

KINDERGARTEN Grade-Level Expectations

K-Algebraic Reasoning: Patterns and Functions

1. Sort and classify objects by attributes including size, shape, color, texture, orientation, position and use, and explain the reason for each sort.
2. Describe and make comparisons of qualitative and quantitative changes of a given pattern using terms such as warmer, softer, more, one more, less, one less, bigger, smaller, longer and shorter.
3. Recognize, reproduce, extend and create repeating patterns using movement, sounds, color, shapes, numbers and textures.
4. Identify and extend visual, auditory and physical patterns to make predictions.

K-Numerical and Proportional Reasoning

(Italics indicate links not evident in 2005 framework)

1. *Represent quantities of up to 30 objects in a set.*
2. *Compare sets of up to 30 objects and use the terms more, less or the same to compare the two sets and identify a set with one more or one less than a given set.*
3. Order sets of up to 30 objects from least to greatest.
4. Identify the ordinal position of objects: first, second, third, fourth, fifth and last.
5. Use a variety of models and familiar object to compare two parts of a whole and describe the parts as being closer to a whole or closer to very little.
6. Use a variety of models and familiar objects to:
 - Identify one whole and one half of an object.
 - Recognize a half and put two halves of an object together to make a whole.
 - Form a whole from two smaller sets that have equal amounts.
7. Count by rote to at least 30.
8. Count and group up to 30 objects by tens.
9. Identify the numerals 1-30 and match each numeral to an appropriate set of objects.
10. *Act out and solve addition and subtraction story problems that reflect real-world experiences and contextual problems using sets of up to 10 objects and describe the strategy or reasoning used to solve a problem. For example: Put two crayons together with four crayons; then count to determine the number of crayons needed for all students at a table.*
11. *Write the number sentences that correspond to story problems using addition, subtraction and equals symbols (+, -, =) correctly.*
12. Estimate the amount of objects in a set using 10 as a benchmark and then count to determine if the amount is more or less than 10.
13. Identify and name pennies and dimes.
14. Count pennies and trade pennies for objects.

Mathematics Grade Level Expectations

K-Geometry and Measurement

1. Identify and describe familiar shapes (triangles, squares, rectangles and circles) and solids (cubes, spheres, cylinders, cones and prisms) in the environment.
2. Compare and sort familiar shapes and solids in the environment and contextual situations.
3. Construct small sets of shapes and solids using a variety of materials.
4. Describe location, direction, and position of objects or parts of objects, using terms such as under/over, inside/outside, next to/near, top/bottom, in front of, first and last.
5. *Complete simple shape and jigsaw puzzles and explain the reasoning used to complete the puzzle and solve the problem.*
6. Recognize events that reoccur (at specific times of the day or week).
7. Locate yesterday, today, and tomorrow on a calendar to sequence events and use terms such as before and after to compare events.
8. Use nonstandard units, physical referents (such as a finger) or everyday objects such as links, Unifix cubes or blocks to compare, estimate and order measures of length, area, capacity, weight and temperature and describe the reasoning and strategies used.
9. Describe and order small sets of familiar objects by size, length or area using comparative language such as more, bigger, longer, shorter and taller.
10. Use a balance scale to compare the weight of two objects and identify which is heavier.

K-Working with Data: Probability and Statistics

1. Pose questions about objects and events in the environment that can be used to guide the collection of data.
2. Collect data, record and the results using real graphs and picture graphs.
3. Arrange information in a systematic way using counting, sorting, lists and graphic organizers.
4. Describe data using the terms more, less and the same.
5. Identify and extend patterns from organized data to make predictions. For example: More boys than girls in our class watch television every day. We predict that the same will be true for another kindergarten class.
6. Describe the likelihood of the future occurrence of events based on patterns and personal experiences using terms such as likely, unlikely or certainly.
7. Engage in simple probability activities and discuss the results.

GRADE 1 Grade-Level Expectations

Gr. 1-Algebraic Reasoning: Patterns and Functions

1. Sort, classify and order numbers and objects by one and two attributes including size, shape, color, texture, orientation, position and use, and explain the reason or rule used.
2. Recognize, extend and create one- attribute and two-attribute patterns, e.g., size and shape, counting, e.g., by 5 or 10, and number patterns, e.g., $n + 2$. Describe the pattern and the rule used to make it.
3. Replicate a pattern using a different representation, e.g., from color to shape.
4. Develop and test generalizations based on observations of patterns and relationships.
5. Model real-life situations that represent the result of counting, combining and separation of sets of objects (addition and subtraction of whole numbers) with objects, pictures, symbols and open sentences.
6. Demonstrate understanding of equivalence or balance with objects, models, diagrams, operations or numbers, e.g., using a balance scale, or an arm balance showing the same amount on both sides.

Gr. 1-Numerical and Proportional Reasoning

1. Represent and identify whole numbers up to 100 as groups of tens and ones using models and number lines.
2. Compare and order quantities of up to 100 objects, including naming a number that is one or ten more or less than a given number
3. Describe and estimate quantities using benchmark amounts such as zero, 10 and 100
4. Identify ordinal numbers up to 10th with an ordered set of objects, e.g., point to the fifth crayon lined up on the table.
5. Use a variety of models and familiar objects to compare two parts of a whole object and describe the parts as being closer to very little, one half or one whole.
6. Use a variety of models and familiar objects to:
 - Make a whole of equal size parts of familiar objects.
 - Show and identify equal size pieces of a whole as halves, thirds or fourths
 - Identify pieces of a whole as not being halves, thirds or fourths.
7. Determine half of a whole set of up to 20 objects.
8. Describe ratios in terms of the patterns that develop in the relationships between quantities, e.g., if one cat has four legs, then two cats have eight legs. Count by rote to at least 100.

Mathematics Grade Level Expectations

- Count on from a given amount, orally and with models, and count back from 10.
- Count and group at least 100 objects by tens.
- Identify, read and write numerals to 100.
- Create problems and write one- and two-digit number sentences that reflect contextual situations and real world experiences. Solve the problems using a variety of methods including models, pictures, pencil and paper, estimation and mental computation, and describe the reasoning or strategies used. For example: Tell a story or draw a picture for a problem that can be solved using the number sentence $10 + 6 = 16$.
- Solve contextual problems using all addition sums to 18 and subtraction differences from 10 with flexibility and fluency.
- Estimate the amount of objects in a set using zero, 10 and 100 as benchmarks and then determine if the estimate was reasonable.
- Identify and name pennies, nickels, dimes and quarters.
- Identify pennies, nickels, dimes and quarters.
- Determine and compare sets of pennies and dimes valued up to \$1.00; trade sets of pennies for dimes and vice versa. For example: José has three dimes and eight pennies. Andrea has two dimes and 17 pennies. If they do not have the same amount of money, who has more or less? How much more or less?

Gr. 1 Geometry and Measurement

- Identify and describe familiar two- dimensional shapes and three-dimensional solids in the environment and contextual situations.
- Copy two- and three-dimensional designs from visual memory.
- Compare and sort familiar shapes and solids and designs found in the environment and contextual situations
- Construct shapes and solids using a variety of materials and create two-dimensional shapes and designs with a line of symmetry.
- Describe location, direction and position of objects or parts of objects, using terms such as left, right and opposite.
- Know the days of the week in order and locate dates, days, weeks and months on a calendar. Use the information to solve problems involving the planning and sequencing of events.*
- Solve problems involving telling time to the nearest hour using digital and analog clocks. Estimate and compare the length of time needed to complete a task using comparative language such as longer, shorter, more or less.

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8. Use nonstandard units or physical referents to estimate answers to measurement problems involving length, area, weight, temperature, volume and capacity, and then justify the reasonableness of the answers. Suggested materials include Unifix or locking cubes, paperclips, Popsicle sticks, square tiles, water and sand.
9. Use nonstandard units, references or direct comparison of objects (appearance), to order objects by length, area and capacity.
10. Explore using standard units of measure (inch and centimeter) to communicate measurement in a universal manner.

Gr. 1-Working with Data: Probability and Statistics

1. Pose questions that can be used to guide data collection, organization and representation.
2. Collect and systematically organize and represent the data that answers the questions using lists, charts and tables, tallies, glyphs (coded pictures), picture graphs and bar graphs.
3. Describe data that have been organized and make comparisons using terms such as largest, smallest, most often or least often.
4. Describe and explain the likelihood of the occurrence of various events in the student's world using terms such as possible, impossible, likely, unlikely or certain.
5. Engage in simple probability activities and games including the use of number cubes and spinners; record, graph and describe the results of the activities and games.

GRADE 2 - Grade-Level Expectations

Gr. 2 - Algebraic Reasoning: Patterns and Functions

1. Sort, classify and order objects and numbers in more than one way and by one and two attributes and describe the rule used. Use attributes such as size, shape, color, texture, orientation, position and use; and characteristics such as symmetry and congruence.
2. Recognize, extend, and create repeating, growing, number; e.g., skip counting, odd/even, counting on by 10; and one and two attribute patterns. Describe the pattern and the rule used to make it.
3. *Replicate the pattern using a different representation, e.g., letters to numbers.*
4. Use patterns and the rules that describe the patterns to identify a missing object, objects with common or different attributes, and the complement of a set of objects.
5. Analyze and describe observable changes in patterns using language that describes number characteristics and qualitative characteristics such as attributes, orientation and position.
6. Model real-life situations that represent the addition and subtraction of whole numbers with objects, pictures, symbols and open sentences.
7. Demonstrate an understanding of equivalence or balance of sets using objects, models, diagrams, numbers whole number relationships (operations) and the equals sign, e.g., $2 + 3 = 5$ is the same as $5 = 2 + 3$ and the same as $4 + 1 = 5$.

Gr. 2 - Numerical and Proportional Reasoning

1. Locate, label, compare, and order whole numbers up to 1,000 using pictures, place value models, number lines, and benchmarks of 0, 10 and 100, including naming the number that is 10 or 100 more or less than a given number.
2. Represent whole numbers up to 1,000 by modeling and writing numbers in expanded forms, e.g., $37 = (3 \times 10) + (7 \times 1)$, and regrouped forms, e.g., $(2 \times 10) + (17 \times 1) = 37$, and use the forms to support computational strategies.
3. Represent multiplication and division (with factors of 1, 2, 5 and 10) using a variety of models and strategies such as arrays, pictures, skip counting, extending number patterns, and repeated addition and subtraction; describe the connection between multiplication and division.
4. Use a variety of models and familiar objects to compare, order and estimate parts of a whole using the unit fractions $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$.
5. Use a variety of models to represent and describe parts of groups as unit fractions $\frac{1}{2}$, through $\frac{1}{10}$.
6. Estimate and determine $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$ of a small group of up to 20 objects, such as finding $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$ of 12 cookies.

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7. Describe ratios in terms of the linear patterns that develop from the relationships between quantities, e.g., In a pattern of green, green, red blocks there are always two green blocks for one red block.
8. *Count whole numbers to 1,000 and beyond.*
9. *Count on by tens from a given amount, e.g., 17, 27, 37, etc.*
10. *Read and write numerals up to 1,000.*
11. Skip count by twos, fives, tens and hundreds to 1,000 and beyond.
12. Determine whether a set of objects has an odd or even number of items by pairing objects and creating arrays.
13. Create word problems and write and solve two- and three-digit number sentences that reflect contextual situations and real-world experiences involving addition and subtraction. Construct and solve open sentences, e.g., $\square + 5 = 11$. Solve the problems using a variety of methods including models, pictures, pencil and paper, estimation and mental computation, and describe the reasoning or strategies used.
14. Solve problems using addition and subtraction facts involving sums and differences to 20 with flexibility and fluency
15. Add two-digit numbers with and without regrouping. Subtract two-digit numbers without regrouping and with regrouping using models.
16. Determine when an estimate for a problem involving two- and three-digit numbers is appropriate or when an exact answer is needed.
17. Use a variety of strategies to estimate solutions and to determine if a solution to a computation or word problem reflecting real-world experiences involving addition and subtraction of two- and three-digit whole numbers is reasonable.
18. *Determine and compare the value of pennies, nickels, dimes, quarters and half dollars.*
19. Count, compare and trade sets of pennies, dimes and dollars up to \$10.00

Gr. 2 - Geometry and Measurement

1. Identify, describe and draw polygons (triangles, quadrilaterals including trapezoids and rhombuses, pentagons and hexagons), solids, and other familiar two- and three- dimensional objects in the environment.
2. Compare and sort familiar polygons, solids, and other two- and three- dimensional objects in the environment.
3. Construct polygons, solids and other two- and three-dimensional objects using a variety of materials and create two-dimensional shapes and designs with one or more lines of reflective symmetry (lines that divide the shape or design into two congruent parts).

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4. Investigate and predict the result of putting together and taking apart two- and three-dimensional shapes in the environment, e.g. use objects to find other shapes that can be made from three triangles or a rectangle and a triangle.
5. *Know the months of the year in order and locate dates, days, weeks and months on a calendar. Use the information to write and solve problems involving calendars.*
6. *Solve problems involving telling time, including estimating and measuring the length of time needed to complete a task, to the half-hour using analog and digital clocks.*
7. Use measurement tools such as thermometers to measure temperature, basic rulers to measure length to the nearest half-inch or centimeter, and balance scales to measure weight /mass in grams.
8. Use nonstandard referents and standard benchmarks to estimate and measure the following:
 - length(to the nearest inch, half-inch, foot, yard, centimeter or meter);
 - area (in square inches);
 - capacity (in liters and cups);
 - weight (in grams);
 - temperature; and
 - volume (using water or sand).
9. Describe the strategy used to determine an estimate and determine if the estimate is reasonable.
10. *Describe the relationships between and centimeter and meter among inch, foot and yard.*

Gr. 2 - Working with Data: Probability and Statistics

1. Pose questions that can be used to guide data collection, organization and representation.
2. Collect and systematically organize and represent the data that answer the questions using lists, charts and tables, tallies, glyphs (coded pictures), picture graphs and bar graphs.
3. Describe data that have been organized and make comparisons using terms such as largest, smallest, most often or least often.
4. Determine patterns and make predictions from data displayed in tables and graphs.
5. Describe and explain the likelihood of the occurrence of various events. State possibilities, make predictions and test the predictions in practical situations.
6. Conduct simple probability investigations involving activities of chance and games with number cubes and spinners; record, graph and describe the results of the investigations.

GRADE 3 - Grade-Level Expectations

Gr. 3 - Algebraic Reasoning: Patterns and Functions

1. Sort, classify and order a group of objects and numbers in more than one way and explain the reason or describe the rule used.
2. Create and construct numerical and spatial patterns and sequences that repeat and grow.
3. Analyze, describe and extend repeating and growing patterns and sequences, including those found in real-world contexts, by constructing and using tables, graphs and charts.
4. Describe mathematical relationships and situations involving computation of whole numbers (addition, subtraction, multiplication and division) using words, symbols, open number sentences and equations, e.g., $56 + \Delta = 100$ and $3 \times 5 = 9 + 6$.
5. Demonstrate understanding of equivalence as a balanced relationship of quantities by using the equals sign to relate two quantities that are equivalent and the inequality symbols, $<$ and $>$, to relate two quantities that are not equivalent. ($23 \times 5 > 23 \times 2$)
6. Solve problems and demonstrate an understanding of equivalence using the equals sign in number sentences that reflect the commutative and associative properties of addition and multiplication of whole numbers, e.g. $3 \times 5 = 5 \times 3$.

Gr. 3 - Numerical and Proportional Reasoning

1. Locate, label, compare and order whole numbers up to 10,000 using place value models, number lines and number patterns (including multiples of 100 and 1,000).
2. Identify the number that is 100 and 1,000 more or less than a given number up to 10,000 using place value models, pictures and number lines.
3. Round three- and four-digit numbers to the nearest hundred and thousand using place value models, number lines and number patterns.
4. Represent three- and four-digit numbers up to 10,000 in expanded forms, e.g., $5,472 = (5 \times 1,000) + (4 \times 100) + (7 \times 10) + (2 \times 1)$, and regrouped forms, e.g., $5,472 = (4 \times 1,000) + (14 \times 100) + (6 \times 10) + (12 \times 1)$. Use the forms to support computational strategies.
5. Represent fractions with like and unlike denominators of 2, 3, 4, 5, 6 and 8 using a variety of materials; label the fractional parts using words and fraction symbols.
6. Locate, label and estimate fractions with like and unlike denominators of 2, 3, 4, 5, 6 and 8 by constructing and using models, pictures and number lines.
7. Determine equivalence, compare and order fractions through the construction and use of models, pictures and number lines with like and unlike denominators of 2, 3, 4, 5, 6 and 8, including identifying a whole object or a whole set of objects as a fraction with the same numerator and denominator.

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8. Use models, number patterns and counting and grouping of objects, to find equal parts of a set of objects and identify amounts such as $\frac{2}{3}$ of 12 is 8.
9. Describe quantitative relationships using ratios and identify patterns with equivalent ratios such as 3 out of 6 crayons are red or 4 out of 8 crayons are red and are the same as 1 out of 2 crayons is red.
10. Recall the multiplication and division facts for 1, 2, 3, 4, 5 and 10.
11. Write multiplication and division story problems to match a given multiplication or division number sentence and vice versa; solve the problems and justify the solution.
12. Solve problems involving addition and subtraction of two- and three-digit whole numbers and money amounts up to \$100.00 with and without regrouping, using a variety of strategies, including models.
13. Create and solve addition and subtraction word problems by using place value patterns and algebraic properties (commutative and associative for addition).
14. Solve problems involving the multiplication and division of two- and three-digit numbers by one digit (2, 3, 4, 5 or 10) with models, arrays and pictures of sets.
15. Determine when an estimate for a problem involving two- and three-digit numbers is appropriate or when an exact answer is needed.
16. Use a variety of estimation strategies to determine and justify the reasonableness of an answer to a computation or word problem involving addition and subtraction of two- and three-digit whole numbers and money amounts up to \$100.00.
17. Determine when a strategy will result in an overestimate or an underestimate in problems involving two- and three-digit numbers.
18. Determine and compare the value of sets of coins and write the values using decimal notation, e.g., two quarters = 50 cents or \$0.50 (50 of 100 cents in a dollar) and is less than two quarters, two dimes and a nickel or \$0.75.
19. Determine, compare and write the value of money amounts up to \$100.00 and identify equivalent ways to represent a given amount of money, including combinations of pennies, nickels, dimes, quarters and half dollars, e.g., \$0.25 can be five nickels, two dimes and one nickel or one quarter.

Gr. 3 - Geometry and Measurement

1. Identify, describe, construct and draw two- dimensional shapes such as quadrilaterals (including parallelograms), pentagons and hexagons.
2. Identify, describe, construct and represent three-dimensional figures such as cubes, spheres, cylinders, cones, pyramids, prisms.
3. Compare and classify polygons and solids and determine congruence by using attributes such as the number and length of sides, faces and edges, and the number and kinds of angles (acute, right and obtuse).

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4. *Create two-dimensional figures with one or more lines of reflective symmetry.*
5. Draw and interpret simple maps using shapes or pictures on a coordinate grid.
6. Investigate ways to tile or tessellate a shape or region using a variety of polygons.
7. Use calendar and clocks to plan and sequence events and identify events and times as occurring in the a.m. and p.m.
8. Solve problems involving telling time to the nearest quarter hour, five minutes and minute using analog and digital clocks.
9. *Develop an understanding and describe the relationships between appropriate units of measure through concrete experiences (ounces and pounds; gram and kilograms; inches, feet and yards; meters and kilometers; cups, pints and quarts; and milliliters and liters).*
10. Estimate and measure using nonstandard units and appropriate customary and metric tools and units:
 - length and perimeter to the nearest $\frac{1}{4}$ inch or $\frac{1}{2}$ centimeter;
 - area in square inches or square centimeters;
 - capacity in cups, pints, quarts, milliliters or liters,
 - weight in ounces, pounds and grams (mass is weighed in grams);
 - temperature to the nearest degree; and
 - volume using inch cubes and centimeter cubes.
11. Describe and use estimation strategies that can identify a reasonable answer to a measurement problem when an estimate is appropriate.

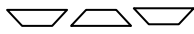
Gr. 3 - Working with Data: Probability and Statistics

1. Pose questions that can be used to guide data collection, organization, and representation.
2. Collect and organize the data that answer the questions using diagrams, charts, tables, lists, pictographs, bar graphs and line plots
3. Analyze data that have been collected and organized, to draw and defend conclusions based on the data.
4. Describe an event or element as typical based upon the range, median and mode of a set of data.
5. Experiment to test predictions and determine probability in practical situations such as investigating the fairness of games using a variety of spinners and dice.
6. Describe the probability of an outcome as ___ out of ___, e.g., 3 out of 5.
7. Investigate combinations using models.

GRADE 4 - Grade-Level Expectations

Gr. 4 - Algebraic Reasoning: Patterns and Functions

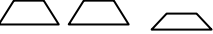
1. Extend and compare numerical and geometric sequences and classify patterns as growing or repeating, e.g. 2, 4, 8, , , grows and the following sequence repeats:



2. Develop and test generalizations based on observable patterns and relationships and describe the rules for number patterns using equations, e.g., in this sequence 1, 6, 16, 36 ..., to get the next number the current number can be doubled and four added to the product.

3. Describe mathematical relationships and situations, involving ratios and computation of whole numbers, in all four operations with using symbols, number sentences and equations.

If  = $\Delta\Delta\Delta$

Then  = _____

4. Represent possible values by using symbols, e.g., variables, to represent quantities in expressions and number sentences. Use number sentences (equations) to model and solve word problems.
5. Solve problems and demonstrate an understanding of equivalence in mathematical situations that reflect the commutative and associative properties of addition and multiplication of whole numbers and the distributive property.

Gr. 4 - Numerical and Proportional Reasoning

1. *Locate, label, compare and order numbers up to 100,000 using place value models, number lines and number patterns (including multiples of 1,000 and 10,000).*
2. Extend number patterns to determine 1,000 and 10,000 more and less than a given number in practical situations.
3. Round whole numbers up to 100,000 using number patterns, number lines, diagrams and place value models.
4. Write and describe equivalent representations of four- and five-digit whole numbers up to 100,000 and beyond, in expanded and regrouped forms. Use the forms to support computational strategies.
5. Relate multiplication and division to number patterns and models of groups and rectangular arrays.
6. Identify and define prime and composite numbers through the use of models including rectangular arrays, place value models and pictures.

Mathematics Grade Level Expectations

7. Construct and use number lines, pictures and models, including rulers, to determine and identify equivalent ratios and fractions.
8. Locate, label and estimate (round) fractions with like and unlike denominators of 2, 3, 4, 5, 6, 8 and 10 by constructing and using models, pictures and number lines.
9. Construct and use models, pictures and number lines, including rulers to compare and order fractional parts of a whole and mixed numbers with like and unlike denominators of 2, 3, 4, 5, 6 and 8 and 10.
10. Construct and use models, pictures and number lines, including rulers, to identify wholes and parts of a whole (including a part of a group or groups) as simple fractions and mixed numbers.
11. Use models to represent tenths and hundredths and record the representations using equivalent ratio, fraction and decimal notation ($\frac{1}{10}$, 0.1)
12. Express a ratio or division problem as a fraction and describe the relationship between the divisor and the remainder written as a fraction. For example: When determining the number of groups of 3 in 14, we say $14 \div 3 = 4$ with a remainder of 2 or $4\frac{2}{3}$.
13. Solve practical problems involving simple ratios and proportions, e.g., determining distance on maps, by using models, pictures and number patterns
14. *Develop and use a variety of computation strategies including place value concepts, number lines and the commutative and associative properties to add and subtract three- and four-digit numbers and money amounts up to \$1,000.00.*
15. Solve contextual problems involving addition and subtraction of whole numbers using a variety of methods, including writing appropriate number sentences (equations) and explaining the strategies used.
16. Create story problems to match a given number sentence (equation).
17. Recall the multiplication and division facts 1 through 10.
18. *Write multiplication and division story problems involving basic facts and two- and three-digit by one-digit numbers to match a given number sentence and vice versa; solve the problems using strategies that include models and arrays and justify the solutions.*
19. *Determine and explain in writing when an estimate is appropriate and whether a particular estimation strategy is reasonable or will result in an overestimate or underestimate involving computation with three- and four- digit numbers and money amounts up to \$1,000.*
20. Use models and pictures to add and subtract fractions with like and unlike denominators of 2, 3, 4, 5, 6, 8 and 10 and match number sentences or equations to the problems.
21. Identify or write number sentences to solve simple problems involving fractions with like denominators, decimals (tenths) and mixed numbers.
22. Write contextual problems involving the addition and subtraction of fractions with like denominators, decimals (tenths) and mixed numbers; solve the problems and justify the solutions.
23. Estimate a reasonable answer to simple problems involving fractions, mixed numbers and decimals (tenths).

Mathematics Grade Level Expectations

24. Write and solve multi-step contextual problems, including problems with extraneous information and explain orally and in writing how the answers were determined.

Gr. 4 - Geometry and Measurement

1. Describe and represent polygons, solids, and other familiar two- and three-dimensional objects.
2. Compare and classify polygons based on relationships such as parallel or perpendicular lines, symmetry and congruence.
3. Make and test conjectures about polygons using geometric relationships such as symmetry and congruence.
4. Draw and interpret simple maps with ordered pairs of numbers and/or letters in quadrant one of an x, y coordinate system and find possible paths between two points.
5. Analyze geometric reflections (flips), rotations (turns), and translations (slides) of plane figures and describe the relationship to the original figure.
6. Use calendars and clocks to solve problems and schedule events involving elapsed time.
7. *Write and solve problems involving the conversion of simple measures of time, e.g., minutes to hours, hours to days and days to weeks and months.*
8. Use customary and metric tools and units and non-standard units to estimate, measure and solve problems involving length and perimeter to the nearest quarter-inch or half-centimeter, area, capacity, weight, temperature and volume.
9. Use estimation strategies to predict reasonable answers to measurement problems and explain the reasoning used orally and in writing.

Gr. 4 - Working with Data: Probability and Statistics

1. Pose questions and develop a plan to collect data using observations, surveys and experiments to answer the questions.
2. Collect, organize and represent the data that answer the questions using simple circle graphs and broken line graphs.
3. Discuss, make predictions and write about patterns and trends in categorical and numerical data that have been represented in a variety of ways.
4. Determine the range, median, mode and mean of a set of data and describe characteristics of the data set as typical or average based on those determinations.
5. Conduct probability experiments and express the probability based on possible outcomes, e.g., 8 out of 10 tiles chosen were red.
6. Determine and describe possible combinations, where order does not matter, e.g., when there is a choice of vanilla (V), chocolate (C) or strawberry (S) ice cream for a two-scoop cone and two different scoops are desired, the possible combinations are CV, CS, or VS.

Mathematics Grade Level Expectations