

Objectives

Fourth Grade

Default Objectives

Generating Patterns

Description:
Examine visual and numeric patterns, and solve problems by determining inputs, outputs, or functional relationships. Use tables to organize information.

Direct Standards:

4.5.A: Represent multi-step problems involving the four operations with whole numbers using strip diagrams and equations with a letter standing for the unknown quantity.

| Game | Description |
|--------------------------------|--|
| Pattern Wheel | Identify and extend patterns of different geometric shapes. |
| Pattern Directions | Extend repeating patterns in various directions. Here the objects all have the same shape; the patterns are based on color, orientation, and rotation. |
| Robot Patterns | Identify and extend geometric patterns of colored squares on a grid. |
| Helicopter | Identify the number of stacks the helicopter should drop in order to fill the hole in the ground. Teaches proportional relationships. |
| Helicopter Table | Fill in the empty boxes in the table with the correct number of blocks for the given number of helicopters or with the number of helicopters given the number of blocks. |
| Make it Linear | Determine the number of blocks needed to make the sequence linear. |
| Hundreds Pit | Count by 2s, 3s, 4s, 5s, or 10s to fill the pit so Jiji can cross. |
| Multiplication Table Parts | Find locations in the multiplication table that correspond to multiplication facts with a given product. Investigate relationships between nearby rows and columns with puzzles that have multiple products. |
| Multiplication Pattern Strings | Multiply whole numbers using a place value model. |

Place Value

Description:
Identify the place value of digits in numbers up to ten thousand.

Direct Standards:

4.2.B: Represent the value of the digit in whole numbers through 1,000,000,000 and decimals to the hundredths using expanded notation and numerals.

Supporting Standards:

4.2.A: Represent the value of the digit in whole numbers through 1,000,000,000 and decimals to the hundredths using expanded notation and numerals.

| Game | Description |
|--------------------------|---|
| Petals Multiple Choice | Represent ones, tens, hundreds and thousands using words, numerals and visual models. |
| How Many Petals | Write the numeral for how many petals are in a given pile. |
| Petals Place Value | Given a four-digit whole number, identify the number of thousands, hundreds, tens, and ones. |
| Petals Regrouping | Given a model of boxes of flowers (thousands), bouquets (hundreds), flowers (tens), and ones (individual petals), regroup in order to represent the total number of petals as a numeral in standard place value notation. |
| Petals Regrouping Random | Find the total number of petals by counting the boxes (thousands), bouquets (hundreds), flowers (tens), and ones (individual petals) and regrouping using mental arithmetic. |

Using Place Value

Description:
Read and write numbers to one million using expanded notation. Learn how to place commas in whole numbers.

Direct Standards:

4.2.B: Represent the value of the digit in whole numbers through 1,000,000,000 and decimals to the hundredths using expanded notation and numerals.

Supporting Standards:

4.2.A: Represent the value of the digit in whole numbers through 1,000,000,000 and decimals to the hundredths using expanded notation and numerals.

| Game | Description |
|---------------------|--|
| Number Line Journey | Move left and right on the number line to locate the given number. |
| Expanded Form | Provide a number when given its representation in expanded notation. This game also covers place value concepts to the millions place while enforcing the skills of reading and writing whole numbers. |
| Commas | Correctly place commas on large whole numbers and identify the place values of the points where the commas are placed. |
| Place Value Clouds | Identify the place value of a given digit of a whole number up to the millions place. The place values are expressed with the words or symbols for the powers of ten. |

Rounding Whole Numbers

Description:
Round up to six-digit numbers to any place. Students utilize the number line and develop strategies based on place value to round whole numbers.

Direct Standards:

4.2.D: Round whole numbers to a given place value through the hundred thousands place.

| Game | Description |
|--------------------------|---|
| Round Off Highest Place | Round whole numbers to the nearest ten, hundred, or thousand. |
| Round to Multiple Places | Round whole numbers to the nearest ten, hundred, or thousand. |
| Number Funnels | Round whole numbers to the nearest given place value. The game also teaches place value concepts up to the hundred thousands place. |
| Round Off 0s and 9s | Round whole numbers to the nearest ten, hundred, or thousand. |

Comparing Whole Numbers

Description:
Compare up to six-digit numbers using strategies based on place value and the symbols <, >, and =.

Direct Standards:

4.2.C: Compare and order whole numbers to 1,000,000,000 and represent comparisons using symbols.

| Game | Description |
|----------------------------|--|
| Large Number Comparison | Order whole numbers (up to seven digits) using the symbols for less than, greater than, and equal to. |
| Least Most LI | Identify the least or greatest element in a set of whole numbers (up to six digits) and learn the meaning of the words "least" and "greatest". |
| Large Number Comparison LI | Order whole numbers (up to seven digits) using the phrases "less than", "greater than", and "equal to". |
| Order Fill | Choose the numbers in order from least to greatest in order to fill the pit so Jiji can cross. |

Mixed Numbers

Description:
Represent fractions and mixed numbers using multiple visual models as well as numerical notation.

Direct Standards:

4.3.G: Represent fractions and decimals to the tenths or hundredths as distances from zero on a number line.

Supporting Standards:

4.3.A: Represent a fraction $\frac{a}{b}$ as a sum of fractions $\frac{1}{b}$, where a and b are whole numbers and $b > 0$, including when $a > b$.

| Game | Description |
|---------------------------------------|---|
| Match Fraction | Represent a given fraction using a visual model by first dividing a whole into equal parts and then shading the correct number of parts. |
| Crank Pies | Represent given fractions, improper fractions, and mixed numbers as circular diagrams displaying equal parts of a whole. This game also teaches the idea of equivalent fractions. |
| Alien Bridge | Use pies divided into fourths to create a fraction diagram to match the given one. |
| Match Fraction LI | Represent a given fraction using a visual model by first dividing a whole into equal parts and then shading the correct number of parts. |
| Jiji Cycle Select Wheel | Relate a collection of fractions represented with circular diagrams to a single point on the number line. |
| Scale Fraction | Plot the combined length of a collection of rectangles on the number line. |
| Estimate Fractions on the Number Line | Estimate the location fractions on the number line. |

| | |
|-----------------------|---|
| Fraction Trap | Estimate on a number line the location of Fractions |
| Numerator Denominator | Identify the numerator and denominator of a fraction represented as a diagram, symbol, or word using the terms numerator and denominator. |

Fractions - Equivalence and Ordering

Description:
Use models and symbols to find equivalent fractions and compare fractions with either the same numerator or same denominator.

Direct Standards:
4.3.C: Determine if two given fractions are equivalent using a variety of methods. . 4.3.D: compare two fractions with different numerators and different denominators and represent the comparison using symbols. . 4.3.G: Represent fractions and decimals to the tenths or hundredths as distances from zero on a number line.

Supporting Standards:
4.3.A: Represent a fraction $\frac{a}{b}$ as a sum of fractions $\frac{1}{b}$, where a and b are whole numbers and $b > 0$, including when $a > b$.

| Game | Description |
|-----------------------------------|---|
| Ficks | Represent the same length using different partitionings. |
| Common Denominator with Wholes | Use the model to implicitly find the common denominator. |
| Common Denominator with Fractions | Find the common denominator of unit fractions. |
| Equivalent Fractions | Identify equivalent fractions using rectangular diagrams displaying equal parts of a whole. |
| Equivalent Fractions LI | Identify equivalent fractions using rectangular diagrams displaying equal parts of a whole. |
| Fraction Trap | Estimate on a number line the location of fractions. |
| Fraction More or Less | Compare fractions with the same numerator or the same denominator using models. |
| Mixed More or Less | Compare mixed numbers with the same numerator or the same denominator using models. |
| Fraction Order Fill | Help J.J. cross the pit by putting one- and two-place decimals in order from least to greatest. |

Angles and Triangles

Description:
Label angles as acute, right, obtuse, or straight and draw angles using a protractor. Classify triangles based on their properties and find the sum of the angles in a triangle and use that to find the missing angle. Identify lines of symmetry in isosceles triangles.

Direct Standards:
4.6.A: Identify points, lines, line segments, rays, angles, and perpendicular and parallel lines. . 4.6.B: Identify and draw one or more lines of symmetry, if they exist, for a two-dimensional figure. . 4.6.D: Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines or the presence or absence of angles of a specified size. .
4.7.A: Illustrate the measure of an angle as the part of a circle whose center is at the vertex of the angle that is 'cut out' by the rays of the angle. Angle measures are limited to whole numbers. .
4.7.B: Illustrate degrees as the units used to measure an angle, where $\frac{1}{360}$ of any circle is one degree and an angle that 'cuts' $\frac{n}{360}$ out of any circle whose center is at the angle's vertex has a measure of n degrees. Angle measures are limited to whole numbers.

Supporting Standards:
4.6.C: Apply knowledge of right angles to identify acute, right, and obtuse triangles. . 4.7.C: Determine the approximate measures of angles in degrees to the nearest whole number using a protractor. . 4.7.D: Draw an angle with a given measure. .
4.7.E: Determine the measure of an unknown angle formed by two non-overlapping adjacent angles given one or both angle measures.

| Game | Description |
|------------------------------|---|
| Wedge | Identify the objects that can be used to move the barrier. Shapes that are not triangles will block J.J.'s path since they cannot wedge themselves under the barrier. |
| Which Angle? | Identify an angle as acute, obtuse, straight, or right when given its numerical or pictorial representation. |
| Missing Angle with Triangles | Find the magnitude of the missing angle on a triangle or quadrilateral using facts about the sums of their interior angles. This game also introduces the use of a protractor as a tool used to measure an angle. |
| Lines of Symmetry | Identify lines of symmetry in a variety of shapes. |
| Shape Types | Identify the given polygon. |

Applying Area and Perimeter

Description:
Apply formulas for area and perimeter to solve problems with rectangles. Generate different rectangles with given areas and perimeters. Use models to solve problems involving area.

Direct Standards:
4.5.D: Solve problems related to perimeter and area of rectangles where dimensions are whole numbers.

Supporting Standards:
4.5.C: Use models to determine the formulas for the perimeter of a rectangle ($P = w + l + w$ or $P = 2l + 2w$), including the special form for perimeter of a square ($4s$) and the area of a rectangle ($l \times w$).
4.8.C: Solve problems that deal with measurements of length, intervals of time, liquid volumes, mass, and money using addition, subtraction, multiplication, or division as appropriate.

| Game | Description |
|-----------------------------|--|
| Perimeter Select | Calculate the perimeter of a variety of shapes including triangles, squares, trapezoids, parallelograms, rectangles, and rhombuses. |
| Select Area Perimeter | Learn how to calculate the area and perimeter of a rectangle. |
| Area Select | Calculate the area of rectangles using a formula. |
| Area or Perimeter? | Calculate the area of rectangles using a formula. |
| Area Perimeter Select Shape | Construct a rectangle with a given area and/or perimeter. This game deepens the student's knowledge of the concepts of area and perimeter. |
| Area Perimeter with Units | Learn the units for measuring area and perimeter and explore pairs of different rectangles with equivalent perimeters or areas. |
| Complete Box | Use the model to fill the space with unit squares, using both standard and non-standard shapes. Illustrate the additive nature of area. |
| Complete Box Fill | Fill the space with unit squares - both standard and nonstandard shapes. Illustrate the additive nature of area. |

Adding and Subtracting Fractions

Description:
Using multiple models, add and subtract fractions with a common denominator. Models include fractions whose sum is greater than 1 and finding a missing addend.

Direct Standards:
4.3.E: Represent and solve addition and subtraction of fractions with equal denominators using objects and pictorial models that build to the number line and properties of operations.

Supporting Standards:
4.3.F: Evaluate the reasonableness of sums and differences of fractions using benchmark fractions $0, \frac{1}{4}, \frac{1}{2}, \frac{3}{4}$, and 1 , referring to the same whole. . 4.3.G: Represent fractions and decimals to the tenths or hundredths as distances from zero on a number line.

| Game | Description |
|---|---|
| Fraction Robot | Add proper and improper fractions with like denominators using rectangular diagrams displaying equal parts of a whole. |
| Complementary Fraction | Represent a fraction as sums of unit fractions |
| Allen Bridge | Learn the meaning of fraction addition using visual models. |
| J.J. Cycle Select Basket | Relate a collection of fractions represented with circular diagrams to a single point on the number line. |
| Crank Pies | Add and subtract fractions with like denominators using circular diagrams displaying equal parts of a whole. |
| Scale Fraction Addition and Subtraction | Add and subtract fractions and mixed numbers on the number line. The fractions and mixed numbers are presented using visual models. |
| Pie Monster | Use pies divided into fourths to create a fraction diagram to match the given one. |

Adding and Subtracting Fractions LI

Description:
Symbolically add and subtract fractions with the same denominator using visual support. Includes missing addend problems.

Direct Standards:
4.3.E: Represent and solve addition and subtraction of fractions with equal denominators using objects and pictorial models that build to the number line and properties of operations. . 4.3.G: Represent fractions and decimals to the tenths or hundredths as distances from zero on a number line.

Supporting Standards:
4.3.F: Evaluate the reasonableness of sums and differences of fractions using benchmark fractions $0, \frac{1}{4}, \frac{1}{2}, \frac{3}{4}$, and 1 , referring to the same whole.

| Game | Description |
|--|---|
| Allen Bridge LI | Add fractions with the same denominator. In some levels, students fill in the missing addend when given one addend and the sum. |
| Complementary Fraction LI | Represent a fraction as sums of unit fractions. |
| J.J. Cycle Select Basket LI | Relate a collection of fractions to a single point on the number line. |
| Crank Pies Addition and Subtraction LI | Add proper and improper fractions with like denominators. This game extends the visual model of fractions to numeric representations. |
| Allen Bridge Mixed LI | Add mixed numbers with the same denominator. In some levels, students fill in the missing addend when given one addend and the sum. |
| Scale Fraction Addition and Subtraction LI | Add and subtract fractions and mixed numbers with like and unlike denominators on the number line. |
| Pie Monster LI | Represent the given fraction or whole number with circles divided into equal parts. |

Fraction Multiples

Description:
Use models and symbols to multiply a fraction by a whole number.

Direct Standards:
4.3.G: Represent fractions and decimals to the tenths or hundredths as distances from zero on a number line.

Supporting Standards:

4.3.A: Represent a fraction $\frac{a}{b}$ as a sum of fractions $\frac{1}{b}$, where a and b are whole numbers and $b > 0$, including when $a > b$. 4.3.B: Decompose a fraction in more than one way into a sum of fractions with the same denominator using concrete and pictorial models and recording results with symbolic representations.

| Game | Description |
|--|---|
| Alien Bridge | Learn to multiply fractions by a whole number using a visual model. |
| Alien Bridge LI | Learn to multiply fractions by a whole number using a visual model. This game integrates the symbolic notation for recording the multiplication equation displayed in the visual model. |
| Crank Pies Fraction Multiplication | Multiply fractions by whole numbers using visual models. |
| Fraction Multiplication on the Number Line | Multiply fractions and estimate the locations of the products on a number line. |

Lines of Symmetry

Description:

Find lines of symmetry in plane shapes and solve problems involving multiple step reasoning. Create reflections of 2-dimensional shapes across a line of symmetry.

Direct Standards:

4.6.B: Identify and draw one or more lines of symmetry, if they exist, for a two-dimensional figure.

| Game | Description |
|--------------------------------|---|
| Where is the Line of Symmetry? | Identify lines of symmetry in a variety of shapes. |
| Symmetry Grid | Create figures that have bilateral symmetry using a grid to reflect shapes across the symmetry line. |
| Ice Caves | Shoot lasers through blocks of ice along lines of symmetry. Students identify line-symmetric and asymmetric figures. |
| Big Seed | Fill all the holes using colored tiles. A group of tiles of the same color can be unfolded along 8 symmetry axes. The color of tiles can also be changed. |

Exploring Lines and Shapes

Description:

Explore properties of lines, including slope and y -intercept. Identify intersecting lines. Examine attributes of 2D shapes.

Direct Standards:

4.6.A: Identify points, lines, line segments, rays, angles, and perpendicular and parallel lines.

| Game | Description |
|--------------------------|---|
| Line Balloons | Construct a line that pops a linear arrangement of balloons. |
| Line Capture | Fit a line to a set of points in the coordinate plane. In later levels, place a point in the plane so that it will be on the line through the given points. |
| Do the Lines Intersect? | Identify parallel, perpendicular, and intersecting lines within a given set of lines. |
| Dot Shapes | Construct quadrilaterals and other shapes by connecting vertices. |
| Pick Geometric Shapes 2D | Match the name of a two-dimensional shape with the number of vertices or edges it has. |
| Shape Names | Identify the given polygon. |

Parallel Lines and Parallelograms

Description:

Identify parallel and perpendicular lines. Examine properties of parallelograms compared to other quadrilaterals.

Direct Standards:

4.6.A: Identify points, lines, line segments, rays, angles, and perpendicular and parallel lines. 4.6.D: Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines or the presence or absence of angles of a specified size.

| Game | Description |
|---|---|
| Perpendicular Lines | Identify parallel, perpendicular, and intersecting lines within a given set of lines. |
| Bricks | Arrange the shapes to create the composite shape shown. |
| Parallel Lines | Identify parallel, perpendicular, and intersecting lines within a given set of lines. |
| Quadrilateral Types with Parallelograms | Identify the given polygon. |

Advanced Shapes

Description:

Find lines of symmetry in regular polygons and solve problems involving multiple step reasoning. Create reflections of 2-dimensional shapes across a line of symmetry.

Direct Standards:

4.6.B: Identify and draw one or more lines of symmetry, if they exist, for a two-dimensional figure.

Supporting Standards:

4.6.D: Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines or the presence or absence of angles of a specified size.

| Game | Description |
|-------------------|---|
| Lines of Symmetry | Identify lines of symmetry in a variety of shapes. |
| Ice Caves | Shoot lasers through blocks of ice along lines of symmetry. Students identify line-symmetric and asymmetric figures. |
| Shape Types | Identify different types of triangles (equilateral, acute, etc.) and different types of polygons (rectangle, rhombus, etc). |

Multiple Operations

Description:

Solve multistep problems posed with whole numbers and having whole-number answers using the four operations. Interpret equations involving multiplication and addition and determine order to match visual models.

Direct Standards:

4.4.H: Solve with fluency one- and two-step problems involving multiplication and division, including interpreting remainders.

| Game | Description |
|-----------------------------------|--|
| Complete Box | Represent numerical expressions using an area model. |
| Linear Transform | Select the number that will allow Jill to cross to the other side. This game teaches the concept of equality through problems involving multiple operations. |
| Linear Transform Unknown Operator | Find the output that results from applying a linear function to a whole number. |
| Leg Drape Boots | Multiply whole numbers using repeated addition. |
| Leg Drape Creatures | Multiply whole numbers using repeated addition. |
| Which Parentheses | Identify where the parentheses should be placed to make the expression represent the given model. |
| Operation Race | Evaluate numerical expressions using the correct order of operations. |

Fraction and Decimal Equivalence

Description:

Find equivalencies of fractions and decimals and use them to add with tenths and hundredths. State decimal place value to hundredths. Estimate fractions and decimals on the number line.

Direct Standards:

4.2.E: Represent decimals, including tenths and hundredths, using concrete and visual models and money. 4.2.G: Relate decimals to fractions that name tenths and hundredths. 4.3.G: Represent fractions and decimals to the tenths or hundredths as distances from zero on a number line.

Supporting Standards:

4.2.H: Determine the corresponding decimal to the tenths or hundredths place of a specified point on a number line.

| Game | Description |
|-----------------------------|---|
| Fraction Grid | Identify the fraction, equivalents of numbers using the given model. |
| Decimal Grid | Identify the decimal equivalents of numbers using the given model. |
| Fractions and Decimals Grid | Identify the decimal and fraction equivalents of numbers using the given model. |
| Number Line Trap | Estimate on a number line the location of tenths and hundredths in fraction and decimal form. |
| Addition on NL | Estimate on a number line the location of fourths and halves in fraction and decimal form. |

Comparing Decimals

Description:

Compare decimals based on size, using models and the number line. Compare decimals using the symbols $<$, $=$, and $>$.

Direct Standards:

4.2.B: Represent the value of the digit in whole numbers through 1,000,000,000 and decimals to the hundredths using expanded notation and numerals. 4.2.E: Represent decimals, including tenths and hundredths, using concrete and visual models and money. 4.2.F: Compare and order decimals using concrete and visual models to the hundredths. 4.2.H: Determine the corresponding decimal to the tenths or hundredths place of a specified point on a number line.

Supporting Standards:

4.3.G: Represent fractions and decimals to the tenths or hundredths as distances from zero on a number line.

| Game | Description |
|---------------------|---|
| Decimal Greenies | Identify and interpret the digit values of given decimals using place value-based models. This game introduces expanded notation, utilizes skills to read and write decimals, and teaches place value concepts to the hundredths place. |
| Number Line Journey | Represent one- and two-place decimals on a number line. Some levels require students to decide which direction to move in at each step to find the given number. |
| What's the Number | Estimate on a number line the location of decimals and whole numbers. |
| Decimal Comparison | Order decimals using place value-based methods and the symbols for less than, greater than, and equal to. |
| Decimal Order Fill | Help Jiji cross the pit by putting one- and two-place decimals in order from least to greatest. |

Addition and Subtraction with Decimals

Description:

Estimate and solve decimal addition and subtraction problems using standard algorithms. Work with decimals to the thousandth place.

Direct Standards:

4.4.A: Add and subtract whole numbers and decimals to the hundredth place using the standard algorithm.

| Game | Description |
|---|--|
| Place Value Align | Learn to align decimals before adding or subtracting. |
| Estimate Addition and Subtraction Number Line | Estimate sums and differences of whole numbers and decimals on a number line. |
| Place Value River | Identify which place to increase or decrease in order to obtain the second decimal from the first. |
| Arithmetic Algorithm | Add one- and two-place decimals using the standard algorithm. |

Multi-Digit Multiplication

Description:

Use area models to learn how to multiply two two-digit whole numbers using strategies based on place value. Develop strategies and algorithms to multiply up to four-digit whole numbers by a single digit whole number.

Direct Standards:

4.4.C: represent the product of 2 two-digit numbers using arrays, area models, or equations, including perfect squares through 15 by 15.

4.4.D: Use strategies and algorithms, including the standard algorithm, to multiply up to a four-digit number by a one-digit number and to multiply a two-digit number by a two-digit number. Strategies may include mental math, partial products, and the commutative, associative, and distributive properties.

4.4.H: Solve with fluency one- and two-step problems involving multiplication and division, including interpreting remainders.

| Game | Description |
|-----------------------|---|
| Grid Expressions | Multiply whole numbers using an area model. |
| Area Multiplication | Multiply two-digit whole numbers using visual models. |
| Area Multiplication 2 | Multiply two-digit whole numbers using visual models. |

Multi-Digit Division

Description:

Use strategies and algorithms based on place value to divide up to four-digit whole numbers by a single digit whole number.

Direct Standards:

4.4.E: Represent the quotient of up to a four-digit whole number divided by a one-digit whole number using arrays, area models, or equations.

4.4.F: Use strategies and algorithms, including the standard algorithm, to divide up to a four-digit dividend by a one-digit divisor.

4.4.H: Solve with fluency one- and two-step problems involving multiplication and division, including interpreting remainders.

| Game | Description |
|------------------------------|--|
| Area Divide | Explore the concept of division using an array model to practice division facts. |
| Long Division | Divide multi-digit numbers by one-digit divisors using a visual model incorporating place value blocks. This game builds conceptual understanding of the division algorithm. |
| Long Division with Remainder | Divide multi-digit numbers by one-digit divisors with remainders using a visual model incorporating place value blocks. |

Line Plots and Range

Description:

Generate fractional measurement data and show the variability by making a line plot. Discern between multiple population attributes and identify one variable that is expressed in a line plot. Identify the mode, minimum, and maximum given a line plot. Identify the range given a numeric data set.

Direct Standards:

4.9.A: Represent data on a frequency table, dot plot, or stem-and-leaf plot marked with whole numbers and fractions.

4.9.B: Solve one- and two-step problems using data in whole number, decimal, and fraction form in a frequency table, dot plot, or stem-and-leaf plot.

| Game | Description |
|--------------------------|--|
| Soccer Dot Plots Eighths | Record fraction measurements on a number line to create a dot plot. |
| Dot Plot Dimension | Identify which dimension of the given collection of rectangles is represented by the dot plot shown. |
| Min/Max Magnet | Identify the minimum, maximum, or mode value of a distribution shown in a dot plot. |
| What's the Range? | Find the range of a list of whole numbers and bubble select to record the answer. |

Measurement and Conversions

Description:

Solve problems involving measurement and conversions of distance, money, liquid volumes, and numerical quantities.

Direct Standards:

4.2.E: Represent decimals, including tenths and hundredths, using concrete and visual models and money.

4.8.B: Convert measurements within the same measurement system, customary or metric, from a smaller unit into a larger unit or a larger unit into a smaller unit when given other equivalent measures represented in a table.

4.8.C: Solve problems that deal with measurements of length, intervals of time, liquid volumes, mass, and money using addition, subtraction, multiplication, or division as appropriate.

Supporting Standards:

4.8.A: Identify relative sizes of measurement units within the customary and metric systems.

| Game | Description |
|---------------|--|
| Buy Item | Choose the monetary amount needed to purchase a given item. |
| Measure It | Measure the length of a gap in US customary units using a ruler. |
| Fruit Monster | Determine how many pieces of fruit are needed to feed the monsters. Students explore the relationship between inputs and outputs using ratios within a visual model. |
| Rate Objects | Find an equivalent rate to the one given. |
| Capacity | Learn how to convert between cups, pints, quarts and gallons. Practice converting liquid quantities between different units. |

Addition and Subtraction within 1,000,000

Description:

Add two whole numbers with up to six digits using algorithms based on place value strategies. Estimate addition and subtraction on a number line.

Direct Standards:

4.4.A: Add and subtract whole numbers and decimals to the hundredth place using the standard algorithm.

| Game | Description |
|------------------------------------|--|
| Arithmetic Number Line | Add and subtract whole numbers (up to five digits) and estimate sums and differences on a number line. |
| Intro to Building | Fill in the missing addend to make a sum of 100 or 1000. |
| Building Blocks | Fill in the missing addend to make a sum of 100 or 1000. |
| Addition and Subtraction Algorithm | Add and subtract whole numbers (up to five digits) using the standard algorithm. |
| Missing Digits | Fill in the missing digit(s) in a multi-digit addition or subtraction computation. |

Challenge

Description:

Use spatial reasoning to solve challenging multi-step puzzles that explore symmetry, reflections, rotations, and analytical thinking.

| Game | Description |
|-----------------------|---|
| Bird Brain | Find birds in a grid after a sequence of transformations. |
| Venn Space | Place the object in the correct section of the Venn diagram according to its attributes. |
| Big Seed | Fill all the holes using colored tiles. A group of tiles of the same color can be unfolded along 8 symmetry axes. The color of tiles can also be changed. |
| Venn Space Pick Shape | Identify the object that has the attributes corresponding to a particular section of a Venn diagram. |
| Dot Shapes | Connect dots to form shapes which will fill holes in the ground. |

| | |
|--------------------|---|
| Concentration Nums | Practice multiplication facts. |
| Ice Caves | Identify lines of symmetry in two-dimensional shapes. |
| Kick Box | Use lasers and mirrors to move the spheres out of the way so Jili can pass. |

Fourth Grade

Optional Objectives

Multiplication and Division Facts

Description:
Review Multiplication and Division facts to 100. Use visual representations to model problems.

| Game | Description |
|------------------------------|---|
| Leg Drape | Practice multiplication facts with a visual scaffold |
| Leg Drape Symbolic | Practice multiplication facts using symbolic language |
| Multiplication Facts | Practice Facts with an alternate representation |
| Fair Sharing Visual | Practice division via fair sharing. |
| Fair Sharing Symbolic | Practice symbolic division facts via fair sharing. |
| Area Divide | Practice division facts using an area representation. |
| Multiplication Table | Practice multiplication facts in reverse by placing products on the multiplication table. |
| Multiplication Table Grouped | Practice multiplication facts in reverse by placing groups of products on the multiplication table. |
| Concentration numbers | Practice multiplication facts quickly in sequence |

Addition and Subtraction Facts

Description:
Review addition and subtraction facts to 20. Use visual representations to model problems, including ten frames, number lines, and blocks.

| Game | Description |
|--|--|
| PushBox Addition Facts | Practice addition facts using visual block representations for sums under 10 |
| SelectBox Addition Facts | Practice addition facts using alternate visual block representations for sums under 10 |
| Basic Subtraction Facts | Practice Subtraction facts under 10 using visual block representations. |
| SelectBox Subtraction Facts | Practice Subtraction facts under 10 using alternate block representations. |
| TenFrame Addition Facts | Practice addition facts to 20 using Ten Frames |
| TenFrame Subtraction Facts | Practice subtraction facts using visual block representations. |
| Mixed Facts | Practice addition and subtraction facts using visual block representations. |
| Addition and Subtraction facts on the numberline | Practice addition and subtraction facts using a numberline representation. |
| Ad5Facts Bridge | Practice addition facts using a tricky inverted format. |
| Concentration numbers | Practice multiple addition and subtraction facts quickly in sequence |

Standards

Fourth Grade

Number and Operations

4.2.A: Represent the value of the digit in whole numbers through 1,000,000,000 and decimals to the hundredths using expanded notation and numerals.

Supporting Objectives

- Place Value
- Using Place Value

4.2.B: Represent the value of the digit in whole numbers through 1,000,000,000 and decimals to the hundredths using expanded notation and numerals.

Direct Objectives

- Place Value
- Using Place Value
- Comparing Decimals

4.2.C: Compare and order whole numbers to 1,000,000,000 and represent comparisons using symbols.

Direct Objectives

- Comparing Whole Numbers

4.2.D: Round whole numbers to a given place value through the hundred thousands place.

Direct Objectives

- Rounding Whole Numbers

4.2.E: Represent decimals, including tenths and hundredths, using concrete and visual models and money.

Direct Objectives

- Fraction and Decimal Equivalence
- Comparing Decimals
- Measurement and Conversions

4.2.F: Compare and order decimals using concrete and visual models to the hundredths.

Direct Objectives

- Comparing Decimals

4.2.G: Relate decimals to fractions that name tenths and hundredths.

Direct Objectives

- Fraction and Decimal Equivalence

4.2.H: Determine the corresponding decimal to the tenths or hundredths place of a specified point on a number line.

Direct Objectives

- Comparing Decimals

Supporting Objectives

- Fraction and Decimal Equivalence

4.3.A: Represent a fraction a/b as a sum of fractions $1/b$, where a and b are whole numbers and $b > 0$, including when $a > b$.

Supporting Objectives

- Mixed Numbers
- Fractions - Equivalence and Ordering
- Fraction Multiples

4.3.B: Decompose a fraction in more than one way into a sum of fractions with the same denominator using concrete and pictorial models and recording results with symbolic representations.

Supporting Objectives

- Fraction Multiples

4.3.C: Determine if two given fractions are equivalent using a variety of methods.

Direct Objectives

- Fractions - Equivalence and Ordering

4.3.D: compare two fractions with different numerators and different denominators and represent the comparison using symbols.

Direct Objectives

- Fractions - Equivalence and Ordering

4.3.E: Represent and solve addition and subtraction of fractions with equal denominators using objects and pictorial models that build to the number line and properties of operations.

Direct Objectives

- Adding and Subtracting Fractions
- Adding and Subtracting Fractions LI

4.3.F: Evaluate the reasonableness of sums and differences of fractions using benchmark fractions 0 , $1/4$, $1/2$, $3/4$, and 1 , referring to the same whole.

Supporting Objectives

- Adding and Subtracting Fractions
- Adding and Subtracting Fractions LI

4.3.G: Represent fractions and decimals to the tenths or hundredths as distances from zero on a number line.

Direct Objectives

- Mixed Numbers
- Fractions - Equivalence and Ordering
- Adding and Subtracting Fractions LI
- Fraction Multiples
- Fraction and Decimal Equivalence

Supporting Objectives

- Adding and Subtracting Fractions
- Comparing Decimals

4.4.A: Add and subtract whole numbers and decimals to the hundredths place using the standard algorithm.

Direct Objectives

- Addition and Subtraction with Decimals
- Addition and Subtraction within 1,000,000

4.4.B: Determine products of a number and 10 or 100 using properties of operations and place value understandings.

4.4.C: represent the product of 2 two-digit numbers using arrays, area models, or equations, including perfect squares through 15 by 15.

Direct Objectives

- Multi-Digit Multiplication

4.4.D: Use strategies and algorithms, including the standard algorithm, to multiply up to a four-digit number by a one-digit number and to multiply a two-digit number by a two-digit number. Strategies may include mental math, partial products, and the commutative, associative, and distributive properties.

Direct Objectives

- Multi-Digit Multiplication

4.4.E: Represent the quotient of up to a four-digit whole number divided by a one-digit whole number using arrays, area models, or equations.

Direct Objectives

- Multi-Digit Division

4.4.F: Use strategies and algorithms, including the standard algorithm, to divide up to a four-digit dividend by a one-digit divisor.

Direct Objectives

- Multi-Digit Division

4.4.G: Round to the nearest 10, 100, or 1,000 or use compatible numbers to estimate solutions involving whole number.

4.4.H: Solve with fluency one- and two-step problems involving multiplication and division, including interpreting remainders.

Direct Objectives

- Multiple Operations
- Multi-Digit Multiplication
- Multi-Digit Division

Algebraic Reasoning

4.5.A: Represent multi-step problems involving the four operations with whole numbers using strip diagrams and equations with a letter standing for the unknown quantity.

Direct Objectives

- Generating Patterns

4.5.B: Represent problems using an input-output table and numerical expressions to generate a number pattern that follows a given rule representing the relationship of the values in the resulting sequence and their position in the sequence.

4.5.C: Use models to determine the formulas for the perimeter of a rectangle ($l + w + l + w$ or $2l + 2w$), including the special form for perimeter of a square ($4s$) and the area of a rectangle ($l \times w$).

Supporting Objectives

- Applying Area and Perimeter

4.5.D: Solve problems related to perimeter and area of rectangles where dimensions are whole numbers.

Direct Objectives

- Applying Area and Perimeter

Geometry and Measurement

4.6.A: Identify points, lines, line segments, rays, angles, and perpendicular and parallel lines.

Direct Objectives

- Angles and Triangles
- Exploring Lines and Shapes
- Parallel Lines and Parallelograms

4.6.B: Identify and draw one or more lines of symmetry, if they exist, for a two-dimensional figure.

Direct Objectives

- Angles and Triangles
- Lines of Symmetry
- Advanced Shapes

4.6.C: Apply knowledge of right angles to identify acute, right, and obtuse triangles.

Supporting Objectives

- Angles and Triangles

4.6.D: Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines or the presence or absence of angles of a specified size.

Direct Objectives

- Angles and Triangles
- Parallel Lines and Parallelograms

Supporting Objectives

- Advanced Shapes

4.7.A: Illustrate the measure of an angle as the part of a circle whose center is at the vertex of the angle that is 'cut out' by the rays of the angle. Angle measures are limited to whole numbers.

Direct Objectives

- Angles and Triangles

4.7.B: Illustrate degrees as the units used to measure an angle, where $1/360$ of any circle is one degree and an angle that 'cuts' $n/360$ out of any circle whose center is at the angle's vertex has a measure of n degrees. Angle measures are limited to whole numbers.

Direct Objectives

- Angles and Triangles

4.7.C: Determine the approximate measures of angles in degrees to the nearest whole number using a protractor.

Supporting Objectives

- Angles and Triangles

4.7.D: Draw an angle with a given measure.

Supporting Objectives

- Angles and Triangles

4.7.E: Determine the measure of an unknown angle formed by two non-overlapping adjacent angles given one or both angle measures.

Supporting Objectives

- Angles and Triangles

4.8.A: Identify relative sizes of measurement units within the customary and metric systems.

Supporting Objectives

- Measurement and Conversions

4.8.B: Convert measurements within the same measurement system, customary or metric, from a smaller unit into a larger unit or a larger unit into a smaller unit when given other equivalent measures represented in a table.

Direct Objectives

- Measurement and Conversions

4.8.C: Solve problems that deal with measurements of length, intervals of time, liquid volumes, mass, and money using addition, subtraction, multiplication, or division as appropriate.

Direct Objectives

- Measurement and Conversions

Supporting Objectives

- Applying Area and Perimeter

Data Analysis

4.9.A: Represent data on a frequency table, dot plot, or stem-and-leaf plot marked with whole numbers and fractions.

Direct Objectives

- Line Plots and Range

4.9.B: Solve one- and two-step problems using data in whole number, decimal, and fraction form in a frequency table, dot plot, or stem-and-leaf plot.

Direct Objectives

- Line Plots and Range

Personal Financial Literacy

4.10.A: Distinguish between fixed and variable expenses.

4.10.B: Calculate profit in a given situation.

4.10.C: Compare the advantages and disadvantages of various savings options.

4.10.D: Describe how to allocate a weekly allowance among spending; saving, including for college; and sharing.

4.10.E: Describe the basic purpose of financial institutions, including keeping money safe, borrowing money, and lending.