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Year 11 maths

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R

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Numbers

- A.1** Prime or composite
- A.2** Identify rational and irrational numbers
- A.3** Compare and order rational numbers
- A.4** Write a recurring decimal as a fraction
- A.5** Square roots
- A.6** Estimate square roots
- A.7** Cube roots
- A.8** Estimate cube roots
- A.9** Add, subtract, multiply and divide rational numbers
- A.10** Evaluate numerical expressions involving rational numbers

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Percents

- B.1** Percent of change
- B.2** Percent of change: word problems
- B.3** Percent of change: find the original amount word problems
- B.4** Sale prices and VAT: find the original price
- B.5** Multi-step problems with percents

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Expressions and properties

- C.1** Properties of addition and multiplication
- C.2** Distributive property
- C.3** Write equivalent expressions using properties
- C.4** Simplify variable expressions involving like terms and the distributive property
- C.5** Identify equivalent linear expressions

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Solve equations

- D.1** Solve one- and two-step linear equations
- D.2** Solve advanced linear equations
- D.3** Solve equations with variables on both sides
- D.4** Solve equations: complete the solution
- D.5** Find the number of solutions
- D.6** Create equations with no solutions or infinitely many solutions
- D.7** Solve linear equations: word

Standard form

- N.1** Convert between ordinary numbers and standard form
- N.2** Compare numbers written in standard form
- N.3** Add and subtract numbers written in standard form
- N.4** Multiply and divide numbers written in standard form

Exponential functions

- O.1** Evaluate an exponential function
- O.2** Match exponential functions and graphs
- O.3** Graph exponential functions
- O.4** Domain and range of exponential functions
- O.5** Exponential growth and decay: word problems
- O.6** Compound interest

Monomials

- P.1** Identify monomials
- P.2** Multiply monomials
- P.3** Divide monomials
- P.4** Multiply and divide monomials
- P.5** Powers of monomials

Polynomials

- Q.1** Polynomial vocabulary
- Q.2** Model polynomials with algebra tiles
- Q.3** Add and subtract polynomials using algebra tiles
- Q.4** Add and subtract polynomials
- Q.5** Add polynomials to find perimeter
- Q.6** Multiply a polynomial by a monomial
- Q.7** Multiply two polynomials using algebra tiles
- Q.8** Multiply two binomials
- Q.9** Multiply two binomials: special cases
- Q.10** Multiply polynomials

Factorising

- R.1** HCF of monomials
- R.2** Factorise out a monomial
- R.3** Factorise quadratics using algebra tiles

Similarity

- CC.1** Identify similar figures
- CC.2** Similarity ratios
- CC.3** Similarity statements
- CC.4** Side lengths and angle measures in similar figures
- CC.5** Similar triangles and indirect measurement
- CC.6** Perimeters of similar figures
- CC.7** Similarity rules for triangles
- CC.8** Similar triangles and transformations
- CC.9** Areas of similar figures

Right triangles

- DD.1** Pythagoras' Theorem
- DD.2** Pythagoras' theorem: word problems
- DD.3** Converse of Pythagoras' theorem
- DD.4** Pythagoras' Inequality Theorems
- DD.5** Special right triangles

Trigonometry

- EE.1** Trigonometric ratios: sin, cos and tan
- EE.2** Trigonometric ratios: csc, sec and cot
- EE.3** Find trigonometric functions of special angles: sin, cos and tan
- EE.4** Find trigonometric functions of special angles: csc, sec and cot
- EE.5** Find trigonometric functions using a calculator
- EE.6** Inverses of trigonometric functions
- EE.7** Trigonometric ratios: find a side length
- EE.8** Trigonometric ratios: find an angle measure
- EE.9** Solve a right triangle
- EE.10** Law of Sines
- EE.11** Law of Cosines
- EE.12** Solve a triangle
- EE.13** Area of a triangle: sine formula
- EE.14** Graph sine functions
- EE.15** Graph cosine functions
- EE.16** Graph sine and cosine functions

problems

- D.8** Solve linear equations: mixed review
- D.9** Rearrange multi-variable equations

Problem solving

- E.1** Consecutive integer problems
- E.2** Rate of travel: word problems
- E.3** Weighted averages: word problems

Single-variable inequalities

- F.1** Solve one- and two-step linear inequalities
- F.2** Graph solutions to one- and two-step linear inequalities
- F.3** Solve advanced linear inequalities
- F.4** Graph solutions to advanced linear inequalities
- F.5** Graph compound inequalities
- F.6** Write compound inequalities from graphs
- F.7** Solve compound inequalities
- F.8** Graph solutions to compound inequalities

Relations and functions

- G.1** Relations: convert between tables, graphs, mappings and lists of points
- G.2** Domain and range of relations
- G.3** Find values using function graphs
- G.4** Identify independent and dependent variables
- G.5** Identify functions
- G.6** Evaluate a function
- G.7** Complete a function table from a graph
- G.8** Complete a function table from an equation
- G.9** Find solutions using a table
- G.10** Approximate solutions using a table
- G.11** Interpret functions using everyday language
- G.12** Rate of change: tables
- G.13** Rate of change: graphs

Direct and inverse variation

- H.1** Identify proportional relationships
- H.2** Find the constant of variation
- H.3** Graph a proportional relationship
- H.4** Write direct variation equations
- H.5** Write and solve direct variation equations
- H.6** Write inverse variation equations
- H.7** Write and solve inverse variation equations
- H.8** Identify direct variation and inverse variation

Linear functions

- I.1** Identify linear functions
- I.2** Interpret points on the graph of a linear function

algebra tiles

- R.4** Factorise quadratics with leading coefficient 1
- R.5** Factorise quadratics with other leading coefficients
- R.6** Factorise quadratics: special cases
- R.7** Factorise by grouping
- R.8** Factorise polynomials

Quadratic equations and inequalities

- S.1** Characteristics of quadratic functions: graphs
- S.2** Characteristics of quadratic functions: equations
- S.3** Complete a function table: quadratic functions
- S.4** Match quadratic functions and graphs
- S.5** Graph a quadratic function
- S.6** Solve a quadratic equation using square roots
- S.7** Solve a quadratic equation using the zero product property
- S.8** Solve a quadratic equation with leading coefficient 1 by factorising
- S.9** Solve a quadratic equation with other leading coefficients by factorising
- S.10** Complete the square
- S.11** Solve a quadratic equation by completing the square
- S.12** Solve a quadratic equation using the quadratic formula
- S.13** Solve simultaneous quadratic and linear equations
- S.14** Graph solutions to quadratic inequalities
- S.15** Solve quadratic inequalities

Function types

- T.1** Identify linear, quadratic and cubic functions from graphs
- T.2** Identify linear, quadratic, cubic and exponential functions from graphs
- T.3** Identify linear, quadratic and exponential functions from tables
- T.4** Write linear, quadratic and exponential functions
- T.5** Linear functions over unit intervals
- T.6** Exponential functions over unit intervals
- T.7** Describe linear and exponential growth and decay

Function operations

- U.1** Composition of linear functions: find a value
- U.2** Composition of linear functions: find an equation
- U.3** Composition of linear and quadratic functions: find a value
- U.4** Composition of linear and quadratic functions: find an equation
- U.5** Identify inverse functions
- U.6** Find values of inverse functions from tables

Perimeter and area

- FF.1** Perimeter
- FF.2** Area of triangles and quadrilaterals
- FF.3** Area and perimeter in the coordinate plane I
- FF.4** Area and perimeter in the coordinate plane II
- FF.5** Area and circumference of circles
- FF.6** Area of compound figures
- FF.7** Area between two shapes
- FF.8** Area and perimeter of similar figures

Three-dimensional figures

- GG.1** Parts of three-dimensional figures
- GG.2** Three-dimensional figure vocabulary
- GG.3** Front, side and top view
- GG.4** Base plans
- GG.5** Nets of three-dimensional figures
- GG.6** Cross-sections of three-dimensional figures
- GG.7** Solids of revolution

Surface area and volume

- HH.1** Surface area and volume of cuboids
- HH.2** Surface area of prisms and cylinders
- HH.3** Surface area of pyramids and cones
- HH.4** Surface area of spheres
- HH.5** Surface area: mixed review
- HH.6** Volume of prisms and cylinders
- HH.7** Volume of pyramids and cones
- HH.8** Volume of spheres
- HH.9** Volume of compound figures
- HH.10** Volume: mixed review
- HH.11** Similar solids
- HH.12** Surface area of similar solids
- HH.13** Volume of similar solids
- HH.14** Surface area and volume of similar solids

Circles

- II.1** Parts of a circle
- II.2** Central angles
- II.3** Arc measure and arc length
- II.4** Area of sectors
- II.5** Circle measurements: mixed review
- II.6** Arcs and chords
- II.7** Tangent lines
- II.8** Perimeter of polygons with an inscribed circle
- II.9** Inscribed angles
- II.10** Angles in inscribed right triangles
- II.11** Angles in inscribed quadrilaterals I
- II.12** Angles in inscribed quadrilaterals II
- II.13** Write equations of circles

Linear function

- I.3** Find the gradient of a graph
- I.4** Find the gradient from two points
- I.5** Find a missing coordinate using gradient
- I.6** Find the gradient and y-intercept of a linear equation
- I.7** Graph an equation in $y=mx+c$ form
- I.8** Write an equation in $y=mx+c$ form from a graph
- I.9** Write an equation in $y=mx+c$ form
- I.10** Write an equation in $y=mx+c$ form from a table
- I.11** Write an equation in $y=mx+c$ form from a word problem
- I.12** Write linear functions to solve word problems
- I.13** Complete a table and graph a linear function
- I.14** Compare linear functions: graphs, tables and equations
- I.15** Find x- and y-intercepts for equations in $ax + by = c$ form
- I.16** Graph an equation in $ax + by = c$ form
- I.17** Equations of horizontal and vertical lines
- I.18** Graph a horizontal or vertical line
- I.19** Point-gradient form: graph an equation
- I.20** Point-gradient form: write an equation
- I.21** Point-gradient form: write an equation from a graph
- I.22** Gradients of parallel lines
- I.23** Gradients of perpendicular lines
- I.24** Gradients of parallel and perpendicular lines
- I.25** Write an equation for a parallel line
- I.26** Write an equation for a perpendicular line
- I.27** Write an equation for a parallel or perpendicular line
- I.28** Transformations of linear functions

Simultaneous equations

- J.1** Is (x, y) a solution to the simultaneous equations?
- J.2** Solve simultaneous equations by graphing
- J.3** Solve simultaneous equations by graphing: word problems
- J.4** Find the number of solutions to simultaneous equations by graphing
- J.5** Find the number of solutions to simultaneous equations
- J.6** Solve simultaneous equations using substitution
- J.7** Solve simultaneous equations using substitution: word problems
- J.8** Solve simultaneous equations using elimination
- J.9** Solve simultaneous equations using elimination: word problems
- J.10** Solve a system of equations using any method
- J.11** Solve a system of equations

- U.7** Find values of inverse functions from graphs

- U.8** Find inverse functions and relations

Function transformations

- V.1** Translation and reflection rules
- V.2** Translations of functions
- V.3** Reflections of functions
- V.4** Translations and reflections of functions

Radical expressions

- W.1** Simplify radical expressions
- W.2** Simplify radical expressions involving fractions
- W.3** Multiply radical expressions
- W.4** Add and subtract radical expressions
- W.5** Simplify radical expressions using the distributive property
- W.6** Simplify radical expressions using conjugates
- W.7** Simplify radical expressions: mixed review

Fractional indices

- X.1** Evaluate fractional indices
- X.2** Multiplication with fractional indices
- X.3** Division with fractional indices
- X.4** Power rule with fractional indices
- X.5** Simplify expressions involving fractional indices I
- X.6** Simplify expressions involving fractional indices II

Rational functions and expressions

- Y.1** Rational functions: asymptotes and excluded values
- Y.2** Simplify complex fractions
- Y.3** Simplify rational expressions
- Y.4** Multiply and divide rational expressions
- Y.5** Divide polynomials
- Y.6** Add and subtract rational expressions
- Y.7** Solve rational equations

Midpoints and distance

- Z.1** Midpoints
- Z.2** Distance between two points
- Z.3** Distance to the origin in three dimensions

Transformations

- AA.1** Identify translations, reflections and rotations
- AA.2** Translations: graph the image
- AA.3** Translations: find the coordinates
- AA.4** Translations: write the rule
- AA.5** Reflections: graph the image
- AA.6** Reflections: find the coordinates

- centered at the origin from graphs

- II.14** Write equations of circles centered at the origin from properties

- II.15** Find properties of circles from equations

- II.16** Graph circles centered at the origin

Vectors

- JJ.1** Compass directions and vectors
- JJ.2** Find the magnitude of a vector
- JJ.3** Find the component form of a vector
- JJ.4** Find the component form of a vector given its magnitude and direction angle
- JJ.5** Graph a resultant vector using the triangle method
- JJ.6** Graph a resultant vector using the parallelogram method
- JJ.7** Add vectors
- JJ.8** Subtract vectors
- JJ.9** Multiply a vector by a scalar
- JJ.10** Find the magnitude of a vector scalar multiple
- JJ.11** Determine the direction of a vector scalar multiple
- JJ.12** Linear combinations of vectors

Measurement

- KK.1** Convert rates and measurements: metric units
- KK.2** Metric mixed units
- KK.3** Convert rates and measurements: imperial units
- KK.4** Imperial mixed units
- KK.5** Convert between metric and imperial units
- KK.6** Precision
- KK.7** Greatest possible error
- KK.8** Minimum and maximum area and volume
- KK.9** Percent error
- KK.10** Percent error: area and volume

Data and graphs

- LL.1** Interpret tables
- LL.2** Interpret line graphs
- LL.3** Create line graphs
- LL.4** Interpret bar graphs for grouped data
- LL.5** Create bar graphs for grouped data
- LL.6** Interpret pie charts
- LL.7** Interpret stem-and-leaf plots
- LL.8** Choose the best type of graph
- LL.9** Box plots

Statistics

- MM.1** Mean, median, mode and range
- MM.2** Quartiles and interquartile range
- MM.3** Variance and standard deviation

using any method: word problems

Linear inequalities

- K.1** Does (x, y) satisfy the inequality?
- K.2** Linear inequalities: solve for y
- K.3** Graph a linear inequality in the coordinate plane
- K.4** Linear inequalities: word problems
- K.5** Is (x, y) a solution to the simultaneous inequalities?
- K.6** Solve simultaneous linear inequalities by graphing

Indices

- L.1** Indices review
- L.2** Negative indices
- L.3** Multiplication with indices
- L.4** Division with indices
- L.5** Multiplication and division with indices
- L.6** Power rule
- L.7** Evaluate expressions using properties of indices
- L.8** Identify equivalent expressions involving indices

Number sequences

- M.1** Identify arithmetic and geometric sequences
- M.2** Arithmetic sequences
- M.3** Geometric sequences
- M.4** Evaluate variable expressions for number sequences
- M.5** Write variable expressions for arithmetic sequences
- M.6** Write variable expressions for geometric sequences
- M.7** Sequences of square and cube numbers
- M.8** Fibonacci-type sequences
- M.9** Number sequences: mixed review

- AA.7** Rotate polygons about a point
- AA.8** Rotations: graph the image
- AA.9** Rotations: find the coordinates
- AA.10** Sequences of translations, reflections and rotations: graph the image
- AA.11** Transformations that carry a polygon onto itself
- AA.12** Translations, reflections and rotations: mixed review
- AA.13** Dilations: graph the image
- AA.14** Dilations: find the coordinates
- AA.15** Dilations: find length, perimeter and area
- AA.16** Dilations: scale factor and classification
- AA.17** Dilations: find the scale factor and center of the dilation
- AA.18** Dilations and parallel lines

Congruence

- BB.1** Identify congruent figures
- BB.2** Congruence statements and corresponding parts
- BB.3** Solve problems involving corresponding parts
- BB.4** SSS and SAS Theorems
- BB.5** ASA and AAS Theorems
- BB.6** SSS, SAS, ASA and AAS Theorems
- BB.7** SSS Theorem in the coordinate plane
- BB.8** Congruency in isosceles and equilateral triangles
- BB.9** Hypotenuse-Leg Theorem

- MM.4** Describe distributions in line plots
- MM.5** Identify biased samples
- MM.6** Create scatter plots
- MM.7** Identify trends with scatter plots
- MM.8** Make predictions with scatter plots
- MM.9** Outliers in scatter plots
- MM.10** Write an equation for a line of best fit

Probability

- NN.1** Theoretical probability
- NN.2** Experimental probability
- NN.3** Make predictions
- NN.4** Compound events: find the number of outcomes
- NN.5** Probability of compound events
- NN.6** Find the number of outcomes: word problems
- NN.7** Find probabilities using two-way frequency tables
- NN.8** Identify independent and dependent events
- NN.9** Probability of independent and dependent events
- NN.10** Find conditional probabilities
- NN.11** Independence and conditional probability
- NN.12** Find conditional probabilities using two-way frequency tables
- NN.13** Geometric probability