



## Unit 1 Higher Tier

**Note:** Higher tier students will also be assessed on Foundation Tier subject content.

Remind yourself what is included in the formula sheet: It is in the inside cover of the exam papers and can be found here: [Higher Tier](#).

Revision sheets can be found on the Pearson website, in the Assessment support section, [here](#).

Content	Notes	Y/N
<b>Number</b>		
<b>Decimals: Unit 1 Revision Sheet A Fractions Decimal Percentages Higher</b>		
Convert recurring decimals into fractions	$0.3\dot{2} = 0.322... = \frac{29}{90}$	
<b>Powers and roots: Unit 1 Revision Sheet A Fractions Decimal Percentages Higher</b>		
Understand the meaning of surds	Simplify: $\sqrt{8} + 3\sqrt{32}$	
Manipulate surds, including rationalising a denominator	Express in the form $a + b\sqrt{2} : (3 + 5\sqrt{2})^2$ Rationalise: $\frac{2}{\sqrt{8}} ; \frac{1}{2 - \sqrt{3}}$	
Use index laws to simplify and evaluate numerical expressions involving integer, fractional and negative powers	Evaluate: $\sqrt[3]{8^2}, 625^{-\frac{1}{2}}, \left(\frac{1}{25}\right)^{\frac{3}{2}}$	
<b>Set language and notation: Unit 1 Revision Sheet A Fractions Decimal Percentages Higher</b>		
Understand sets defined in algebraic terms, and understand and use subsets	If A is a subset of B, then $A \subset B$	
Use Venn diagrams to represent sets and the number of elements in sets		
Use the notation $n(A)$ for the number of elements in the set A		
Use sets in practical situations		
<b>Degree of accuracy: Unit 1 Revision Sheet A Fractions Decimal Percentages Higher</b>		
Solve problems using upper and lower bounds where values are given to a degree of accuracy	The dimensions of a rectangle are 12 cm and 8cm to the nearest cm. Calculate, to 3 significant figures, the smallest possible area as a percentage of the largest possible area	



Content	Notes	Y/N
<b>Algebra</b>		
<b>Use of symbols: Unit 1 Revision Sheet B Algebra Higher</b>		
Use index notation involving fractional, negative and zero powers	Simplify $(p^2 + 3)^0$	
<b>Algebraic manipulation: Unit 1 Revision Sheet B Algebra Higher</b>		
Expand the product of two or more linear expressions	Expand and simplify $(x + 2)(x + 3)(x - 1)$	
Understand the concept of a quadratic expression and be able to factorise such expressions	Factorise $6x^2 - 5x - 6$	
Manipulate algebraic fractions where the numerator and/or the denominator can be numeric, linear or quadratic	Express as a single fraction $\frac{3x+1}{x+2} - \frac{x-2}{x-1}$ Simplify $\frac{2x^2 + 3x}{4x^2 - 9}$	
Complete the square for a given quadratic expression	Write $2x^2 + 6x - 1$ in the form $a(x + b)^2 + c$	
<b>Quadratic equations: Unit 1 Revision Sheet B Algebra Higher</b>		
Solve quadratic equations by factorisation	$2x^2 - 3x + 1 = 0$ , $x(3x - 2) = 5$	
Solve quadratic equations by using the quadratic formula or completing the square	The quadratic formula is included in the formula sheet in the inside front cover of an exam paper	
Form and solve quadratic equations from data given in a context	A bag contains $x$ counters. 7 of the counters are blue. Sam takes at random a counter from the bag and does not replace it. Jill then takes a counter from the bag. The probability they both take a blue counter is 0.2. Form an equation involving $x$ . Show that your equation can be expressed as $x^2 - x - 210 = 0$ . Calculate the value of $x$	



Content	Notes	Y/N
<b>Graphs: Unit 1 Revision Sheet C Graphs Higher</b>		
<p>Recognise, plot and draw graphs with equation:</p> $y = Ax^3 + Bx^2 + Cx + D$ <p>in which:</p> <p>(i) the constants are integers and some could be zero</p> <p>(ii) the letters <math>x</math> and <math>y</math> can be replaced with any other two letters or:</p> $y = Ax^3 + Bx^2 + Cx + D + \frac{E}{x} + \frac{F}{x^2}$ <p>in which:</p> <p>(i) the constants are numerical and at least three of them are zero</p> <p>(ii) the letters <math>x</math> and <math>y</math> can be replaced with any other two letters</p> <p><math>y = \sin x</math>, <math>y = \cos x</math>, <math>y = \tan x</math> for angles of any size (in degrees)</p>	$y = x^3$ $y = 3x^3 - 2x^2 + 5x - 4$ $y = 2x^3 - 6x + 2$ $V = 60w(60 - w)$ $y = \frac{1}{x}, x \neq 0,$ $y = 2x^2 + 3x + \frac{1}{x},$ $x \neq 0,$ $y = \frac{1}{x}(3x^2 - 5),$ $x \neq 0,$ $w = \frac{5}{d^2}, d \neq 0$	
Calculate the gradient of a straight line given the coordinates of two points	Find the equation of the straight line through (1, 7) and (2, 9)	
Find the equation of a straight line parallel to a given line; find the equation of a straight line perpendicular to a given line	Find the equation of the line perpendicular to $y = 2x + 5$ through the point (3, 7)	
<b>Shape and Space</b>		
<b>Geometrical reasoning: Unit 1 Revision Sheet D Shape and Space Higher</b>		
Provide reasons, using standard geometrical statements, to support numerical values for angles obtained in any geometrical context involving lines, polygons and circles		
<b>Trigonometry and Pythagoras' theorem: Unit 1 Revision Sheet E Pythagoras and Trig Higher</b>		
Understand and use sine, cosine and tangent of obtuse angles		
Understand and use angles of elevation and depression		
Understand and use the sine and cosine rules for any triangle	These formulae are included in the formula sheet in the inside front cover of an exam paper	



Content	Notes	Y/N
Use Pythagoras' theorem in three dimensions		
Understand and use the formula $\frac{1}{2}ab \sin C$ for the area of a triangle	This formula is included in the formula sheet in the inside front cover of an exam paper	
Apply trigonometrical methods to solve problems in three dimensions, including finding the angle between a line and a plane	The angle between two planes will not be required	
<b>Mensuration: Unit 1 Revision Sheet D Shape and Space Higher</b>		
Find perimeters and areas of sectors of circles	Radian measure is excluded. The formula for the volume and curved surface area of a cylinder is included in the formula sheet in the inside front cover of an exam paper. These can be used to deduce the area and circumference of a circle	
<b>Probability and Handling Data</b>		
<b>Graphical representation of data: Unit 1 Revision Sheet F Probability Venn Diagrams and Handling Data Higher</b>		
Construct and interpret histograms	For continuous variables with unequal class intervals	
<b>Probability: Unit 1 Revision Sheet F Probability Venn Diagrams and Handling Data Higher</b>		
Draw and use tree diagrams		
Determine the probability that two or more independent events will occur	Thelma spins a biased coin twice. The probability that it will come down heads both times is 0.09. Calculate the probability that it will come down tails both times	
Use simple conditional probability when combining events	Picking two balls out of a bag, one after the other, without replacement	
Apply probability to simple problems		