Grade 7 Math topics

A. Integers

1. Understanding integers
2. Integers on number lines
3. Graph integers on horizontal and vertical number lines
4. Understanding opposite integers
5. Understanding absolute value
6. Absolute value
7. Absolute value and integers: word problems
8. Compare and order integers

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9. Integer inequalities with absolute values

B. Operations with integers

1. Integer addition rules
2. Add integers using counters
3. Add integers using number lines
4. Add integers
5. Add three or more integers
6. Integer subtraction rules
7. Subtract integers using counters
8. Subtract integers using number lines
9. Subtract integers
10. Integer addition and subtraction rules
11. Add and subtract integers using counters
12. Add and subtract integers
13. Complete addition and subtraction sentences with integers
14. Add and subtract integers: word problems
15. Understand multiplying by a negative integer using a number line
16. Integer multiplication rules
17. Multiply integers
18. Integer division rules
19. Equal quotients of integers
20. Divide integers
21. Integer multiplication and division rules
22. Multiply and divide integers
23. Complete multiplication and division sentences with integers

24. Add, subtract, multiply and divide integers
25. Evaluate numerical expressions involving integers

C. Decimals

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

D. Operations with decimals

1. Add and subtract decimals
2. Add and subtract decimals: word problems
3. Multiply a decimal by a multi-digit whole number
4. Multiply decimals and whole numbers: word problems
5. Multiply decimals
6. Divide decimals by whole numbers
7. Divide decimals by whole numbers: word problems
8. Divide decimals
9. Estimate sums, differences and products of decimals
10. Add, subtract, multiply and divide decimals: word problems
11. Multi-step inequalities with decimals
12. Maps with decimal distances
13. Evaluate numerical expressions involving decimals

E. Number theory

1. Prime or composite
2. Prime factorization

3. Multiplicative inverses
4. Divisibility rules
5. Greatest common factor
6. Least common multiple
7. GCF and LCM: word problems

F. Fractions

1. Understanding fractions: word problems
2. Equivalent fractions
3. Write fractions in lowest terms
4. Fractions: word problems with graphs and tables
5. Least common denominator
6. Compare and order fractions
7. Compare fractions using benchmarks
8. Compare fractions: word problems
9. Convert between mixed numbers and improper fractions
10. Compare mixed numbers and improper fractions
11. Round mixed numbers
12. Put a mix of decimals, fractions and mixed numbers in order

G. Add and subtract fractions

1. Add and subtract fractions with like denominators
2. Add and subtract fractions with like denominators: word problems
3. Add fractions with unlike denominators using models
4. Add fractions with unlike denominators
5. Subtract fractions with unlike denominators using models
6. Subtract fractions with unlike denominators

7. Estimate sums and differences of fractions using benchmarks
8. Add and subtract fractions with unlike denominators
9. Add and subtract fractions with unlike denominators: word problems
10. Add three or more fractions with unlike denominators
11. Complete addition and subtraction sentences with fractions
12. Estimate sums and differences of mixed numbers
13. Add and subtract mixed numbers
14. Add and subtract mixed numbers: word problems
15. Inequalities with addition and subtraction of fractions and mixed numbers

H. Multiply fractions

1. Multiply unit fractions by whole numbers using number lines
2. Multiply unit fractions by whole numbers using models
3. Multiply fractions by whole numbers using number lines
4. Multiply fractions by whole numbers: choose the model
5. Multiply fractions and whole numbers
6. Multiply fractions and whole numbers: word problems
7. Multiply two fractions using models
8. Multiply fractions
9. Multiply fractions: word problems
10. Complete the fraction multiplication sentence
11. Multiply three or more fractions and whole numbers
12. Multiply mixed numbers and whole numbers
13. Multiply mixed numbers
14. Multiply mixed numbers: word problems

I. Divide fractions

1. Divide whole numbers by unit fractions using models
2. Reciprocals
3. Divide whole numbers and unit fractions
4. Divide whole numbers by fractions
5. Divide fractions
6. Divide fractions: word problems
7. Estimate quotients when dividing mixed numbers
8. Divide fractions and mixed numbers
9. Divide fractions and mixed numbers: word problems

J. Rational numbers

1. Convert between decimals and fractions or mixed numbers
2. Identify rational numbers
3. Absolute value of rational numbers
4. Rational numbers on number lines
5. Compare and order rational numbers using number lines
6. Compare rational numbers
7. Put rational numbers in order
8. Classify real numbers

K. Operations with rational numbers

1. Add and subtract fractions and decimals
2. Multiply and divide fractions and decimals
3. Estimate products and quotients of fractions and mixed numbers
4. Add, subtract, multiply and divide fractions and mixed numbers: word problems
5. Evaluate numerical expressions involving fractions

6. Apply addition and subtraction rules
7. Add and subtract positive and negative decimals
8. Apply multiplication and division rules
9. Multiply and divide positive and negative decimals

L. Exponents and square roots

1. Understanding exponents
2. Evaluate powers
3. Solve equations with variable exponents
4. Powers with negative bases
5. Powers with decimal and fractional bases
6. Evaluate numerical expressions involving exponents
7. Square roots of perfect squares
8. Estimate square roots

M. Ratios, rates and proportions

1. Understanding ratios
2. Identify equivalent ratios
3. Write an equivalent ratio
4. Equivalent ratios: word problems
5. Unit rates
6. Equivalent rates
7. Compare ratios: word problems
8. Compare rates: word problems
9. Ratios and rates: word problems
10. Do the ratios form a proportion?
11. Do the ratios form a proportion: word problems

12. Solve proportions
13. Solve proportions: word problems
14. Estimate population size using proportions
15. Rate of change: tables
16. Rate of change: graphs
17. Constant rate of change: tables
18. Constant rate of change: graphs
19. Scale drawings: word problems

N. Coordinate plane

1. Coordinate plane review
2. Quadrants and axes
3. Follow directions on a coordinate plane
4. Distance between two points

O. Proportional relationships

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

P. Percents

1. What percentage is illustrated?
2. Convert between percents, fractions and decimals
3. Compare percents to fractions and decimals
4. Estimate percents of numbers
5. Percents of numbers and money amounts
6. Percents of numbers: word problems
7. Solve percent equations
8. Solve percent equations: word problems

Q. Consumer math

1. Add, subtract, multiply and divide money amounts: word problems
2. Price lists
3. Unit prices
4. Unit prices: find the total price
5. Percent of a number: tax, discount and more
6. Find the percent: tax, discount and more
7. Sale prices: find the original price
8. Multi-step problems with percents
9. Estimate tips
10. Simple interest

R. Problem solving and estimation

1. Estimate to solve word problems
2. Multi-step word problems
3. Guess-and-check word problems
4. Use Venn diagrams to solve problems

5. Find the number of each type of coin
6. Elapsed time word problems

S. Units of measurement

1. Estimate metric measurements
2. Compare and convert metric units
3. Mixed metric units
4. Convert square and cubic units of length
5. Convert between cubic centimetres and millilitres
6. Precision

T. Expressions

1. Write variable expressions
2. Write variable expressions: word problems
3. Evaluate linear expressions
4. Evaluate multi-variable expressions
5. Evaluate absolute value expressions
6. Evaluate nonlinear expressions
7. Identify terms and coefficients
8. Sort factors of expressions

U. Equivalent expressions

1. Properties of addition and multiplication
2. Simplify linear expressions
3. Multiply using the distributive property: area models
4. Multiply using the distributive property
5. Solve equations using properties

6. Write equivalent expressions using properties
7. Add and subtract like terms
8. Add and subtract like terms with exponents
9. Factor linear expressions: area models
10. Factors of linear expressions
11. Identify equivalent linear expressions using algebra tiles
12. Identify equivalent linear expressions
13. Identify equivalent linear expressions: word problems

V. One-variable equations

1. Which x satisfies an equation?
2. Write an equation from words
3. Model and solve equations using algebra tiles
4. Write and solve equations that represent diagrams
5. Solve one-step equations
6. Solve two-step equations
7. Solve one and two-step equations with decimals
8. Solve one- and two-step equations: word problems
9. Solve equations involving like terms
10. Solve equations: complete the solution
11. Solve equations with variables on both sides
12. Rearrange multi-variable equations

W. One-variable inequalities

1. Solutions to inequalities
2. Graph inequalities on number lines
3. Write inequalities from number lines

4. Solve one-step inequalities
5. Graph solutions to one-step inequalities
6. One-step inequalities: word problems
7. Solve two-step inequalities
8. Graph solutions to two-step inequalities

X. Sequences

1. Identify arithmetic and geometric sequences
2. Arithmetic sequences
3. Geometric sequences
4. Number sequences: mixed review
5. Number sequences: word problems
6. Evaluate variable expressions for number sequences
7. Write variable expressions for arithmetic sequences

Y. Two-variable equations

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

Z. Lines and angles

1. Name, measure and classify angles
2. Lines, line segments and rays
3. Parallel, perpendicular and intersecting lines
4. Identify complementary, supplementary, vertical, adjacent and congruent angles
5. Find measures of complementary, supplementary, vertical and adjacent angles
6. Transversals of parallel lines: name angle pairs
7. Transversals of parallel lines: find angle measures
8. Find lengths and measures of bisected line segments and angles

AA. Two-dimensional figures

1. Identify and classify polygons
2. Classify triangles
3. Identify trapezoids
4. Classify quadrilaterals
5. Graph triangles and quadrilaterals
6. Find missing angles in triangles
7. Interior angles of polygons
8. Parts of a circle
9. Central angles of circles

BB. Constructions

1. Construct the midpoint or perpendicular bisector of a segment
2. Construct an angle bisector
3. Construct a congruent angle
4. Construct a perpendicular line
5. Construct parallel lines

6. Construct an equilateral triangle or regular hexagon

CC. Three-dimensional figures

1. Bases of three-dimensional figures
2. Nets of three-dimensional figures
3. Front, side and top view

DD. Perimeter and area

1. Perimeter
2. Area of rectangles and parallelograms
3. Area of triangles
4. Area of trapezoids
5. Area with mixed numbers
6. Area and perimeter: word problems
7. Circumference of circles
8. Area of circles
9. Circles: word problems
10. Semicircles: calculate area, perimeter, radius and diameter
11. Quarter circles: calculate area and perimeter
12. Area of sectors
13. Area of compound figures with triangles, semicircles and quarter circles
14. Area between two shapes
15. Perimeter and area: changes in scale
16. Arc length

EE. Surface area and volume

1. Relationship between volume and the area of the base: word problems

2. Volume of prisms and cylinders
3. Surface area of prisms
4. Surface area of pyramids
5. Surface area of cylinders

FF. Transformations and congruence

1. Symmetry
2. Identify reflections, rotations and translations
3. Describe a sequence of transformations
4. Translations: graph the image
5. Translations: find the coordinates
6. Reflections: graph the image
7. Reflections: find the coordinates
8. Rotations: graph the image
9. Rotations: find the coordinates
10. Describe transformations
11. Sequences of congruence transformations: graph the image
12. Sequences of congruence transformations: choose the sequence
13. Identify congruent figures
14. Congruence statements and corresponding parts
15. Determine if two figures are congruent: justify your answer
16. Side lengths and angle measures of congruent figures

GG. Transformations and similarity

1. Identify similar figures
2. Dilations: graph the image
3. Dilations: find the coordinates

4. Dilations: find the scale factor
5. Side lengths and angle measures of similar figures
6. Determine if two figures are similar: justify your answer
7. Similar figures and indirect measurement

HH. Data and graphs

1. Interpret tables
2. Interpret line plots
3. Create line plots
4. Interpret stem-and-leaf plots
5. Create stem-and-leaf plots
6. Interpret bar graphs
7. Create bar graphs
8. Interpret histograms
9. Create histograms
10. Create frequency tables
11. Interpret circle graphs
12. Circle graphs and central angles
13. Interpret line graphs
14. Create line graphs
15. Choose the best type of graph

II. Statistics

1. Calculate mean and range
2. Calculate mean, median, mode and range
3. Interpret charts to find mean and range
4. Interpret charts to find mean, median, mode and range

5. Mean and range: find the missing number
6. Mean, median, mode and range: find the missing number
7. Changes in mean and range
8. Changes in mean, median, mode and range
9. Identify an outlier and describe the effect of removing it
10. Identify representative, random and biased samples
11. Make an estimate from sample data

JJ. Probability

1. Sample spaces of simple events
2. Probability of simple events
3. Probability of simple events: word problems
4. Probability of opposite, mutually exclusive and overlapping events
5. Experimental probability
6. Make predictions
7. Sample spaces for compound events
8. Compound events: find the number of outcomes
9. Counting principle
10. Identify independent and dependent events