Year 8 maths

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Number theory

A.1 Multiplicative inverses
A.2 Divisibility rules
A.3 Identify factors
A.4 Prime or composite
A.5 Prime factorisation
A.6 Highest common factor
A.7 Lowest common multiple
A.8 HCF and LCM: word problems
A.9 Classify numbers
A.10 Convert between ordinary numbers and standard form
A.11 Compare numbers written in standard form

Decimals

B.1 Decimal numbers review
B.2 Compare and order decimals
B.3 Decimal number lines
B.4 Round decimals

Operations with decimals

C.1 Add and subtract decimals
C.2 Add and subtract decimals: word problems
C.3 Complete the decimal addition or subtraction sentence
C.4 Multiply decimals
C.5 Multiply decimals and whole numbers: word problems
C.6 Divide decimals
C.7 Divide decimals by whole numbers: word problems
C.8 Multiply and divide decimals by powers of ten
C.9 Estimate sums, differences and products of decimals
C.10 Add, subtract, multiply and divide decimals: word problems
C.11 Multi-step inequalities with decimals
C.12 Maps with decimal distances
C.13 Evaluate numerical expressions involving decimals

Fractions and mixed numbers

D.1 Write fractions in lowest terms
D.2 Lowest common denominator
D.3 Compare and order fractions

Ratios, rates and proportions

M.1 Understanding ratios
M.2 Identify equivalent ratios
M.3 Write an equivalent ratio
M.4 Equivalent ratios: word problems
M.5 Compare ratios: word problems
M.6 Unit rates
M.7 Equivalent rates
M.8 Use tape diagrams to solve ratio word problems
M.9 Compare rates: word problems
M.10 Ratios and rates: word problems
M.11 Do the ratios form a proportion?
M.12 Do the ratios form a proportion: word problems
M.13 Solve proportions
M.14 Solve proportions: word problems
M.15 Rate of change
M.16 Constant rate of change

Direct proportions

N.1 Find the constant of proportionality from a table
N.2 Write equations for proportional relationships from tables
N.3 Identify proportional relationships by graphing
N.4 Find the constant of proportionality from a graph
N.5 Write equations for proportional relationships from graphs
N.6 Identify proportional relationships from graphs and equations
N.7 Identify proportional relationships from tables
N.8 Complete a table and graph a proportional relationship
N.9 Interpret graphs of proportional relationships
N.10 Write and solve equations for proportional relationships

Percents

O.1 What percentage is illustrated?
O.2 Convert between percents, fractions and decimals
O.3 Convert between percents, fractions and decimals: word problems

Two-variable equations

X.1 Does (x, y) satisfy the equation?
X.2 Identify independent and dependent variables
X.3 Solve word problems involving two-variable equations
X.4 Write a two-variable equation
X.5 Complete a table for a two-variable relationship
X.6 Complete a table and graph a two-variable equation
X.7 Identify the graph of an equation
X.8 Graph a two-variable equation
X.9 Interpret a graph: word problems
X.10 Write an equation from a graph using a table

Linear functions

Y.1 Find the gradient from a graph
Y.2 Find the gradient from two points
Y.3 Find a missing coordinate using gradient
Y.4 Find the gradient and y-intercept of a linear equation
Y.5 Graph a line using gradient
Y.6 Graph an equation in y=mx+c form
Y.7 Write an equation in y=mx+c form from a graph
Y.8 Write an equation in y=mx+c form from a gradient and y-intercept

Two-dimensional figures

Z.1 Identify and classify polygons
Z.2 Name, measure and classify angles
Z.3 Classify triangles
Z.4 Triangle inequality
Z.5 Classify quadrilaterals
Z.6 Graph triangles and quadrilaterals
Z.7 Find missing angles in triangles and quadrilaterals
Z.8 Exterior Angle Theorem
Z.9 Interior angles of polygons
Z.10 Lines, line segments and rays
Z.11 Parallel, perpendicular and intersecting lines
Z.12 Identify complementary, supplementary, vertical, adjacent and congruent angles

D.4 Compare fractions: word problems

D.5 Convert between mixed numbers and improper fractions

D.6 Compare mixed numbers and improper fractions

D.7 Convert fractions or mixed numbers to decimals

D.8 Convert between decimals and fractions or mixed numbers

D.9 Put a mix of decimals, fractions and mixed numbers in order

Add and subtract fractions

E.1 Add and subtract fractions

E.2 Add and subtract fractions: word problems

E.3 Add and subtract mixed numbers

E.4 Add and subtract mixed numbers: word problems

E.5 Inequalities with addition and subtraction of fractions and mixed numbers

E.6 Estimate sums and differences of mixed numbers

Multiply fractions

F.1 Multiply fractions by whole numbers using number lines

F.2 Multiply fractions by whole numbers: choose the model

F.3 Multiply fractions by whole numbers using models: complete the equation

F.4 Multiply fractions and whole numbers: sorting

F.5 Multiply fractions by whole numbers I

F.6 Multiply fractions by whole numbers II

F.7 Multiply fractions and whole numbers: word problems

F.8 Fractions of a number I

F.9 Fractions of a number II

F.10 Fractions of a number: word problems

F.11 Estimate products of fractions and whole numbers

F.12 Scaling whole numbers by fractions: justify your answer

F.13 Scaling whole numbers by fractions

F.14 Multiply two fractions using models

F.15 Multiply fractions

F.16 Multiply fractions: word problems

F.17 Complete the fraction multiplication sentence

F.18 Multiply three or more fractions and whole numbers

F.19 Multiply mixed numbers and whole numbers

F.20 Multiply mixed numbers

Divide fractions

G.1 Reciprocals

G.2 Divide unit fractions by whole numbers using models

G.3 Divide unit fractions by whole numbers

O.4 Compare percents to fractions and decimals

O.5 Solve percent problems using grid models

O.6 Solve percent problems using bar models

O.7 Estimate percents of numbers

O.8 Percents of numbers and money amounts

O.9 Percents of numbers: word problems

O.10 Compare percents of numbers

O.11 Find what percent one number is of another

O.12 Find what percent one number is of another: word problems

O.13 Find the total given a part and a percent

O.14 Solve percent equations

O.15 Solve percent equations: word problems

O.16 Percent of change

O.17 Percent of change: word problems

O.18 Percent of change: find the original amount word problems

Consumer maths

P.1 Add, subtract, multiply and divide money amounts: word problems

P.2 Price lists

P.3 Unit prices

P.4 Unit prices: find the total price

P.5 Percent of a number: VAT, discount and more

P.6 Find the percent: discount and mark-up

P.7 Sale prices: find the original price

P.8 Multi-step problems with percents

P.9 Estimate tips

P.10 Simple interest

P.11 Compound interest

Problem solving and estimation

Q.1 Estimate to solve word problems

Q.2 Multi-step word problems

Q.3 Multi-step word problems: identify reasonable answers

Q.4 Guess-and-check word problems

Q.5 Use Venn diagrams to solve problems

Units of measurement

R.1 Estimate metric measurements

R.2 Compare and convert metric units

R.3 Multi-step problems with metric unit conversions

R.4 Metric mixed units

R.5 Convert between square metres and hectares

R.6 Convert square and cubic units of length

R.7 Convert between cubic metres and litres

Z.13 Find measures of complementary, supplementary, vertical and adjacent angles

Z.14 Identify alternate interior and alternate exterior angles

Z.15 Transversals of parallel lines: name angle pairs

Z.16 Transversals of parallel lines: find angle measures

Z.17 Find lengths and measures of bisected line segments and angles

Z.18 Parts of a circle

Three-dimensional figures

AA.1 Bases of three-dimensional figures

AA.2 Nets of three-dimensional figures

AA.3 Front, side and top view

AA.4 Base plans

Geometric measurement

BB.1 Area of triangles

BB.2 Understanding area of a parallelogram

BB.3 Area of parallelograms

BB.4 Understanding area of a trapezium

BB.5 Area of trapeziums

BB.6 Area of rhombuses

BB.7 Area of triangles and quadrilaterals

BB.8 Area and perimeter of squares and rectangles: word problems

BB.9 Area of compound figures with triangles

BB.10 Circumference of circles

BB.11 Area of circles

BB.12 Circles: word problems

BB.13 Semicircles: calculate area, perimeter, radius and diameter

BB.14 Quarter circles: calculate area, perimeter and radius

BB.15 Area of compound figures with triangles, semicircles and quarter circles

BB.16 Area between two shapes

BB.17 Volume of cubes and cuboids

BB.18 Volume of compound figures

BB.19 Volume of triangular pyramids

BB.20 Volume of cylinders

BB.21 Surface area

BB.22 Scale drawings: word problems

BB.23 Scale drawings: scale factor word problems

Transformations

CC.1 Symmetry

CC.2 Identify reflections, rotations and translations

CC.3 Translations: graph the image

CC.4 Translations: find the coordinates

CC.5 Translations: write the rule

CC.6 Reflections: graph the image

CC.7 Reflections: find the

G.4 Divide whole numbers by unit fractions using models

G.5 Divide whole numbers by unit fractions

G.6 Divide unit fractions and whole numbers using area models

G.7 Divide whole numbers and unit fractions

G.8 Divide fractions by whole numbers

G.9 Divide whole numbers by fractions

G.10 Divide fractions

G.11 Divide fractions: word problems

G.12 Divide fractions and mixed numbers

G.13 Estimate products and quotients of fractions and mixed numbers

G.14 Add, subtract, multiply or divide two fractions

G.15 Add, subtract, multiply and divide fractions and mixed numbers: word problems

G.16 Evaluate numerical expressions involving fractions

Integers

H.1 Understanding integers

H.2 Integers on number lines

H.3 Graph integers on horizontal and vertical number lines

H.4 Compare and order integers

Operations with integers

I.1 Add and subtract integers using number lines

I.2 Add and subtract integers using counters

I.3 Integer addition and subtraction rules

I.4 Add and subtract integers

I.5 Complete addition and subtraction sentences with integers

I.6 Add and subtract integers: word problems

I.7 Add and subtract three or more integers

I.8 Understand multiplying by a negative integer using a number line

I.9 Integer multiplication and division rules

I.10 Multiply and divide integers

I.11 Complete multiplication and division sentences with integers

I.12 Evaluate numerical expressions involving integers

Rational numbers

J.1 Identify rational numbers

J.2 Rational numbers on number lines

J.3 Compare and order rational numbers using number lines

J.4 Compare rational numbers

J.5 Put rational numbers in order

J.6 Compare and order rational numbers: word problems

J.7 Rational numbers: find the sign

R.8 Precision

R.9 Estimate imperial measurements

R.10 Convert and compare imperial units

R.11 Imperial mixed units

R.12 Convert between metric and imperial units

Coordinate plane

S.1 Coordinate plane review

S.2 Quadrants and axes

S.3 Follow directions on a coordinate plane

S.4 Distance between two points

Number sequences

T.1 Identify arithmetic and geometric sequences

T.2 Arithmetic sequences

T.3 Geometric sequences

T.4 Number sequences: mixed review

T.5 Number sequences: word problems

T.6 Evaluate variable expressions for arithmetic sequences

T.7 Evaluate variable expressions for geometric sequences

T.8 Write variable expressions for arithmetic sequences

Expressions and properties

U.1 Write variable expressions

U.2 Write variable expressions: word problems

U.3 Evaluate linear expressions

U.4 Evaluate multi-variable expressions

U.5 Evaluate nonlinear expressions

U.6 Identify terms and coefficients

U.7 Identify equivalent expressions using bar models

U.8 Properties of addition and multiplication

U.9 Add and subtract like terms

U.10 Multiply using the distributive property: area models

U.11 Multiply using the distributive property

U.12 Factorise linear expressions: area models

U.13 Factors of linear expressions

U.14 Sort factors of expressions

U.15 Write equivalent expressions using properties

U.16 Simplify linear expressions

U.17 Identify equivalent linear expressions

U.18 Identify equivalent linear expressions: word problems

One-variable equations

V.1 Which x satisfies an equation?

V.2 Write an equation from words

V.3 Model and solve equations using algebra tiles

V.4 Write and solve equations that represent diagrams

CC.7 Reflections: find the coordinates

CC.8 Rotations: graph the image

CC.9 Rotations: find the coordinates

CC.10 Dilations: graph the image

CC.11 Dilations: find the coordinates

CC.12 Dilations: scale factor and classification

Congruence and similarity

DD.1 Identify congruent figures

DD.2 Congruence statements and corresponding parts

DD.3 Side lengths and angle measures of congruent figures

DD.4 Identify similar figures

DD.5 Similarity ratios

DD.6 Similarity statements

DD.7 Side lengths and angle measures of similar figures

DD.8 Similar figures and indirect measurement

Pythagoras' theorem

EE.1 Pythagoras' theorem: find the length of the hypotenuse

EE.2 Pythagoras' theorem: find the missing leg length

EE.3 Pythagoras' theorem: find the missing leg or hypotenuse length

EE.4 Pythagoras' theorem: find the perimeter

EE.5 Pythagoras' theorem: word problems

EE.6 Converse of Pythagoras' theorem: is it a right triangle?

Constructions

FF.1 Construct the midpoint or perpendicular bisector of a segment

FF.2 Construct an angle bisector

FF.3 Construct a perpendicular line

FF.4 Construct an equilateral triangle or regular hexagon

Data and graphs

GG.1 Interpret tables

GG.2 Interpret line plots

GG.3 Create line plots

GG.4 Interpret stem-and-leaf plots

GG.5 Create stem-and-leaf plots

GG.6 Interpret bar graphs for categorical data

GG.7 Create bar graphs for categorical data

GG.8 Interpret bar graphs for grouped data

GG.9 Create bar graphs for grouped data

GG.10 Create frequency charts

GG.11 Interpret pie charts

GG.12 Pie charts and central angles

GG.13 Interpret line graphs

GG.14 Create line graphs

GG.15 Choose the best type of graph

Operations with rational numbers

K.1 Add and subtract positive and negative decimals

K.2 Add and subtract positive and negative fractions

K.3 Add and subtract rational numbers

K.4 Apply addition and subtraction rules

K.5 Multiply and divide positive and negative decimals

K.6 Multiply and divide positive and negative fractions

K.7 Multiply and divide rational numbers

K.8 Apply multiplication and division rules

K.9 Add, subtract, multiply and divide rational numbers

K.10 Evaluate numerical expressions involving rational numbers

Indices and roots

L.1 Understanding indices

L.2 Evaluate indices

L.3 Solve equations with variable indices

L.4 Indices with negative bases

L.5 Indices with decimal and fractional bases

L.6 Evaluate numerical expressions involving indices

L.7 Square roots of perfect squares

L.8 Estimate square roots

L.9 Cube roots of perfect cubes

V.5 Solve equations using properties

V.6 Solve one-step equations

V.7 Solve two-step equations

V.8 Solve equations: complete the solution

V.9 Solve one- and two-step equations: word problems

V.10 Solve equations involving like terms

V.11 Solve equations with the distributive property

V.12 Solve multi-step equations: complete the solution

One-variable inequalities

W.1 Solutions to inequalities

W.2 Graph inequalities on number lines

W.3 Write inequalities from number lines

W.4 Write and graph inequalities: word problems

W.5 Solve one-step inequalities

W.6 Graph solutions to one-step inequalities

W.7 One-step inequalities: word problems

W.8 Solve two-step inequalities

W.9 Graph solutions to two-step inequalities

Statistics

HH.1 Calculate mean, median, mode and range

HH.2 Interpret charts to find mean, median, mode and range

HH.3 Mean, median, mode and range: find the missing number

HH.4 Changes in mean, median, mode and range

HH.5 Identify an outlier

HH.6 Identify an outlier and describe the effect of removing it

HH.7 Describe distributions in line plots

HH.8 Identify representative, random and biased samples

HH.9 Create scatter plots

HH.10 Identify trends with scatter plots

HH.11 Make predictions with scatter plots

HH.12 Outliers in scatter plots

Probability

II.1 Probability of simple events

II.2 Probability of simple events and opposite events

II.3 Probability of mutually exclusive events and overlapping events

II.4 Experimental probability

II.5 Make predictions using theoretical probability

II.6 Make predictions using experimental probability

II.7 Compound events: find the number of outcomes

II.8 Probability of compound events

II.9 Find the number of outcomes: word problems