Year 10 maths

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Numbers

A.1 Prime or composite
A.2 Prime factorisation
A.3 Highest common factor
A.4 Lowest common multiple
A.5 HCF and LCM: word problems
A.6 Compare and order rational numbers
A.7 Number lines
A.8 Write a recurring decimal as a fraction
A.9 Convert between decimals and fractions
A.10 Square roots
A.11 Estimate square roots
A.12 Cube roots
A.13 Estimate cube roots
A.14 Classify numbers

2 3 4 5 6 7

Operations

B.1 Add, subtract, multiply and divide integers
B.2 Evaluate numerical expressions involving integers
B.3 Evaluate variable expressions involving integers
B.4 Add and subtract rational numbers
B.5 Multiply and divide rational numbers
B.6 Evaluate numerical expressions involving rational numbers
B.7 Evaluate variable expressions involving rational numbers

8 9 10 11 12

Ratios, rates and proportions

C.1 Identify equivalent ratios
C.2 Write an equivalent ratio
C.3 Unit rates
C.4 Unit rates with fractions
C.5 Unit prices
C.6 Solve proportions
C.7 Solve proportions: word problems
C.8 Estimate population size using proportions
C.9 Scale drawings: word problems

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Percents

D.1 Convert between percents, fractions and decimals

Simultaneous equations

L.1 Is (x, y) a solution to the simultaneous equations?
L.2 Solve simultaneous equations by graphing
L.3 Solve simultaneous equations by graphing: word problems
L.4 Find the number of solutions to simultaneous equations by graphing
L.5 Find the number of solutions to simultaneous equations
L.6 Solve simultaneous equations using substitution
L.7 Solve simultaneous equations using substitution: word problems
L.8 Solve simultaneous equations using elimination: matching coefficients
L.9 Solve simultaneous equations using elimination
L.10 Solve simultaneous equations using elimination: word problems
L.11 Solve simultaneous equations using any method
L.12 Solve simultaneous equations using any method: word problems

Linear inequalities

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

Indices

N.1 Indices with integer bases
N.2 Indices with decimal and fractional bases
N.3 Multiplication with positive indices
N.4 Power rule with positive indices
N.5 Evaluate expressions using properties of indices: positive indices
N.6 Negative indices
N.7 Multiplication with integer indices

Congruence

Z.1 Identify congruent figures
Z.2 Congruence statements and corresponding parts
Z.3 Congruent figures: side lengths and angle measures
Z.4 SSS and SAS Theorems
Z.5 ASA and AAS Theorems
Z.6 SSS, SAS, ASA and AAS Theorems
Z.7 Hypotenuse-Leg Theorem

Similarity

AA.1 Identify similar figures
AA.2 Similarity ratios
AA.3 Similarity statements
AA.4 Similar figures: side lengths and angle measures
AA.5 Similar triangles and indirect measurement

Triangles and trigonometry

BB.1 Pythagoras' theorem
BB.2 Pythagoras' theorem: word problems
BB.3 Converse of Pythagoras' theorem: is it a right triangle?
BB.4 Trigonometric ratios: sin, cos and tan
BB.5 Trigonometric ratios: csc, sec and cot
BB.6 Find trigonometric functions of special angles: sin, cos and tan
BB.7 Find trigonometric functions of special angles: csc, sec and cot
BB.8 Find trigonometric functions using a calculator
BB.9 Inverses of trigonometric functions
BB.10 Trigonometric ratios: find a side length
BB.11 Trigonometric ratios: find an angle measure
BB.12 Solve a right triangle

Perimeter and area

CC.1 Perimeter
CC.2 Circumference of circles
CC.3 Perimeter of semicircles and quarter circles
CC.4 Area of triangles and quadrilaterals

- **D.2** Solve percent equations
- **D.3** Percent word problems
- **D.4** Percent of change
- **D.5** Percent of change: word problems
- **D.6** Percent of a number: VAT, discount and more
- **D.7** Find the percent: discount and mark-up
- **D.8** Multi-step problems with percents

Expressions and properties

- **E.1** Write variable expressions
- **E.2** Properties of addition and multiplication
- **E.3** Distributive property
- **E.4** Simplify variable expressions using properties
- **E.5** Write equivalent expressions using properties
- **E.6** Simplify variable expressions involving like terms and the distributive property
- **E.7** Identify equivalent linear expressions

Solve equations

- **F.1** Write variable equations
- **F.2** Identify expressions and equations
- **F.3** Properties of equality
- **F.4** Identify equivalent equations
- **F.5** Does x satisfy the equation?
- **F.6** Solve equations using order of operations
- **F.7** Model and solve equations using algebra tiles
- **F.8** Write and solve equations that represent diagrams
- **F.9** Solve one-step linear equations
- **F.10** Solve two-step linear equations
- **F.11** Solve advanced linear equations
- **F.12** Solve equations with variables on both sides
- **F.13** Solve equations: complete the solution
- **F.14** Find the number of solutions
- **F.15** Create equations with no solutions or infinitely many solutions
- **F.16** Solve linear equations: word problems
- **F.17** Solve linear equations: mixed review
- **F.18** Rearrange multi-variable equations

Problem solving

- **G.1** Word problems: mixed review
- **G.2** Word problems with money
- **G.3** Consecutive integer problems
- **G.4** Rate of travel: word problems
- **G.5** Weighted averages: word problems

Single-variable inequalities

- **H.1** Graph inequalities

- **N.7** Multiplication with integer indices
- **N.8** Division with integer indices
- **N.9** Multiplication and division with integer indices
- **N.10** Power rule with integer indices
- **N.11** Evaluate expressions using properties of indices: integer indices
- **N.12** Identify equivalent expressions involving integer indices
- **N.13** Evaluate integers raised to positive unit fractions
- **N.14** Multiplication with positive unit fraction indices

Number sequences

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

Standard form

- **P.1** Convert between ordinary numbers and standard form
- **P.2** Compare numbers written in standard form
- **P.3** Add and subtract numbers written in standard form
- **P.4** Multiply numbers written in standard form
- **P.5** Divide numbers written in standard form

Exponential functions

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

Monomials

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

Polynomials

- **S.1** Polynomial vocabulary
- **S.2** Model polynomials with algebra tiles
- **S.3** Add and subtract polynomials using algebra tiles
- **S.4** Add and subtract polynomials

- **CC.5** Area of circles
- **CC.6** Area of semicircles and quarter circles
- **CC.7** Area of compound figures with triangles, semicircles and quarter circles
- **CC.8** Area between two shapes
- **CC.9** Area and perimeter of similar figures

Three-dimensional figures

- **DD.1** Parts of three-dimensional figures
- **DD.2** Three-dimensional figure vocabulary
- **DD.3** Front, side and top view
- **DD.4** Base plans
- **DD.5** Nets of three-dimensional figures

Surface area and volume

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

Circles

- **FF.1** Parts of a circle
- **FF.2** Central angles
- **FF.3** Arc measure and arc length
- **FF.4** Area of sectors
- **FF.5** Circle measurements: mixed review
- **FF.6** Arcs and chords
- **FF.7** Tangent lines

Geometric constructions

- **GG.1** Construct the midpoint or perpendicular bisector of a segment
- **GG.2** Construct an angle bisector
- **GG.3** Construct a perpendicular line
- **GG.4** Construct parallel lines
- **GG.5** Construct an equilateral triangle or regular hexagon
- **GG.6** Construct a square

Vectors

- **HH.1** Compass directions and vectors
- **HH.2** Find the component form of a vector
- **HH.3** Graph a resultant vector using

H.2 Write inequalities from graphs
H.3 Identify solutions to inequalities
H.4 Solve one-step linear inequalities: addition and subtraction
H.5 Solve one-step linear inequalities: multiplication and division
H.6 Solve one-step linear inequalities
H.7 Graph solutions to one-step linear inequalities
H.8 Solve two-step linear inequalities
H.9 Graph solutions to two-step linear inequalities
H.10 Solve advanced linear inequalities
H.11 Graph solutions to advanced linear inequalities
H.12 Graph compound inequalities
H.13 Write compound inequalities from graphs
H.14 Solve compound inequalities
H.15 Graph solutions to compound inequalities

Relations and functions

I.1 Relations: convert between tables, graphs, mappings and lists of points
I.2 Domain and range of relations
I.3 Identify independent and dependent variables
I.4 Identify functions
I.5 Identify functions: vertical line test
I.6 Identify types of functions from graphs
I.7 Find values using function graphs
I.8 Evaluate a function
I.9 Evaluate a function: plug in an expression
I.10 Complete a function table from a graph
I.11 Complete a function table from an equation
I.12 Find solutions using a table
I.13 Approximate solutions using a table
I.14 Interpret functions using everyday language

Direct and inverse variation

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

Linear functions

K.1 Identify linear functions
K.2 Interpret points on the graph of a linear function
K.3 Find the gradient of a graph

S.5 Add polynomials to find perimeter
S.6 Multiply a polynomial by a monomial
S.7 Multiply two polynomials using algebra tiles
S.8 Multiply two binomials
S.9 Multiply two binomials: special cases
S.10 Multiply polynomials

Factorising

T.1 HCF of monomials
T.2 Factorise out a monomial
T.3 Factorise quadratics using algebra tiles
T.4 Factorise quadratics with leading coefficient 1
T.5 Factorise quadratics with other leading coefficients
T.6 Factorise quadratics: special cases

Quadratic equations

U.1 Characteristics of quadratic functions: graphs
U.2 Characteristics of quadratic functions: equations
U.3 Complete a function table: quadratic functions
U.4 Match quadratic functions and graphs
U.5 Graph a quadratic function
U.6 Solve a quadratic equation using square roots
U.7 Solve a quadratic equation using the zero product property
U.8 Solve a quadratic equation with leading coefficient 1 by factorising
U.9 Solve a quadratic equation with other leading coefficients by factorising
U.10 Complete the square
U.11 Solve a quadratic equation by completing the square
U.12 Solve a quadratic equation using the quadratic formula

Rational functions and expressions

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

Coordinate plane

W.1 Coordinate plane review
W.2 Quadrants and axes
W.3 Midpoint formula: find the midpoint
W.4 Midpoint formula: find the endpoint

the triangle method
HH.4 Graph a resultant vector using the parallelogram method
HH.5 Add vectors
HH.6 Subtract vectors

Measurement

II.1 Convert rates and measurements: metric units
II.2 Metric mixed units
II.3 Convert rates and measurements: imperial units
II.4 Imperial mixed units
II.5 Convert between square metres and hectares
II.6 Convert square units of length
II.7 Convert between cubic metres and litres
II.8 Convert cubic units of length
II.9 Convert between metric and imperial units
II.10 Precision
II.11 Greatest possible error
II.12 Minimum and maximum area and volume
II.13 Percent error
II.14 Percent error: area and volume
II.15 Calculate density, mass and volume

Data and graphs

JJ.1 Interpret tables
JJ.2 Interpret line graphs
JJ.3 Create line graphs
JJ.4 Interpret bar graphs for categorical data
JJ.5 Create bar graphs for categorical data
JJ.6 Interpret bar graphs for grouped data
JJ.7 Create bar graphs for grouped data
JJ.8 Interpret line plots
JJ.9 Create line plots
JJ.10 Interpret pie charts
JJ.11 Interpret stem-and-leaf plots
JJ.12 Box plots

Statistics

KK.1 Calculate mean, median, mode and range
KK.2 Interpret charts to find mean, median, mode and range
KK.3 Mean, median, mode and range: find the missing number
KK.4 Calculate quartiles and interquartile range
KK.5 Identify an outlier
KK.6 Identify an outlier and describe the effect of removing it
KK.7 Describe distributions in line plots
KK.8 Identify biased samples
KK.9 Create scatter plots
KK.10 Identify trends with scatter plots
KK.11 Make predictions with scatter plots

K.4 Find the gradient from two points

K.5 Find a missing coordinate using gradient

K.6 Find the gradient and y-intercept of a linear equation

K.7 Graph an equation in y=mx+c form

K.8 Write an equation in y=mx+c form from a graph

K.9 Write an equation in y=mx+c form

K.10 Write an equation in y=mx+c form from a table

K.11 Write an equation in y=mx+c form from a word problem

K.12 Linear equations: solve for y

K.13 Write linear functions to solve word problems

K.14 Complete a table and graph a linear function

K.15 Compare linear functions: graphs, tables and equations

K.16 Find x- and y-intercepts for equations in ax + by = c form

K.17 Graph an equation in ax + by = c form

K.18 Equations of horizontal and vertical lines

K.19 Graph a horizontal or vertical line

K.20 Point-gradient form: graph an equation

K.21 Point-gradient form: write an equation

K.22 Point-gradient form: write an equation from a graph

K.23 Gradients of parallel lines

K.24 Write an equation for a parallel line

K.25 Transformations of linear functions

W.5 Distance between two points

Transformations

X.1 Identify reflections, rotations and translations

X.2 Translations: graph the image

X.3 Translations: find the coordinates

X.4 Reflections: graph the image

X.5 Reflections: find the coordinates

X.6 Rotate polygons about a point

X.7 Rotations: graph the image

X.8 Rotations: find the coordinates

X.9 Reflections, rotations and translations: graph the image

X.10 Reflections, rotations and translations: find the coordinates

X.11 Dilations: graph the image

X.12 Dilations: find the coordinates

X.13 Dilations and scale factors

Logic

Y.1 Identify hypotheses and conclusions

Y.2 Counterexamples

KK.12 Outliers in scatter plots

KK.13 Write an equation for a line of best fit

Probability

LL.1 Probability of simple events

LL.2 Probability of simple events and opposite events

LL.3 Probability of mutually exclusive events and overlapping events

LL.4 Experimental probability

LL.5 Make predictions using experimental probability

LL.6 Make predictions using theoretical probability

LL.7 Compound events: find the number of outcomes

LL.8 Probability of compound events

LL.9 Find the number of outcomes: word problems

LL.10 Find probabilities using two-way frequency tables

LL.11 Identify independent and dependent events

LL.12 Probability of independent and dependent events

LL.13 Find conditional probabilities using two-way frequency tables