

Grade: Kindergarten

Number

- say the number sequence by 1s starting anywhere from 1 to 10 and from 10 to 1
- recognize, at a glance, and name familiar arrangements of 1 to 5 objects or dots
- relate a numeral, 1 to 10, to its respective quantity
- represent and describe numbers 2 to 10, concretely and pictorially
- compare quantities, 1 to 10, using one-to-one correspondence

Patterns and Relations

Patterns

- demonstrate an understanding of repeating patterns (two or three elements) by
 - identifying
 - reproducing
 - extending
 - creating
 patterns, using manipulatives, sounds, and actions

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Shape and Space

3-D Objects and 2-D Shapes

- sort 3-D objects using a single attribute
- build and describe 3-D objects

Measurement

- use direct comparison to compare two objects based on a single attribute such as length (height), mass (weight), and volume (capacity)

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Grade: 1

Number

- say the number sequence, 0 to 100, by
 - 1s forward and backward between any two given numbers
 - 2s to 20, forward starting at 0
 - 5s and 10s to 100, forward starting at 0
- recognize, at a glance, and name familiar arrangements of 1 to 10 objects or dots
- demonstrate an understanding of counting by
 - indicating that the last number said identifies "how many"
 - showing that any set has only one count
 - using the counting on strategy
 - using parts or equal groups to count sets
- represent and describe numbers to 20 concretely, pictorially, and symbolically
- compare sets containing up to 20 elements to solve problems using
 - referents
 - one-to-one correspondence
- estimate quantities to 20 by using referents
- demonstrate, concretely and pictorially, how a given number can be represented by a variety of equal groups with and without singles
- identify the number, up to 20, that is one more, two more, one less, and two less than a given number
- demonstrate an understanding of addition of numbers with answers to 20 and their corresponding subtraction facts, concretely, pictorially, and symbolically by
 - using familiar and mathematical language to describe additive and subtractive actions from their experience
 - creating and solving problems in context that involve addition and subtraction
 - modelling addition and subtraction using a variety of concrete and visual representations, and recording the process symbolically
- describe and use mental mathematics strategies (memorization not intended), such as
 - counting on and counting back
 - making 10
 - doubles
 - using addition to subtract
 to determine the basic addition facts to 18 and related subtraction facts

Patterns and Relations

Patterns

- demonstrate an understanding of repeating patterns (two to four elements) by
 - describing
 - reproducing
 - extending
 - creating
 patterns using manipulatives, diagrams, sounds, and actions
- translate repeating patterns from one representation to another

Variables and Equations

- describe equality as a balance and inequality as an imbalance, concretely, and pictorially (0 to 20)
- record equalities using the equal symbol

Shape and Space

3-D Objects and 2-D Shapes

- sort 3-D objects and 2-D shapes using one attribute, and explain the sorting rule
- replicate composite 2-D shapes and 3-D objects

- *compare 2-D shapes to parts of 3-D objects in the environment*

Measurement

- *demonstrate an understanding of measurement as a process of comparing by*
 - *identifying attributes that can be compared*
 - *ordering objects*
 - *making statements of comparison*
 - *filling, covering, or matching*

Grade: 2

Number

- say the number sequence from 0 to 100 by
 - 2s, 5s and 10s, forward and backward, using starting points that are multiples of 2, 5, and 10 respectively
 - 10s using starting points from 1 to 9
 - 2s starting from 1
- demonstrate if a number (up to 100) is even or odd
- describe order or relative position using ordinal numbers (up to tenth)
- represent and describe numbers to 100, concretely, pictorially, and symbolically
- compare and order numbers up to 100
- estimate quantities to 100 using referents
- illustrate, concretely and pictorially, the meaning of place value for numerals to 100
- demonstrate and explain the effect of adding zero to or subtracting zero from any number
- demonstrate an understanding of addition (limited to 1 and 2-digit numerals) with answers to 100 and the corresponding subtraction by
 - using personal strategies for adding and subtracting with and without the support of manipulatives
 - creating and solving problems that involve addition and subtraction
 - explaining that the order in which numbers are added does not affect the sum
 - explaining that the order in which numbers are subtracted may affect the difference
- apply mental mathematics strategies, such as
 - using doubles
 - making 10
 - one more, one less
 - two more, two less
 - building on a known double
 - addition for subtraction
 to determine basic addition facts to 18 and related subtraction facts

Patterns and Relations

Patterns

- demonstrate an understanding of repeating patterns (three to four elements) by
 - describing
 - extending
 - comparing
 - creating
 patterns using manipulatives, diagrams, sounds, and actions
- demonstrate an understanding of increasing patterns by
 - describing
 - reproducing
 - extending
 - creating
 patterns using manipulatives, diagrams, sounds, and actions (numbers to 100)

Variables and Equations

- demonstrate and explain the meaning of equality and inequality by using manipulatives and diagrams (0 to 100)
- record equalities and inequalities symbolically using the equal symbol or the not equal symbol

Shape and Space

3-D Objects and 2-D Shapes

- sort 2-D shapes and 3-D objects using two attributes and explain the sorting rule

- describe, compare, and construct 3-D objects, including
 - cubes
 - spheres
 - cones
 - cylinders
 - pyramids

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- describe, compare, and construct 2-D shapes, including
 - triangles
 - squares
 - rectangles
 - circles

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- identify 2-D shapes as parts of 3-D objects in the environment

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Measurement

- relate the number of days to a week and the number of months to a year in a problem-solving context

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- relate the size of a unit of measure to the number of units (limited to non-standard units) used to measure length and mass (weight)

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- compare and order objects by length, height, distance around, and mass (weight) using non-standard units, and make statements of comparison

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- measure length to the nearest non-standard unit by
 - using multiple copies of a unit
 - using a single copy of a unit (iteration process)

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- demonstrate that changing the orientation of an object does not alter the measurements of its attributes

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Statistics and Probability

Data Analysis

- gather and record data about self and others to answer questions

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- construct and interpret concrete graphs and pictographs to solve problems

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Grade: 3

Number

<ul style="list-style-type: none"> • say the number sequence forward and backward from 0 to 1000 by <ul style="list-style-type: none"> - 5s, 10s or 100s using any starting point - 3s using starting points that are multiples of 3 - 4s using starting points that are multiples of 4 - 25s using starting points that are multiples of 25 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> • represent and describe numbers to 1000, concretely, pictorially, and symbolically 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> • compare and order numbers to 1000 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> • estimate quantities less than 1000 using referents 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> • illustrate, concretely and pictorially, the meaning of place value for numerals to 1000 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> • describe and apply mental mathematics strategies for adding two 2-digit numerals, such as <ul style="list-style-type: none"> - adding from left to right - taking one addend to the nearest multiple of ten and then compensating - using doubles 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> • describe and apply mental mathematics strategies for subtracting two 2-digit numerals, such as <ul style="list-style-type: none"> - taking the subtrahend to the nearest multiple of ten and then compensating - thinking of addition - using doubles 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> • apply estimation strategies to predict sums and differences of two 2-digit numerals in a problem-solving context 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> • demonstrate an understanding of addition and subtraction of numbers with answers to 1000 (limited to 1, 2 and 3-digit numerals) by <ul style="list-style-type: none"> - using personal strategies for adding and subtracting with and without the support of manipulatives - creating and solving problems in contexts that involve addition and subtraction of numbers concretely, pictorially, and symbolically 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> • apply mental mathematics strategies and number properties, such as <ul style="list-style-type: none"> - using doubles - making 10 - using the commutative property - using the property of zero - thinking addition for subtraction to recall basic addition facts to 18 and related subtraction facts 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> • demonstrate an understanding of multiplication to 5×5 by <ul style="list-style-type: none"> - representing and explaining multiplication using equal grouping and arrays - creating and solving problems in context that involve multiplication - modelling multiplication using concrete and visual representations, and recording the process symbolically - relating multiplication to repeated addition - relating multiplication to division 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> • demonstrate an understanding of division by <ul style="list-style-type: none"> - representing and explaining division using equal sharing and equal grouping - creating and solving problems in context that involve equal sharing and equal grouping - modelling equal sharing and equal grouping using concrete and visual representations, and recording the process symbolically - relating division to repeated subtraction - relating division to multiplication (limited to division related to multiplication facts up to 5×5) 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> • demonstrate an understanding of fractions by <ul style="list-style-type: none"> - explaining that a fraction represents a part of a whole - describing situations in which fractions are used - comparing fractions of the same whole with like denominators 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Patterns and Relations

Patterns

- *demonstrate an understanding of increasing patterns by*
 - *describing*
 - *extending*
 - *comparing*
 - *creating**patterns using manipulatives, diagrams, sounds, and actions (numbers to 1000)*

- *demonstrate an understanding of decreasing patterns by*
 - *describing*
 - *extending*
 - *comparing*
 - *creating**patterns using manipulatives, diagrams, sounds, and actions (numbers to 1000)*

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Variables and Equations

- *solve one-step addition and subtraction equations involving symbols representing an unknown number*

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Shape and Space

3-D Objects and 2-D Shapes

- *describe 3-D objects according to the shape of the faces, and the number of edges and vertices*

- *sort regular and irregular polygons, including*
 - *triangles*
 - *quadrilaterals*
 - *pentagons*
 - *hexagons*
 - *octagons**according to the number of sides*

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Measurement

- *relate the passage of time to common activities using non-standard and standard units (minutes, hours, days, weeks, months, years)*

- *relate the number of seconds to a minute, the number of minutes to an hour, and the number of days to a month in a problem-solving context*

- *demonstrate an understanding of measuring length (cm, m) by*
 - *selecting and justifying referents for the units cm and m*
 - *modelling and describing the relationship between the units cm and m*
 - *estimating length using referents*
 - *measuring and recording length, width, and height*

- *demonstrate an understanding of measuring mass (g, kg) by*
 - *selecting and justifying referents for the units g and kg*
 - *modelling and describing the relationship between the units g and kg*
 - *estimating mass using referents*
 - *measuring and recording mass*

- *demonstrate an understanding of perimeter of regular and irregular shapes by*
 - *estimating perimeter using referents for centimetre or metre*
 - *measuring and recording perimeter (cm, m)*
 - *constructing different shapes for a given perimeter (cm, m) to demonstrate that many shapes are possible for a perimeter*

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Statistics and Probability

Data Analysis

- *collect first-hand data and organize it using*
 - *tally marks*
 - *line plots*
 - *charts*
 - *lists**to answer questions*

- *construct, label and interpret bar graphs to solve problems*

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Grade: 4

Number

- *represent and describe whole numbers to 10 000, pictorially and symbolically*
- *compare and order numbers to 10 000*
- *demonstrate an understanding of addition of numbers with answers to 10 000 and their corresponding subtractions (limited to 3 and 4-digit numerals) by*
 - *using personal strategies for adding and subtracting*
 - *estimating sums and differences*
 - *solving problems involving addition and subtraction*
- *explain the properties of 0 and 1 for multiplication, and the property of 1 for division*
- *describe and apply mental mathematics strategies, such as*
 - *skip counting from a known fact*
 - *using doubling or halving*
 - *using doubling or halving and adding or subtracting one more group*
 - *using patterns in the 9s facts*
 - *using repeated doubling**to determine basic multiplication facts to 9 x 9 and related division facts*
- *demonstrate an understanding of multiplication (2- or 3-digit by 1-digit) to solve problems by*
 - *using personal strategies for multiplication with and without concrete materials*
 - *using arrays to represent multiplication*
 - *connecting concrete representations to symbolic representations*
 - *estimating products*
- *demonstrate an understanding of division (1-digit divisor and up to 2-digit dividend) to solve problems by*
 - *using personal strategies for dividing with and without concrete materials*
 - *estimating quotients*
 - *relating division to multiplication*
- *demonstrate an understanding of fractions less than or equal to one by using concrete and pictorial representations to*
 - *name and record fractions for the parts of a whole or a set*
 - *compare and order fractions*
 - *model and explain that for different wholes, two identical fractions may not represent the same quantity*
 - *provide examples of where fractions are used*
- *describe and represent decimals (tenths and hundredths) concretely, pictorially, and symbolically*
- *relate decimals to fractions (to hundredths)*
- *demonstrate an understanding of addition and subtraction of decimals (limited to hundredths) by*
 - *using compatible numbers*
 - *estimating sums and differences*
 - *using mental math strategies**to solve problems*

Patterns and Relations

Patterns

- *identify and describe patterns found in tables and charts, including a multiplication chart*
- *reproduce a pattern shown in a table or chart using concrete materials*
- *represent and describe patterns and relationships using charts and tables to solve problems*
- *identify and explain mathematical relationships using charts and diagrams to solve problems*

Variables and Equations

- *express a given problem as an equation in which a symbol is used to represent an unknown number*

- solve one-step equations involving a symbol to represent an unknown number

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Shape and Space

3-D Objects and 2-D Shapes

- describe and construct rectangular and triangular prisms

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Measurement

- read and record time using digital and analog clocks, including 24-hour clocks
- read and record calendar dates in a variety of formats

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- demonstrate an understanding of area of regular and irregular 2-D shapes by
 - recognizing that area is measured in square units
 - selecting and justifying referents for the units cm^2 or m^2
 - estimating area by using referents for cm^2 or m^2
 - determining and recording area (cm^2 or m^2)
 - constructing different rectangles for a given area (cm^2 or m^2) in order to demonstrate that many different rectangles may have the same area

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Transformations

- demonstrate an understanding of line symmetry by
 - identifying symmetrical 2-D shapes
 - creating symmetrical 2-D shapes
 - drawing one or more lines of symmetry in a 2-D shape

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Statistics and Probability

Data Analysis

- demonstrate an understanding of many-to-one correspondence
- construct and interpret pictographs and bar graphs involving many-to-one correspondence to draw conclusions

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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Grade: 5

Number

- represent and describe whole numbers to 1 000 000
- use estimation strategies including
 - front-end rounding
 - compensation
 - compatible numbers
 in problem-solving contexts
- apply mental mathematics strategies and number properties, such as
 - skip counting from a known fact
 - using doubling or halving
 - using patterns in the 9s facts
 - using repeated doubling or halving
 to determine answers for basic multiplication facts to 81 and related division facts
- apply mental mathematics strategies for multiplication, such as
 - annexing then adding zero
 - halving and doubling
 - using the distributive property
- demonstrate an understanding of multiplication (2-digit by 2-digit) to solve problems
- demonstrate, with and without concrete materials, an understanding of division (3-digit by 1-digit) and interpret remainders to solve problems
- demonstrate an understanding of fractions by using concrete and pictorial representations to
 - create sets of equivalent fractions
 - compare fractions with like and unlike denominators
- describe and represent decimals (tenths, hundredths, thousandths) concretely, pictorially, and symbolically
- relate decimals to fractions (to thousandths)
- compare and order decimals (to thousandths) by using
 - benchmarks
 - place value
 - equivalent decimals
- demonstrate an understanding of addition and subtraction of decimals (limited to thousandths)

Patterns and Relations

Patterns

- determine the pattern rule to make predictions about subsequent elements

Variables and Equations

- solve problems involving single-variable, one-step equations with whole number coefficients and whole number solutions

Shape and Space

3-D Objects and 2-D Shapes

- describe and provide examples of edges and faces of 3-D objects, and sides of 2-D shapes that are
 - parallel
 - intersecting
 - perpendicular
 - vertical
 - horizontal

- identify and sort quadrilaterals, including
 - rectangles
 - squares
 - trapezoids
 - parallelograms
 - rhombuses
 according to their attributes

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Measurement

- design and construct different rectangles given either perimeter or area, or both (whole numbers) and draw conclusions
- demonstrate an understanding of measuring length (mm) by
 - selecting and justifying referents for the unit mm
 - modelling and describing the relationship between mm and cm units, and between mm and m units
- demonstrate an understanding of volume by
 - selecting and justifying referents for cm^3 or m^3 units
 - estimating volume by using referents for cm^3 or m^3
 - measuring and recording volume (cm^3 or m^3)
 - constructing rectangular prisms for a given volume
- demonstrate an understanding of capacity by
 - describing the relationship between mL and L
 - selecting and justifying referents for mL or L units
 - estimating capacity by using referents for mL or L
 - measuring and recording capacity (mL or L)

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Transformations

- perform a single transformation (translation, rotation, or reflection) of a 2-D shape (with and without technology) and draw and describe the image
- identify a single transformation, including a translation, rotation, and reflection of 2-D shapes

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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Statistics and Probability

Chance and Uncertainty

- describe the likelihood of a single outcome occurring using words such as
 - impossible
 - possible
 - certain
- compare the likelihood of two possible outcomes occurring using words such as
 - less likely
 - equally likely
 - more likely

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Data Analysis

- differentiate between first-hand and second-hand data
- construct and interpret double bar graphs to draw conclusions

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Grade: 6

Number

- *demonstrate an understanding of place value for numbers*
 - *greater than one million*
 - *less than one thousandth*
- *solve problems involving large numbers, using technology*
- *demonstrate an understanding of factors and multiples by*
 - *determining multiples and factors of numbers less than 100*
 - *identifying prime and composite numbers*
 - *solving problems involving multiples*
- *relate improper fractions to mixed numbers*
- *demonstrate an understanding of ratio, concretely, pictorially, and symbolically*
- *demonstrate an understanding of percent (limited to whole numbers) concretely, pictorially, and symbolically*
- *demonstrate an understanding of integers, concretely, pictorially, and symbolically*
- *demonstrate an understanding of multiplication and division of decimals (1-digit whole number multipliers and 1-digit natural number divisors)*
- *explain and apply the order of operations, excluding exponents, with and without technology (limited to whole numbers)*

Patterns and Relations

Patterns

- *demonstrate an understanding of the relationships within tables of values to solve problems*
- *represent and describe patterns and relationships using graphs and tables*

Variables and Equations

- *represent generalizations arising from number relationships using equations with letter variables*
- *demonstrate and explain the meaning of preservation of equality concretely, pictorially, and symbolically*

Shape and Space

3-D Objects and 2-D Shapes

- *construct and compare triangles, including*
 - *scalene*
 - *isosceles*
 - *equilateral*
 - *right*
 - *obtuse*
 - *acute*
in different orientations
- *describe and compare the sides and angles of regular and irregular polygons*

Measurement

- *demonstrate an understanding of angles by*
 - *identifying examples of angles in the environment*
 - *classifying angles according to their measure*
 - *estimating the measure of angles using 45°, 90°, and 180° as reference angles*
 - *determining angle measures in degrees*
 - *drawing and labelling angles when the measure is specified*
- *demonstrate that the sum of interior angles is:*
 - *180° in a triangle*
 - *360° in a quadrilateral*

- *develop and apply a formula for determining the*
 - *perimeter of polygons*
 - *area of rectangles*
 - *volume of right rectangular prisms*

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Transformations

- *perform a combination of translation(s), rotation(s) and/or reflection(s) on a single 2-D shape, with and without technology, and draw and describe the image*
- *perform a combination of successive transformations of 2-D shapes to create a design, and identify and describe the transformations*
- *identify and plot points in the first quadrant of a Cartesian plane using whole number ordered pairs*
- *perform and describe single transformations of a 2-D shape in the first quadrant of a Cartesian plane (limited to whole number vertices)*

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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Statistics and Probability

Chance and Uncertainty

- *demonstrate an understanding of probability by*
 - *identifying all possible outcomes of a probability experiment*
 - *differentiating between experimental and theoretical probability*
 - *determining the theoretical probability of outcomes in a probability experiment*
 - *determining the experimental probability of outcomes in a probability experiment*
 - *comparing experimental results with the theoretical probability for an experiment*

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Data Analysis

- *create, label, and interpret line graphs to draw conclusions*
- *select, justify, and use appropriate methods of collecting data, including*
 - *questionnaires*
 - *experiments*
 - *databases*
 - *electronic media*
- *graph collected data and analyze the graph to solve problems*

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Grade: 7

Number

• determine and explain why a number is divisible by 2, 3, 4, 5, 6, 8, 9, or 10 and why a number cannot be divided by 0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• demonstrate an understanding of the addition, subtraction, multiplication, and division of decimals (for more than 1-digit divisors or 2-digit multipliers, the use of technology is expected) to solve problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• solve problems involving percents from 1% to 100%	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• demonstrate an understanding of the relationship between positive repeating decimals and positive fractions, and positive terminating decimals and positive fractions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• demonstrate an understanding of adding and subtracting positive fractions and mixed numbers, with like and unlike denominators, concretely, pictorially, and symbolically (limited to positive sums and differences)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• demonstrate an understanding of addition and subtraction of integers, concretely, pictorially, and symbolically	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• compare and order positive fractions, positive decimals (to thousandths) and whole numbers by using - benchmarks - place value - equivalent fractions and/or decimals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Patterns and Relations

Patterns

• demonstrate an understanding of oral and written patterns and their equivalent linear relations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• create a table of values from a linear relation, graph the table of values, and analyze the graph to draw conclusions and solve problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Variables and Equations

• demonstrate an understanding of preservation of equality by - modelling preservation of equality concretely, pictorially, and symbolically - applying preservation of equality to solve equations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• explain the difference between an expression and an equation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• evaluate an expression given the value of the variable(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• model and solve problems that can be represented by one-step linear equations of the form $x + a = b$, concretely, pictorially, and symbolically, where a and b are integers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• model and solve problems that can be represented by linear equations of the form - $ax + b = c$ - $ax = b$ - $x/a = b, a \neq 0$ concretely, pictorially, and symbolically, where a, b, c are whole numbers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Shape and Space

3-D Objects and 2-D Shapes

• perform geometric constructions, including - perpendicular line segments - parallel line segments - perpendicular bisectors - angle bisectors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Measurement

• demonstrate an understanding of circles by - describing the relationships among radius, diameter, and circumference of circles - relating circumference to pi determining the sum of the central angles - constructing circles with a given radius or diameter - solving problems involving the radii, diameters, and circumferences of circles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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- *develop and apply a formula for determining the area of*
 - *triangles*
 - *parallelograms*
 - *circles*

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Transformations

- *identify and plot points in the four quadrants of a Cartesian plane using integral ordered pairs*
- *perform and describe transformations (translations, rotations or reflections) of a 2-D shape in all four quadrants of a Cartesian plane (limited to integral number vertices)*

Statistics and Probability

Chance and Uncertainty

- *express probabilities as ratios, fractions, and percents*
- *identify the sample space (where the combined sample space has 36 or fewer elements) for a probability experiment involving two independent events*
- *conduct a probability experiment to compare the theoretical probability (determined using a tree diagram, table or another graphic organizer) and experimental probability of two independent events*

Data Analysis

- *demonstrate an understanding of central tendency and range by*
 - *determining the measures of central tendency (mean, median, mode) and range*
 - *determining the most appropriate measures of central tendency to report findings*
- *determine the effect on the mean, median, and mode when an outlier is included in a data set*
- *construct, label, and interpret circle graphs to solve problems*
