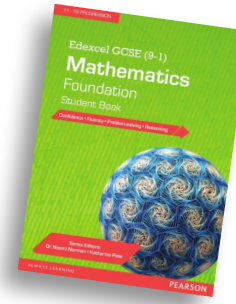
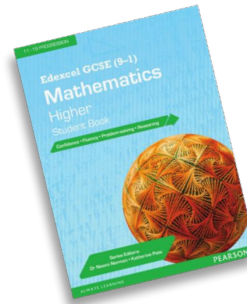
The content you are taught will be assessed across all three papers.



Year 9 Options- Other information

You will be expected to fully utilise all the resources that are available to you. You will already have access to several online interactive platforms including:

- **MyMaths**
- **MathsWatch**
- **Pearson Active learn**



Your teachers will later introduce you to a new resource called **PIXL Maths**

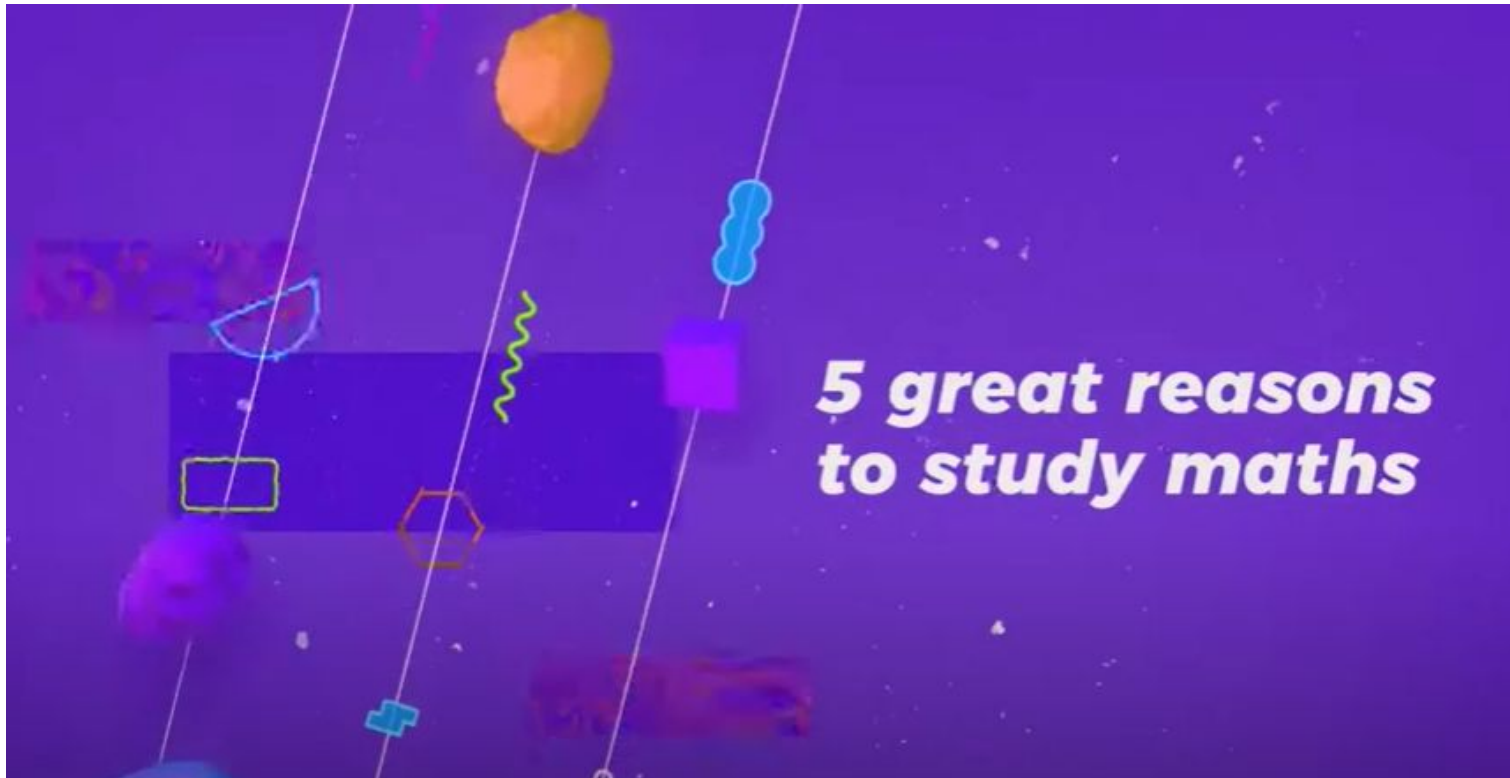


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Year 9 Options | Activity

- <https://www.youtube.com/watch?v=4ApLzQvMSxc>





Year 9 Options-Skills

By studying Maths, you will develop a number of skills such as:

- **Constructing and clearly presenting mathematical and logical arguments**
- **Analysing data, finding patterns and extracting conclusions**
- **Problem solving**
- **Quantitative reasoning**
- **Attention to detail**





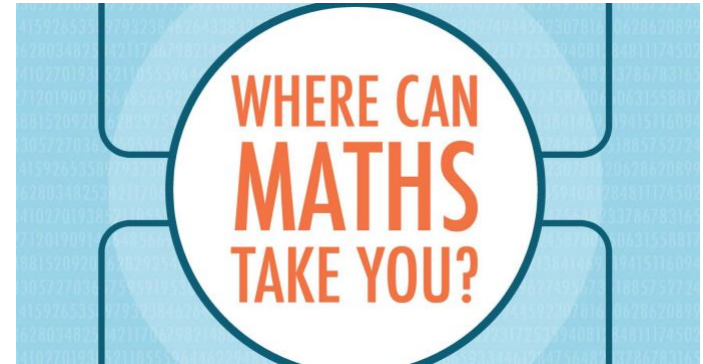
Year 9 Options- Careers

CAREERS IN MATH

IF YOU LIKE MATH, CONSIDER ONE OF THESE CAREERS.

ACCOUNTANT
ACTUARY
ARCHITECT
AUTOMOTIVE TECHNICIAN
CARPENTER
COMPUTER PROGRAMMER
DATA ANALYST
ELECTRICIAN
ENGINEER
FINANCIAL PLANNER

INVESTMENT ANALYST
LOAN OFFICER
MACHINIST
METEOROLOGIST
PHYSICIST
STATISTICIAN
SYSTEMS ANALYST
TEACHER / PROFESSOR
TOOL AND DIE MAKER
WEBSITE DEVELOPER



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