
# SCOPE & SEQUENCE
## WITH STANDARD ALIGNMENT

### - GRADES 6-8 & AUTO-ASSIGNMENTS - INDIANA

ST16-220728

ST Math®
Created by MIND Research Institute

# JOURNEY AND BONUS JOURNEY OBJECTIVES

## Negative Numbers

## Standards Coverage:

**Recommended: 6.NS.1, 6.NS.2, 6.NS.3**

| Game Name | Game Description |
|---|---|
| Temperature Changes | Determine the temperature change or the new temperature by reading and comparing the temperature on two thermometers, or by reading the original temperature and the description of the change. |
| Negative Number Line Trap | Plot positive and negative integers on a number line, presented in simplest form or with two or more leading negative signs. |
| Fraction and Decimal Trap | Plot positive and negative fractions, mixed numbers, and decimals on a number line. |

## Coordinates and Distances

## Standards Coverage:

**Recommended: 6.AF.7, 6.AF.8, 6.NS.2**

| Game Name | Game Description |
|---|---|
| Coordinate Trap | Select the location of a coordinate pair from the first quandrant. |
| Ordered Pairs | Name the coordinate pair for a given point located on a coordinate grid. |
| Coordinate Trap Negatives | Select the location of a coordinate pair on a coordinate grid. |
| Number Line Distances | Represent the distance between two points on a number line as a numerical expression. |
| Grid Distances | Find the distance between two points that lie on the same vertical or horizontal line in a coordinate plane. |

## Proportional Reasoning

## Standards Coverage:

**Recommended: 6.NS.8, 6.NS.10**

| Game Name | Game Description |
|---|---|
| Ratio Monster | Select a number of monster arms and mouths according the given ratio. In the last level, chose a ratio first and then select the parts. |
| Build-A-Monster | Identify the ratio of the monster arms to monster mouths. |
| Stretch-A-Block | Scale blocks by whole number factors using a visual model. |
| Kaboomerang!! | Remove the ornament potholes from JiJi's path by choosing the configuration that can be scaled to match the one on the ground. |
| Build-A-Monster Symbolic | Write a ratio to describe the data. |
| Ornaments Proportions | Arrange ornaments into different configurations representing equivalent ratios. Then scale up or down to match the ornaments to the outlines in the ground. |
| Ornaments Pick-a-Proportion | Choose one of two lines of ornaments to complete and scale up or down to match the arrangement in the ground. |

## Percents

## Standards Coverage:

**Recommended: 6.NS.5**

| Game Name | Game Description |
|---|---|
| Percent Objects | Convert the given fraction into a percent. This game relates common fractions to percents using a model. |
| Percent Objects Symbolic | Convert the given fraction into a percent. This game relates common fractions to percents using a model. |
| Percent Grid | Identify the decimal, fraction, and percent equivalents of numbers using the given model. |
| Percent Coin | Estimate the location of fractions, decimals, and percents on the number line. |
| Percent Strategy | Estimate the location of fractions, decimals, and percents on the number line. |
| Percent Expression | Estimate the location of fractions, decimals, and percents on the number line. |

# Unit Rates, Tables, and Graphs (G6)

## Standards Coverage:

**Recommended: 6.AF.9, 6.NS.8, 6.NS.9, 6.NS.10**

*Related: 6.AF.10*

| Game Name | Game Description |
|---|---|
| Hungry Monsters | Given a ratio, find the missing monsters or missing fruit. |
| Blob Price | Solve unit rate problems involving unit pricing. |
| Monster Graphs | Given a rate, plot equivalent rates on a graph. |
| Monster Graphs Build Rates | Given a graph of equivalent rates, determine an additional or reduced rate. |
| Monster Tables | Given a rate, write equivalent rates in a table. |
| Monster Tables Build Rates | Given a table of equivalent rates, determine an additional or reduced rate. |

# Fraction Division

## Standards Coverage:

**Recommended: 6.C.2, 6.C.3, 6.C.4**

| Game Name | Game Description |
|---|---|
| Select Peanuts | Given the rate of peanuts per elephant and the whole or fractional number of elephants to feed, select the total number of peanuts. |
| Select Elephants | Select the whole or fractional number of elephants needed to eat the given quantity of peanuts. |
| Select Peanuts per Elephant | Given the number of peanuts and the whole or fractional number of elephants, select the rate of peanuts per elephant. |
| Select Peanut or Elephant Multiplier | Multiply and divide whole numbers by whole numbers and by fractions using the elephants and peanuts model. |
| Model Peanuts Equation | Given a numeric division prompt of a whole number divided by a whole number or by a unit fraction, use the model to generate the corresponding scenario. |
| Build Peanuts Equation | Fill in the blanks to write a division expression that represents the situation. |
| Peanuts - Whole Numbers and Unit Fractions | Divide whole numbers by whole numbers and by unit fractions. |
| Visual Fraction Division | Divide fractions by unit fractions using the elephants and peanuts model, now with fractional peanuts as well as whole peanuts. |
| Model Division | Given an expression showing a whole number divided by a fraction or a fraction divided by a unit fraction, select elephants and peanuts to model the expression. |
| Convert to Multiplication | Rewrite a fraction division expression as a multiplication expression. |
| Fraction Division Symbolic | Divide whole numbers and fractions by fractions. |

## Properties of Operations (G6)

## Standards Coverage:

**Recommended: 6.C.6**

| Game Name | Game Description |
|---|---|
| Operation Race | Evaluate numerical expressions using the correct order of operations. |
| Multiplying with Parentheses | Learn the meaning of and how to simplify expressions involving variables and parentheses. |
| Distributive Property | Use the distributive property to show the meaning of expressions with parentheses and variables. |
| Operation Race with Parentheses | Identify the operator precedence for numerical expressions involving arithmetic operations and parentheses. |

## Division Algorithm

## Standards Coverage:

**Recommended: 6.C.1**

| Game Name | Game Description |
|---|---|
| Visual Division | This game introduces division as the separation of a set of objects into equally sized subsets. |
| Long Division Snake | Divide small two-digit numbers by one-digit numbers, with the numbers represented as quantities. |
| Exploratory Division | Explore division without remainder on the number line using a place value model. |
| Number Line Sliders | Explore division with remainder on the number line using a place value model. |
| Number Line Division | Introduction to the full algorithm with single digit divisor and two digit dividends. |
| Double Digit Divisors | Explore the division algorithm with double-digit divisors. |
| Number Line Division Algorithm | Carry out the division algorithm using two-digit divisors and large dividends. |
| Division Snake Sliders | Introduce the idea of partitioning the dividend using strategies of place value and number sense. |
| Exploratory Number Sense | Select the digits of the quotient in a long division problem. |

## Modeling with Expressions (G6)

## Standards Coverage:

**Recommended: 6.C.6**

| Game Name | Game Description |
|---|---|
| Which Parentheses | Identify where the parentheses should be placed to make the expression equal to the given value. |
| Box Commute | Use the commutative property to transform the given expression into one that represents a different configuration of blocks. |
| Wall Factory | Choose values for the variables to make the given expression represent the configuration of blocks in the ground. |
| Wall Factory Modeling | Choose the expression that could represent the given configuration of blocks. |

## Solving One-Step Equations (G6)

## Standards Coverage:

**Recommended: 6.AF.4, 6.AF.5**

*Related: 6.AF.1, 6.AF.2*

| Game Name | Game Description |
|---|---|
| Variable Stacks | Solve one- and two-step one-variable linear equations involving addition and multiplication. The two sides of the equation are modeled as stacks that need to have equal height. |
| Solve Equation | Solve one-variable addition, subtraction, or multiplication equations. |
| Rolling Equations | Use a number line model to solve one-variable addition equations and to find particular solutions to two-variable addition equations, including equations with multiple instances of the variable or variables. |
| Variable Stacks Symbolic | Solve one- and two-step one-variable addition and multiplication equations that are presented symbolically. |

# Linear Relationships (G6)

## Standards Coverage:

### Recommended: 6.AF.9

*Related: 6.AF.10*

| Game Name | Game Description |
|---|---|
| Make it Linear Table | Given a description of a proportional relationship, fill in missing values in a table of pairs corresponding to the ratio described. |
| Linear Transform | Given an operation or a sequence of two operations, find the output resulting from a given input, or the input required to produce a given output. |
| Linear Transform Function | Select the linear function, represented as an operation or sequence of two operations, that is consistent with the given input and output values. |
| Linear Transform Table | Fill in the table with the missing inputs or outputs for a given linear function, or, in other levels, identify the function that corresponds to the given table of inputs and outputs. |

# Exponents

## Standards Coverage:

**Recommended: 6.C.5**

*Related: 6.AF.1*

| Game Name | Game Description |
|---|---|
| Build Shape | Build the given shape using visual exponentiation. |
| Circle Exponents | Build the given shape using repeated multiplication. |
| Exponential Notation | Build the given shape using exponential notation. |
| Repeated Expressions | Given a exponential or multiplicative expression, select repeated addition or repeated multiplication. |
| Write Exponential Expressions | Given a repeated multiplication or addition expression, write the expression in exponential or multiplicative notation. |
| Number Line Exponents | Plot an exponential expression on the number line. |
| Number Line Exponents Bubble Select | Evaluate an exponential expression. |
| Number Line Exponents Two Operations | Given an expression with two operations, evaluate it using the number line. |
| Number Line Exponents Two Ops Bubble Select | Numerically evaluate an expression that has two operations. |

## Decimal Addition and Subtraction

## Standards Coverage:

**Recommended: 6.C.2**

| Game Name | Game Description |
|---|---|
| Place Value Align | Set up addition and subtraction problems involving whole numbers and decimals by aligning their digits by place value. |
| Arithmetic Algorithm | Add one- and two-place decimals using the standard algorithm. |
| Estimate Addition and Subtraction Number Line | Compute and estimate sums and differences of whole numbers and decimals on a number line. |

## Decimal Multiplication

## Standards Coverage:

**Recommended: 6.C.2**

*Related: 6.GM.4*

| Game Name | Game Description |
|---|---|
| Jelly Blocks Fixed Platform | Visually select the multiplicand that solves the problem in this model. |
| Jelly Blocks | Select the product of two numbers using this model. |
| Jelly Blocks Number Sense | Numerically select the multiplicand that solves the problem in this model. |
| Jelly Blocks LI | Given a numeric multipication prompt of an integer with a decimal, determine the product. |
| Money Multiplication | Multiply money amounts by whole numbers. |
| Decimal Moves | Given decimal and the corresponding integer, by multilpying by 10 or a tenth to move the decimal that turns the integer into the given decimal. |
| Decimal Multiplication Algorithm | Set up and carry out the mutliplication algorithm numerically. Finish the question by moving the decimal place appropriately. |
| High Wire Final Stage | Given two decimals and the product of their integer counterparts, determine where the decimal place should be placed to solve the product of the decimals. |

## Decimal Division

## Standards Coverage:

**Recommended: 6.C.2**

| Game Name | Game Description |
|---|---|
| Exploratory Division | Explore division with decimals. In particular, develop the strategy of appending zeros after the decimal point. |
| Decimal Snake | Using the model, carry out division by a single digit integer where the dividend may be a decimal and may need to append zeros. |
| Whole Number Divisors | Carry out the division alogrithm with whole number divisors and dividends that may be decimals and may need to append zeros. |
| Introduction to Decimal Divisors | Given decimal divisors, first set up an equivalent division question where the divisor becomes an integer. |
| Decimal Division | Carry out decimal division using the standard algorithm, appending zeros as needed, and setting up an equivalent problem where the divisor becomes an integer. |

## Area of Polygons

## Standards Coverage:

**Recommended: 6.C.2**

| Game Name | Game Description |
|---|---|
| Area of Rectangle | Find the area and perimeter of a rectangle using visual models. |
| Complete Box | Write an expression to describe the area. Includes adding or deducting from the area. |
| Mean Height | Find the mean height of a collection of stacks of blocks, or the mean of a collection of numbers. |
| Area Select | Calculate the areas of rectangles, triangles and parallelograms and express them using metric and U.S. customary units. |

## Line Plot Intro and Histograms

## Standards Coverage:

**Recommended: 6.DS.2**

| Game Name | Game Description |
|---|---|
| Soccer Dot Plots Negatives | Record measurements on a number line to create a dot plot. Values include positive and negative fractions and whole numbers. |
| Dot Plot Dimension Challenge | Identify which dimension of the given collection of rectangles is represented by the dot plot shown. |
| Histogram Builder | Create histograms by aggregating the recorded dot plot measurements into value bands. |

## Line Plots And Summary Statistics (G6)

## Standards Coverage:

**Recommended: 6.DS.2, 6.DS.4**

| Game Name | Game Description |
|---|---|
| Dot Plot Sweep Intro | Explore concepts related to the shape of a shape of a distribution, including skew and spread. |
| Median Diamond Catcher Negatives | Order a group of whole numbers, fractions, or decimals in order to find the median value. Includes positive and negative values. |
| Mean Dot Plots | Find the mean of the values displayed in a dot plot. |
| Dot Plot Sweep Mean and Median | Adjust the spread, skew, or position of a given distribution so that it will have the indicated median and mean. |
| Box Plot Diamond Catcher | Identify the minimum, maximum, median, and first and third quartiles of a distribution. |
| Dot Plot Sweep Boxplot | Adjust the spread, skew, or position of a given distribution so that it will have the indicated quartiles. |
| Mean Absolute Deviation | Find the mean absolute deviation of a given distribution. |
| Dot Plot Sweep MAD and Review | Adjust the spread, skew, or position of a given distribution so that it will have the indicated mean and MAD, or the indicated quartiles. |

## Challenge 6

| Game Name | Game Description |
|---|---|
| Upright JiJi | Find a sequence of rotations to move JiJi into an upright position. |
| Concentration Nums | Practice multiplication facts. |
| Big Seed | Find a sequence of actions that will unfold the given image into the desired shape. Teaches the concept of symmetry and the idea of a function or transformation. |
| Bird Brain | Find birds in a grid after a sequence of transformations. |
| Dot Shapes | Connect dots to form shapes which will fill holes in the ground. |
| 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 JiJi can pass. |

## Cognitive Training

| Game Name | Game Description |
|---|---|
| Sorting Fruit | Working memory tasks - help animals collect hidden fruit sequences moving along a conveyor belt. |
| Shape Match | Working memory tasks - track moving shapes on a grid to match outlines. |

## Applying Rates and Ratios (G6)

| Game Name | Game Description |
|---|---|
| Seed Worm | Select the number of increments, the length of the increment, or the total distance, when given the other two. |
| Seed Worms | Determine the missing values for two seed worm problems which have a dependence between them. |
| Seed Worms Fractions | Determine the missing values for two seed worm problems, now using fractional increments as well as whole number ones. |
| Speed Worms | Estimate the point at which the seed worms will meet, based on their directions, speeds, and starting locations. In other levels, adjust the speed of one of the worms so that the two worms will meet at the designated spot. |

## Graphing Proportional Relationships

| Game Name | Game Description |
|---|---|
| Graph Path | Move the point along a straight line in a coordinate plane. |
| X Beams Proportional | Adjust the y-coordinate of a point so it is on the line that goes through two other points on the plane. |
| Racing Graphs | Select the relationship that will take JiJi to the given distance in a shorter amount of time. |
| X Beams XY Scale | Identify the scaling factor that is used on the y-axis of a given coordinate plane graph. |
| Racing Graphs Scale | Choose the relationship that will take JiJi to the given distance in a shorter amount of time, taking into account the scaling on the y-axis. |
| Graph Path XY Flip | Move the vertical and horizontal arrows to keep JiJi on the given straight line path. |
| Racing Graphs XY Flip | Select the relationship that will take JiJi to the given distance in a shorter amount of time, taking into account that distance is on the x-axis and time is on the y-axis. |

## Summer Bridge Grade 6

| Game Name | Game Description |
|---|---|
| Build-A-Monster | Identify the ratio of the monster arms to monster mouths. |
| Number Line Exponents | Given an expression with two operations, evaluate it using the number line. |
| Wall Factory | Choose values for the variables to make the given expression represent the configuration of blocks in the ground. |
| Solving One-Step Equations | Solve one- and two-step one-variable linear equations involving addition and multiplication. The two sides of the equation are modeled as stacks that need to have equal height. |
| Concepts of Decimal Multiplication and Division | Select the numeric quotient of two integers or an integer and a decimal. Introduce quotients less than one. |

# OPTIONAL OBJECTIVES

## Multiplication and Division Facts

| Game Name | 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 represenation. |
| 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

| Game Name | Game Description |
|---|---|
| Push Box Addition Facts | Practice addition facts using visual block representations for sums under 10. |
| Select Box 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. |
| Select Box Subtraction Facts | Practice subtraction facts under 10 using alternate block representations. |
| Ten Frame Addition Facts | Practice addition facts to 20 using ten frames. |
| Ten Frame Subtraction Facts | Practice subtraction facts using ten frames. |
| Mixed Facts | Practice addition and subtraction facts using visual block representations. |
| Addition and Subtraction Facts on the Number Line | Practice addition and subtraction facts using a number line representation. |
| Add Facts Bridge | Practice addition facts using a tricky inverted format. |
| Concentration Numbers | Practice multiple addition and subtraction facts quickly in sequence. |

# STANDARDS INDEX

## NS - Number Sense

| Standard | Objective(s) |
|---|---|
| **6.NS.1** | Understand that positive and negative numbers are used to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge). Use positive and negative numbers to represent and compare quantities in real-world contexts, explaining the meaning of 0 in each situation.<br><br>**Recommended: Negative Numbers** |
| **6.NS.2** | Understand the integer number system. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself (e.g., -(-3) = 3), and that 0 is its own opposite.<br><br>**Recommended: Negative Numbers; Coordinates and Distances** |
| **6.NS.3** | Compare and order rational numbers and plot them on a number line. Write, interpret, and explain statements of order for rational numbers in real-world contexts.<br><br>**Recommended: Negative Numbers** |
| **6.NS.5** | Know commonly used fractions (halves, thirds, fourths, fifths, eighths, tenths) and their decimal and percent equivalents. Convert between any two representations (fractions, decimals, percents) of positive rational numbers without the use of a calculator.<br><br>**Recommended: Percents** |

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# NS - Number Sense (continued)

| Standard | Objective(s) |
|---|---|
| **6.NS.8** | Interpret, model, and use ratios to show the relative sizes of two. Describe how a ratio shows the relationship between two quantities. Use the following notations: a/b, a to b, a:b.<br><br>**Recommended: Proportional Reasoning; Unit Rates, Tables, and Graphs (G6)** |
| **6.NS.9** | Understand the concept of a unit rate and use terms related to rate in the context of a ratio relationship.<br><br>**Recommended: Unit Rates, Tables, and Graphs (G6)** |
| **6.NS.10** | Use reasoning involving rates and ratios to model real-world and other mathematical problems (e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations).<br><br>**Recommended: Proportional Reasoning; Unit Rates, Tables, and Graphs (G6)** |

# C - Computation

| Standard | Objective(s) |
|---|---|
| **6.C.1** | Divide multi-digit whole numbers fluently using a standard algorithmic approach.<br><br>**Recommended: Division Algorithm** |
| **6.C.2** | Compute with positive fractions and positive decimals fluently using a standard algorithmic approach.<br><br>**Recommended: Fraction Division; Decimal Addition and Subtraction; Decimal Multiplication; Decimal Division; Area of Polygons** |
| **6.C.3** | Solve real-world problems with positive fractions and decimals by using one or two operations.<br><br>**Recommended: Fraction Division** |
| **6.C.4** | Compute quotients of positive fractions and solve real-world problems involving division of fractions by fractions. Use a visual fraction model and/or equation to represent these calculations.<br><br>**Recommended: Fraction Division** |
| **6.C.5** | Evaluate positive rational numbers with whole number exponents.<br><br>**Recommended: Exponents** |

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# C - Computation (continued)

| Standard | Objective(s) |
|---|---|
| **6.C.6** | Apply the order of operations and properties of operations (identity, inverse, commutative properties of addition and multiplication, associative properties of addition and multiplication, and distributive property) to evaluate numerical expressions with non-negative rational numbers, including those using grouping symbols, such as parentheses, and involving whole number exponents. Justify each step in the process.<br><br>**Recommended: Properties of Operations (G6); Modeling with Expressions (G6)** |

# AF - Algebra and Functions

| Standard | Objective(s) |
|---|---|
| **6.AF.1** | Evaluate expressions for specific values of their variables, including expressions with whole-number exponents and those that arise from formulas used in real-world problems.<br><br>*Related: Solving One-Step Equations (G6); Exponents* |
| **6.AF.2** | Apply the properties of operations (e.g., identity, inverse, commutative, associative, distributive properties) to create equivalent linear expressions and to justify whether two linear expressions are equivalent when the two expressions name the same number regardless of which value is substituted into them.<br><br>*Related: Solving One-Step Equations (G6)* |
| **6.AF.4** | Understand that solving an equation or inequality is the process of answering the following question: Which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.<br><br>**Recommended: Solving One-Step Equations (G6)** |
| **6.AF.5** | Solve equations of the form x + p = q, x - p = q, px = q, and x/p = q fluently for cases in which p, q and x are all non-negative rational numbers. Represent real world problems using equations of these forms and solve such problems.<br><br>**Recommended: Solving One-Step Equations (G6)** |
| **6.AF.7** | Understand that signs of numbers in ordered pairs indicate the quadrant containing the point; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes. Graph points with rational number coordinates on a coordinate plane.<br><br>**Recommended: Coordinates and Distances** |

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# AF - Algebra and Functions (continued)

| Standard | Objective(s) |
|---|---|
| **6.AF.8** | Solve real-world and other mathematical problems by graphing points with rational number coordinates on a coordinate plane. Include the use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.<br><br>**Recommended: Coordinates and Distances** |
| **6.AF.9** | Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane.<br><br>**Recommended: Unit Rates, Tables, and Graphs (G6); Linear Relationships (G6)** |
| **6.AF.10** | Use variables to represent two quantities in a proportional relationship in a real-world problem; write an equation to express one quantity, the dependent variable, in terms of the other quantity, the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.<br><br>*Related: Unit Rates, Tables, and Graphs (G6); Linear Relationships (G6)* |

# GM - Geometry and Measurement

| Standard | Objective(s) |
|---|---|
| **6.GM.4** | Find the area of complex shapes composed of polygons by composing or decomposing into simple shapes; apply this technique to solve real-world and other mathematical problems.<br><br>*Related: Decimal Multiplication* |

# DS - Data Analysis and Statistics

| Standard | Objective(s) |
|---|---|
| **6.DS.2** | Select, create, and interpret graphical representations of numerical data, including line plots, histograms, and box plots.<br><br>**Recommended: Line Plot Intro and Histograms; Line Plots And Summary Statistics (G6)** |
| **6.DS.4** | Summarize numerical data sets in relation to their context in multiple ways, such as: report the number of observations; describe the nature of the attribute under investigation, including how it was measured and its units of measurement; determine quantitative measures of center (mean and/or median) and spread (range and interquartile range), as well as describe any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered; and relate the choice of measures of center and spread to the shape of the data distribution and the context in which the data were gathered.<br><br>**Recommended: Line Plots And Summary Statistics (G6)** |

# JOURNEY AND BONUS JOURNEY OBJECTIVES

## Addition and Subtraction with Negative Numbers

## Standards Coverage:

*Related: 7.C.1, 7.C.2*

| Game Name | Game Description |
|---|---|
| Integers on the Number Line | Add and subtract positive and negative integers and locate the results on a number line. |
| Add Stacks Negative | Identify the positive or negative integer that can be added to one number to obtain another number. |
| Temperature Changes | Learn to read the temperature on a thermometer. Determine the temperature change by reading and comparing the temperature on two thermometers. |

## Multiplication and Division with Negative Numbers

## Standards Coverage:

*Related: 7.C.3, 7.C.4*

| Game Name | Game Description |
|---|---|
| Mult Div Stacks | Create multiplication or division expressions given a product or quotient using visual models of negation. |
| Jelly Block Integers | Evaluate or solve for unknowns given a multiplication or division statement on a number line. |
| Jelly Block Decimals | Evaluate or solve for unknowns given a decimal multiplication or division statement on a number line. |

## Proportional Relationships

## Standards Coverage:

*Related: 7.AF.6*

| Game Name | Game Description |
|---|---|
| Stretch-A-Block | Scale blocks by whole number factors using a visual model. |
| Kaboomerang!! | Proportional reasoning in this number line model. |
| Ornaments Proportions | Given a ratio, select equivalent ratios using the model. |
| Ornaments Pick-a-Proportion | Given data, chose and complete the ratio that describes it. |

## Percents with Increases and Decreases

## Standards Coverage:

**Recommended: 7.C.6**

| Game Name | Game Description |
|---|---|
| Percent Objects | Visually estimate percent of, percent increase, and percent decrease problems. |
| Percent Objects Symbolic | Symbolically estimate percent of, percent increase, and percent decrease problems. |
| Percent Coin | Convert visually between percent increase/decrease and percent of. |
| Percent Strategy | Use a bar model strategy to solve percent problems, including percent increase and decrease. |
| Percent Solve | Solve visual and symbolic percent problems. |
| Percent Expression | Build equivalent expressions for percent increase and percent decrease situations . |

## Unit Rates, Tables, and Graphs (G7)

## Standards Coverage:

*Related: 7.AF.7, 7.AF.6*

| Game Name | Game Description |
|---|---|
| Ornaments Operations | Given equivalent ratios in the model, determine the scale factor. |
| Monster Graphs | Given a rate, plot equivalent rates on a graph. |
| Monster Graphs Build Rates | Given a graph of equivalent rates, determine an additional or reduced rate. |
| Monster Tables | Given a rate, write equivalent rates in a table. |
| Monster Tables Build Rates | Given a table of equivalent rates, determine an additional or reduced rate. |
| Ornaments Tables | Determine which table describes a proportional relationship and complete the table. |

## Rational Concepts (G7)

## Standards Coverage:

*Related: 7.NS.3*

| Game Name | Game Description |
|---|---|
| Fraction, Percent, Decimal Trap | Estimate the location of fractions, decimals, and percents on the number line. |
| Fraction to Decimal Conversions | Convert between fraction and decimal representations of numbers using the division algorithm. |
| Repeating Decimals to Fractions | Choose an equivalent fraction given a repeating decimal using the division algorithm. |
| Fractions to Repeating Decimals | Choose an equivalent repeating decimal given a fraction using the division algorithm. |

## Adding and Subtracting Rational Numbers

## Standards Coverage:

*Related: 7.C.1, 7.C.2*

| Game Name | Game Description |
|---|---|
| JiJi Cycle | Relate a collection of fractions represented with circular diagrams to a single point on the number line. |
| Numline Add Sub Negation | Add and subtract fractions on the number line. The fractions are presented using visual models. |
| Numline Add Sub 3 Terms | Evaluate three term fraction addition and subtraction expressions using a number line model. |

## Multiplying and Dividing Rational Numbers

## Standards Coverage:

*Related: 7.C.3, 7.C.4*

| Game Name | Game Description |
|---|---|
| Multiplication and Division Stacks Countdown | Solve for an unknown rational multiplicand or divisor using a visual model. |
| Multiplication and Division Stacks Pit Stop | Solve for an unknown rational multiplicand or divisor using a visual model. |
| Multiplication and Division Stacks Finish Line | Solve for an unknown rational multiplicand or divisor using a visual model. |

## Properties of Operations

## Standards Coverage:

*Related: 7.AF.1*

| Game Name | Game Description |
|---|---|
| Multiplying with Parentheses | Learn the meaning of and how to simplify expressions involving variables and parentheses. |
| Distributive Property | Use the distributive property to show the meaning of expressions with parentheses and variables. |

## Modeling with Expressions

## Standards Coverage:

*Related: 7.AF.1*

| Game Name | Game Description |
|---|---|
| Which Parentheses | Identify where the parentheses should be placed to make the expression equal to the given value. |
| Box Commute | Use the commutative property to transform the given expression into one that represents a different configuration of blocks. |
| Wall Factory | Choose values for the variables to make the given expression represent the configuration of blocks in the ground. |
| Wall Factory Modeling | Choose the expression that could represent the given configuration of blocks. |

## Solving One-Step Equations (G7)

## Standards Coverage:

*Related: 7.AF.2*

| Game Name | Game Description |
|---|---|
| Variable Stacks | Solve one- and two-step one-variable linear equations involving addition and multiplication. The two sides of the equation are modeled as stacks that need to have equal height. |
| Solve Equation | Solve one-variable addition, subtraction, or multiplication equations. |
| Rolling Equations | Use a number line model to solve one-variable addition equations and to find particular solutions to two-variable addition equations, including equations with multiple instances of the variable or variables. |
| Variable Stacks Symbolic | Solve one- and two-step one-variable addition and multiplication equations that are presented symbolically. |

## Solving Two-Step Equations (G7)

## Standards Coverage:

**Recommended: 7.AF.2**

| Game Name | Game Description |
|---|---|
| Variable Stacks with Like Terms | Students will solve symbolic equations of the form of px+q=r, where p,q,r, and x are any integer value. |
| Inverse Game | Students will select the inverse operation or reciprocal of whole numbers and fractional numbers to bring the visual equation back into balance. |
| Solve Equation | Students will solve symbolic equations of the form of px+q=r, where p,q,r, and x are any integer value. |
| Solve Equation Like Terms | Students will solve symbolic equations of the form of px+qx=r, where p,q,r, and x are any integer value. |
| Frac Wall | Students will solve visual equations of the form px=r, where p and x are positive rational numbers (of the form a/b). |
| Variable Stacks Fractions | Students will solve visual and symbolic equations in the form px+q=r, where x,q, and r are integers and p is a rational number (of the form a/b). |
| Rolling Equation Multiple Unknowns | Find particular solutions to two-variable linear equations using a number line model. |

## Linear Relationships

## Standards Coverage:

*Related: 7.AF.7*

| Game Name | Game Description |
|---|---|
| Make it Linear Table | Given a description of a proportional relationship, fill in missing values in a table of pairs corresponding to the ratio described. |
| Linear Transform | Given an operation or a sequence of two operations, find the output resulting from a given input, or the input required to produce a given output. |
| Linear Transform Function | Select the linear function, represented as an operation or sequence of two operations, that is consistent with the given input and output values. |
| Linear Transform Table | Fill in the table with the missing inputs or outputs for a given linear function, or, in other levels, identify the function that corresponds to the given table of inputs and outputs. |

## Multi-Step Percents

## Standards Coverage:

**Recommended: 7.C.6**

| Game Name | Game Description |
|---|---|
| Percent Solve Multi-Step | Solve advanced multi-step percent problems |
| Percent Growth | Estimate repeated percent problems using visual models. |

## Applying Rates and Ratios

## Standards Coverage:

**Recommended: 7.C.6**

*Related: 7.AF.7*

| Game Name | Game Description |
|---|---|
| Seed Worm | Select the number of increments, the length of the increment, or the total distance, when given the other two. |
| Seed Worms | Determine the missing values for two seed worm problems which have a dependence between them. |
| Seed Worms Fractions | Determine the missing values for two seed worm problems, now using fractional increments as well as whole number ones. |
| Speed Worms | Estimate the point at which the seed worms will meet, based on their directions, speeds, and starting locations. In other levels, adjust the speed of one of the worms so that the two worms will meet at the designated spot. |

## Scale and Slope Graphs (G7)

## Standards Coverage:

*Related: 7.AF.7*

| Game Name | Game Description |
|---|---|
| Graph Path | Move the point along a straight line in a coordinate plane. |
| X Beams Proportional | Adjust the y-coordinate of a point so it is on the line that goes through two other points on the plane. |
| X Beams Linear | Adjust the offset and the vertical increment so that the beam will go through the two given points. |
| Racing Graphs | Select the relationship that will take JiJi to the given distance in a shorter amount of time. |
| X Beams XY Scale | Identify the scaling factor that is used on the y-axis of a given coordinate plane graph. |
| Racing Graphs Scale | Choose the relationship that will take JiJi to the given distance in a shorter amount of time, taking into account the scaling on the y-axis. |
| Graph Path XY Flip | Move the vertical and horizontal arrows to keep JiJi on the given straight line path. |
| Racing Graphs XY Flip | Select the relationship that will take JiJi to the given distance in a shorter amount of time, taking into account that distance is on the x-axis and time is on the y-axis. |
| Racing Graphs XY Scale Flip | Select the relationship that will take JiJi to the given distance in a shorter amount of time, taking into account the scaling and labels on the axes. |

## Polygon Angle Sums

| Game Name | Game Description |
|---|---|
| Angle Sums With Triangles | Find the sum of a polygon's interior angles by decomposing the polygon into a set of triangles. |
| Angle Sums | Find the sum of a polygon's interior angles by decomposing the polygon into a set of triangles and using the sum of interior angles fact for triangles. |
| Missing Angle | 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. |
| Missing Angle Symbolic | 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. |

## Probability

### Standards Coverage:

**Recommended: 7.DSP.5**

| Game Name | Game Description |
|---|---|
| Least Most Probability | Answer probability questions by describing events as likely, unlikely, probable, or improbable. |
| High, Low, Certain and Impossible Probability | Identify the outcome that matches the given description - certain, impossible, likely or unlikely. |
| Estimate Probability with Marbles | Estimate the probability of selecting or not selecting a particular type of marble from the given jar. |
| Estimate Probability with Spinner | Estimate the probability of the spinner landing inside or outside of a given region. |
| Estimate Probability Dice | Estimate the probability of a particular outcome of a roll of a die. |

# Line Plots and Summary Statistics (G7)

## Standards Coverage:

**Recommended: 7.DSP.3**

*Related: 7.DSP.4*

| Game Name | Game Description |
|---|---|
| Dot Plot Sweep Intro | Explore concepts related to the shape of a shape of a distribution, including skew and spread. |
| Mode Magnet Negatives | Identify the minimum, maximum, or mode value of a distribution numbers shown in a dot plot. Includes distributions with positive or negative values or both. |
| Median Diamond Catcher Negatives | Order a group of whole numbers, fractions, or decimals in order to find the median value. Includes positive and negative values. |
| Mean Dot Plots | Find the mean of the values displayed in a dot plot. |
| Dot Plot Sweep Mean and Median | Adjust the spread, skew, or position of a given distribution so that it will have the indicated median and mean. |
| What's the Range | Find the range of a list of numbers. |
| Box Plot Diamond Catcher | Identify the minimum, maximum, median, and first and third quartiles of a distribution. |
| Dot Plot Sweep Boxplot | Adjust the spread, skew, or position of a given distribution so that it will have the indicated quartiles. |
| Mean Absolute Deviation | Find the mean absolute deviation of a given distribution. |
| Dot Plot Sweep MAD and Review | Adjust the spread, skew, or position of a given distribution so that it will have the indicated mean and MAD, or the indicated quartiles. |

## Challenge 7

| Game Name | Game Description |
|---|---|
| Upright JiJi | Find a sequence of rotations to move JiJi into an upright position. |
| Concentration Nums | Practice multiplication facts. |
| Big Seed | Find a sequence of actions that will unfold the given image into the desired shape. Teaches the concept of symmetry and the idea of a function or transformation. |
| Bird Brain | Find birds in a grid after a sequence of transformations. |
| Dot Shapes | Connect dots to form shapes which will fill holes in the ground. |
| 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 JiJi can pass. |

## Cognitive Training

| Game Name | Game Description |
|---|---|
| Sorting Fruit | Working memory tasks - help animals collect hidden fruit sequences moving along a conveyor belt. |
| Shape Match | Working memory tasks - track moving shapes on a grid to match outlines. |

## Summer Bridge Grade 7

| Game Name | Game Description |
|---|---|
| Frac Wall | Students will solve visual equations of the form px=r, where p and x are positive rational numbers (of the form a/b). |
| Solving Two-Step Equations | Students will solve visual and symbolic equations in the form px+q=r, where x,q, and r are integers and p is a rational number (of the form a/b). |
| Linear Balloons Match Equation | Given a linear equation, shift and rotate the line to describe the equation. |
| Linear Transform Table | Fill in the table with the missing inputs or outputs for a given linear function, or, in other levels, identify the function that corresponds to the given table of inputs and outputs. |
| Percent Solve Multi-Step | Solve advanced multi-step percent problems |

# OPTIONAL OBJECTIVES

## Multiplication and Division Facts

| Game Name | 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 represenation. |
| 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

| Game Name | Game Description |
|---|---|
| Push Box Addition Facts | Practice addition facts using visual block representations for sums under 10. |
| Select Box 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. |
| Select Box Subtraction Facts | Practice subtraction facts under 10 using alternate block representations. |
| Ten Frame Addition Facts | Practice addition facts to 20 using ten frames. |
| Ten Frame Subtraction Facts | Practice subtraction facts using ten frames. |
| Mixed Facts | Practice addition and subtraction facts using visual block representations. |
| Addition and Subtraction Facts on the Number Line | Practice addition and subtraction facts using a number line representation. |
| Add Facts Bridge | Practice addition facts using a tricky inverted format. |
| Concentration Numbers | Practice multiple addition and subtraction facts quickly in sequence. |

# STANDARDS INDEX

## NS - Number Sense

| Standard | Objective(s) |
|---|---|
| **7.NS.3** | Know there are rational and irrational numbers. Identify, compare, and order rational and common irrational numbers and plot them on a number line.<br><br>*Related: Rational Concepts (G7)* |

## C - Computation

| Standard | Objective(s) |
|---|---|
| **7.C.1** | Understand p + q as the number located a distance \|q\| from p, in the positive or negative direction, depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.<br><br>*Related: Addition and Subtraction with Negative Numbers; Adding and Subtracting Rational Numbers* |
| **7.C.2** | Understand subtraction of rational numbers as adding the additive inverse, p - q = p + (-q). Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.<br><br>*Related: Addition and Subtraction with Negative Numbers; Adding and Subtracting Rational Numbers* |

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# C - Computation (continued)

| Standard | Objective(s) |
|---|---|
| **7.C.3** | Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (-1)(-1) = 1 and the rules for multiplying signed numbers.<br><br>*Related: Multiplication and Division with Negative Numbers; Multiplying and Dividing Rational Numbers* |
| **7.C.4** | Understand that integers can be divided, provided that the divisor is not zero, and that every quotient of integers (with non-zero divisor) is a rational number. Understand that if p and q are integers, then -(p/q) = (-p)/q = p/(-q).<br><br>*Related: Multiplication and Division with Negative Numbers; Multiplying and Dividing Rational Numbers* |
| **7.C.6** | Use proportional relationships to solve ratio and percent problems with multiple operations, such as the following: simple interest, tax, markups, markdowns, gratuities, commissions, fees, conversions within and across measurement systems, percent increase and decrease, and percent error.<br><br>**Recommended: Percents with Increases and Decreases; Multi-Step Percents; Applying Rates and Ratios** |

# AF - Algebra and Functions

| Standard | Objective(s) |
|---|---|
| **7.AF.1** | Apply the properties of operations (e.g., identity, inverse, commutative, associative, distributive properties) to create equivalent linear expressions, including situations that involve factoring (e.g., given 2x - 10, create an equivalent expression 2(x - 5)). Justify each step in the process.<br><br>*Related: Properties of Operations; Modeling with Expressions* |
| **7.AF.2** | Solve equations of the form px + q = r and p(x + q) = r fluently, where p, q, and r are specific rational numbers. Represent real-world problems using equations of these forms and solve such problems.<br><br>**Recommended: Solving Two-Step Equations (G7)**<br><br>*Related: Solving One-Step Equations (G7)* |
| **7.AF.6** | Decide whether two quantities are in a proportional relationship (e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin).<br><br>*Related: Proportional Relationships; Unit Rates, Tables, and Graphs (G7)* |
| **7.AF.7** | Identify the unit rate or constant of proportionality in tables, graphs, equations, and verbal descriptions of proportional relationships.<br><br>*Related: Unit Rates, Tables, and Graphs (G7); Linear Relationships; Applying Rates and Ratios; Scale and Slope Graphs (G7)* |

# DSP - Data Analysis, Statistics, and Probability

| Standard | Objective(s) |
|---|---|
| **7.DSP.3** | Find, use, and interpret measures of center (mean and median) and measures of spread (range, interquartile range, and mean absolute deviation) for numerical data from random samples to draw comparative inferences about two populations.<br><br>**Recommended: Line Plots and Summary Statistics (G7)** |
| **7.DSP.4** | Make observations about the degree of visual overlap of two numerical data distributions represented in line plots or box plots. Describe how data, particularly outliers, added to a data set may affect the mean and/or median.<br><br>*Related: Line Plots and Summary Statistics (G7)* |
| **7.DSP.5** | Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Understand that a probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event. Understand that a probability of 1 indicates an event certain to occur and a probability of 0 indicates an event impossible to occur<br><br>**Recommended: Probability** |

# JOURNEY AND BONUS JOURNEY OBJECTIVES

## Rational Concepts

## Standards Coverage:

*Related: 8.NS.1*

| Game Name | Game Description |
|---|---|
| Fraction, Percent, Decimal Trap | Estimate the location of fractions, decimals, and percents on the number line. |
| Fraction to Decimal Conversions | Convert between fraction and decimal representations of numbers using the division algorithm. |
| Repeating Decimals to Fractions | Choose an equivalent fraction given a repeating decimal using the division algorithm. |
| Fractions to Repeating Decimals | Choose an equivalent repeating decimal given a fraction using the division algorithm. |

## Unit Rates, Tables, and Graphs

| Game Name | Game Description |
|---|---|
| Hungry Monsters | Given a ratio, find the missing monsters or missing fruit. |
| Ornaments Operations | Given equivalent ratios in the model, determine the scale factor. |
| Blob Price | Solve unit rate problems involving unit pricing. |
| Monster Graphs | Given a rate, plot equivalent rates on a graph. |
| Monster Graphs Build Rates | Given a graph of equivalent rates, determine an additional or reduced rate. |
| Monster Tables | Given a rate, write equivalent rates in a table. |
| Monster Tables Build Rates | Given a table of equivalent rates, determine an additional or reduced rate. |
| Ornaments Tables | Determine which table describes a proportional relationship and complete the table. |

## Solving One-Step Equations

## Standards Coverage:

*Related: 8.AF.1*

| Game Name | Game Description |
|---|---|
| Missing Addend | Fill in the missing addend to make the equation true. |
| Variable Stacks | Solve one- and two-step one-variable linear equations involving addition and multiplication. The two sides of the equation are modeled as stacks that need to have equal height. |
| Solve Equation | Solve one-variable addition, subtraction, or multiplication equations. |
| Rolling Equations | Use a number line model to solve one-variable addition equations and to find particular solutions to two-variable addition equations, including equations with multiple instances of the variable or variables. |
| Variable Stacks Symbolic | Solve one- and two-step one-variable addition and multiplication equations that are presented symbolically. |

## Solving Two-Step Equations

## Standards Coverage:

*Related: 8.AF.1*

| Game Name | Game Description |
|---|---|
| Rolling Equation | Students will select a pair of numbers (all positive) that fit the relationship (additive, multiplicative, or both) displayed by visual representation of jumps on the number line. |
| Variable Stacks | Students will solve visual equations of the form of px+q=r, where p,q,r, and x are any integer value. |
| Variable Stacks with Like Terms | Students will solve symbolic equations of the form of px+q=r, where p,q,r, and x are any integer value. |
| Inverse Game | Students will select the inverse operation or reciprocal of whole numbers and fractional numbers to bring the visual equation back into balance. |
| Solve Equation | Students will solve symbolic equations of the form of px+q=r, where p,q,r, and x are any integer value. |
| Solve Equation Like Terms | Students will solve symbolic equations of the form of px+qx=r, where p,q,r, and x are any integer value. |
| Frac Wall | Students will solve visual equations of the form px=r, where p and x are positive rational numbers (of the form a/b). |
| Variable Stacks Fractions | Students will solve visual and symbolic equations in the form px+q=r, where x,q, and r are integers and p is a rational number (of the form a/b). |
| Rolling Equation Multiple Unknowns | Find particular solutions to two-variable linear equations using a number line model. |

# Solving Linear Equations

## Standards Coverage:

**Recommended: 8.AF.1**

*Related: 8.AF.2*

| Game Name | Game Description |
|---|---|
| Rolling Equation | Students will select a pair of numbers (all positive) that fit the relationship (additive, multiplicative, or both) displayed by visual representation of jumps on the number line, including variables on both sides. |
| Variable Stacks | Students will solve visual equations of the form of px+q =rx where p,q,r,s,t,u and x are any integer value. |
| Inverse Game | Students will select the inverse operation or reciprocal of whole numbers and fractional numbers to bring the visual equation back into balance. |
| Solve Equation | Students will solve symbolic equations of the form of px+q=rx where p,q,r, and x are any integer value. |
| Frac Wall | Students will solve visual equations of the form px=r, where p and x are positive rational numbers (of the form a/b). |
| Variable Stacks Fractions | Students will solve visual and symbolic equations in the form px+q=r, where x,q, and r are integers and p is a rational number (of the form a/b). |
| Solve Equation, Many Solutions | Students will see examples of linear equations with one solution and infinitely many solutions. |
| Variable Stacks Multiple Variables | Students will solve visual and symbolic equations with multiple variables and rational numbers of the form y=mx+b, ay=bx, ay+bx=c. |

# Exponents and Squares

## Standards Coverage:

**Recommended: 8.NS.3**

| Game Name | Game Description |
|---|---|
| Build Shape | Build the given shape using visual exponentiation. |
| Circle Exponents | Build the given shape using repeated multiplication. |
| Exponential Notation | Build the given shape using exponential notation. |
| Perfect Squares | Determine which number or product is a perfect square. |
| Repeated Expressions | Given a exponential or multiplicative expression, select repeated addition or repeated multiplication. |
| Write Exponential Expressions | Given a repeated multiplication or addition expression, write the expression in exponential or multiplicative notation. |
| Number Line Exponents | Plot an exponential expression on the number line. |
| Number Line Exponents Bubble Select | Evaluate an exponential expression. |
| Operation Race with Exponents | Decompose an expression without parentheses by using the order of operations. |
| Number Line Exponents Two Operations | Given an expression with two operations, evaluate it using the number line. |
| Number Line Exponents Two Ops Bubble Select | Numerically evaluate an expression that has two operations. |
| Operation Race with Parentheses | Decompose an expression using the full order of operations (parentheses included). |
| Cube Exponents | Select the exponential expression that matches the given model. |
| Cube Exponents Bubble Select | Select the missing digit that will match the exponential expression with the given model. |
| Place Value Powers of 10 | Determine the power of ten (positive and negative) that corresponds to the appropriate place value. |
| Operations Race, Powers of 10 | Evaluate numeric expressions involving both decimals and positive or negative powers of ten. |

# Scale and Slope Graphs

## Standards Coverage:

*Related: 8.AF.7*

| Game Name | Game Description |
|---|---|
| Graph Path | Move the point along a straight line in a coordinate plane. |
| X Beams Proportional | Adjust the y-coordinate of a point so it is on the line that goes through two other points on the plane. |
| X Beams Linear | Adjust the offset and the vertical increment so that the beam will go through the two given points. |
| Racing Graphs | Select the relationship that will take JiJi to the given distance in a shorter amount of time. |
| X Beams XY Scale | Identify the scaling factor that is used on the y-axis of a given coordinate plane graph. |
| Racing Graphs Scale | Choose the relationship that will take JiJi to the given distance in a shorter amount of time, taking into account the scaling on the y-axis. |
| Graph Path XY Flip | Move the vertical and horizontal arrows to keep JiJi on the given straight line path. |
| Racing Graphs XY Flip | Select the relationship that will take JiJi to the given distance in a shorter amount of time, taking into account that distance is on the x-axis and time is on the y-axis. |
| Racing Graphs XY Scale Flip | Select the relationship that will take JiJi to the given distance in a shorter amount of time, taking into account the scaling and labels on the axes. |

# Function Concepts

## Standards Coverage:

*Related: 8.AF.3*

| Game Name | Game Description |
|---|---|
| Kaboomerang Single-Step | Differentiate between scaling and offsetting with double number lines. |
| Ornaments Single-Step | Find unknown values given either a scaling or offsetting relationship. |
| Ornaments Numeric | Apply numeric strategies for offsetting or scaling with double number lines. |
| Make it Linear | Given some points on a table, complete the missing values given that it is a linear relationship. |
| Linear Transform | Identify inputs, outputs, slope and offset for a linear relationship. |
| Kaboomerang Two-Step | Combine offsetting and scaling to model linear function with a double number line. |
| Ornaments Two-Step Table | Find unknown values given a linear relationship. |
| Make it Linear Non Unit Rate | Given some non-sequential points on a table, complete the missing values given that it is a linear relationship. |
| Linear Transform Fractional Slope | Given a table, identify the fractional slope and integer offset that describes the linear relationship. |
| Kaboomerang Litmus Test | Apply previous numeric and mathematical understandings to model and then solve linear problems in a non-numeric environment. |

# Graphing Linear Functions

## Standards Coverage:

*Related: 8.AF.3, 8.AF.4, 8.AF.5*

| Game Name | Game Description |
|---|---|
| Linear Balloons | Place the missing balloon(s) in place so that the result forms a line. |
| Space Slope | Given a slope and a point, rotate the line to describe the information. |
| Linear Balloons Match Equation | Given a linear equation, shift and rotate the line to describe the equation. |
| Graph Sweep | Adjust the given equation so that the sweeping line matches the desired line. |
| Linear Balloons Tables | Given an equation, fill in a table of values that satisfy the equation. |
| Graph Sweep Bubble Select | Given a line, write the equation that describes it using the graph sweep model. |
| Linear Balloons Graphing | Given a line, write the equation that describes it using the balloon model. |

# Line Plots and Summary Statistics

| Game Name | Game Description |
|---|---|
| Dot Plot Sweep Intro | Explore concepts related to the shape of a shape of a distribution, including skew and spread. |
| Mode Magnet Negatives | Identify the minimum, maximum, or mode value of a distribution numbers shown in a dot plot. Includes distributions with positive or negative values or both. |
| Median Diamond Catcher Negatives | Order a group of whole numbers, fractions, or decimals in order to find the median value. Includes positive and negative values. |
| Mean Dot Plots | Find the mean of the values displayed in a dot plot. |
| Dot Plot Sweep Mean and Median | Adjust the spread, skew, or position of a given distribution so that it will have the indicated median and mean. |
| What's the Range | Find the range of a list of numbers. |
| Box Plot Diamond Catcher | Identify the minimum, maximum, median, and first and third quartiles of a distribution. |
| Dot Plot Sweep Boxplot | Adjust the spread, skew, or position of a given distribution so that it will have the indicated quartiles. |
| Mean Absolute Deviation | Find the mean absolute deviation of a given distribution. |
| Dot Plot Sweep MAD and Review | Adjust the spread, skew, or position of a given distribution so that it will have the indicated mean and MAD, or the indicated quartiles. |

## Challenge 8

| Game Name | Game Description |
|---|---|
| Upright JiJi | Find a sequence of rotations to move JiJi into an upright position. |
| Concentration Nums | Practice multiplication facts. |
| Big Seed | Find a sequence of actions that will unfold the given image into the desired shape. Teaches the concept of symmetry and the idea of a function or transformation. |
| Bird Brain | Find birds in a grid after a sequence of transformations. |
| Dot Shapes | Connect dots to form shapes which will fill holes in the ground. |
| 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 JiJi can pass. |

## Cognitive Training

| Game Name | Game Description |
|---|---|
| Sorting Fruit | Working memory tasks - help animals collect hidden fruit sequences moving along a conveyor belt. |
| Shape Match | Working memory tasks - track moving shapes on a grid to match outlines. |

## Summer Bridge Grade 8

| Game Name | Game Description |
|---|---|
| Variable Stacks | Students will solve visual equations of the form of px+q =rx where p,q,r,s,t,u and x are any integer value. |
| Linear Transform Table | Identify inputs, outputs, slope and offset for a linear relationship. |
| Linear Balloons | Given a linear equation, shift and rotate the line to describe the equation. |
| Variable Stacks Multiple Variables | Students will solve visual and symbolic equations with multiple variables and rational numbers of the form y=mx+b, ay=bx, ay+bx=c. |
| Polynomial Fill | Factor a quadratic expression. |

# OPTIONAL OBJECTIVES

## Multiplication and Division Facts

| Game Name | 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 represenation. |
| 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

| Game Name | Game Description |
|---|---|
| Push Box Addition Facts | Practice addition facts using visual block representations for sums under 10. |
| Select Box 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. |
| Select Box Subtraction Facts | Practice subtraction facts under 10 using alternate block representations. |
| Ten Frame Addition Facts | Practice addition facts to 20 using ten frames. |
| Ten Frame Subtraction Facts | Practice subtraction facts using ten frames. |
| Mixed Facts | Practice addition and subtraction facts using visual block representations. |
| Addition and Subtraction Facts on the Number Line | Practice addition and subtraction facts using a number line representation. |
| Add Facts Bridge | Practice addition facts using a tricky inverted format. |
| Concentration Numbers | Practice multiple addition and subtraction facts quickly in sequence. |

## Factoring Quadratics

| Game Name | Game Description |
|---|---|
| Grid Expressions | Build a rectangle given the dimensions. Select rectangle dimensions given a rectangle. |
| Product Sum Drop | Given a product and a sum, select two numbers that both add up to the sum and multiply to the product. |
| Polynomial Fill Positive | Factor a quadratic expression. |

# Parabolas and Quadratic Functions

| Game Name | Game Description |
|---|---|
| Parabola Balloons | Place the missing balloon(s) in place so that the result forms a paraboloa. |
| Parabola Balloons Match Equation Tags | Given a quadratic equation where b = 0, use the given tools to describe the equation. Here, a and c will have number tags on. |
| Graph Sweep | Adjust the given equation so that the sweeping parabola matches the desired parabola. Here, b is zero. |
| Parabola Balloons Table | Given an equation with b = 0, fill in a table of values that satisfy the equation. |
| Parabola Balloons Symbolic | Given a parabola, write the equation that describes it using the balloon model. Here, b is given as zero. |
| Parabola Balloons Match Equation | Given a parabola where b = 0, use the given tools to describe the equation. Here, a and c will not have number tags. |
| Parabola Balloons Standard Form | Given visual tools for a, b, and c, describe the parabola that pops the balloons. |
| Match Equation Tags with Y Intercept | Given a quadratic equation (one coefficient is always zero), use the given tools to describe the equation. Here, a, b and c will have number tags on. |
| Graph Sweep Single | Adjust the given equation so that the sweeping parabola matches the desired parabola. |
| Parabola Balloons Standard Form Table | Given an equation, fill in a table of values that satisfy the equation. |
| Parabola Balloons Enter Equation | Given a parabola, use the given tools to describe the equation or enter the coefficients directly. |
| Graph Sweep Multiple Puzzles | Repeatedly adjust the given equation so that the sweeping parabola matches the desired parabola. |

# Percent Growth

| Game Name | Game Description |
|---|---|
| Percent Growth Visual | Visually estimate linear and repeated percent problems. |
| Percent Growth Expression | Create expressions to model linear and repeated percent situation. |
| Percent Decay | Visually estimate and create expressions to model percent decay. |

# STANDARDS INDEX

## NS - Number Sense

| Standard | Objective(s) |
|---|---|
| **8.NS.1** | Give examples of rational and irrational numbers and explain the difference between them. Understand that every number has a decimal expansion; for rational numbers, show that the decimal expansion terminates or repeats, and convert a decimal expansion that repeats into a rational number.<br><br>*Related: Rational Concepts* |
| **8.NS.3** | Given a numeric expression with common rational number bases and integer exponents, apply the properties of exponents to generate equivalent expressions.<br><br>**Recommended: Exponents and Squares** |

## AF - Algebra and Functions

| Standard | Objective(s) |
|---|---|
| **8.AF.1** | Solve linear equations with rational number coefficients fluently, including equations whose solutions require expanding expressions using the distributive property and collecting like terms. Represent real-world problems using linear equations and inequalities in one variable and solve such problems.<br><br>**Recommended: Solving Linear Equations**<br><br>*Related: Solving One-Step Equations; Solving Two-Step Equations* |

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# AF - Algebra and Functions (continued)

| Standard | Objective(s) |
|---|---|
| **8.AF.2** | Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by transforming a given equation into simpler forms, until an equivalent equation of the form x = a, a = a, or a = b results (where a and b are different numbers).<br><br>*Related: Solving Linear Equations* |
| **8.AF.3** | Understand that a function assigns to each x-value (independent variable) exactly one y-value (dependent variable), and that the graph of a function is the set of ordered pairs (x,y).<br><br>*Related: Function Concepts; Graphing Linear Functions* |
| **8.AF.4** | Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear, has a maximum or minimum value). Sketch a graph that exhibits the qualitative features of a function that has been verbally described.<br><br>*Related: Graphing Linear Functions* |
| **8.AF.5** | Interpret the equation y = mx + b as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. Describe similarities and differences between linear and nonlinear functions from tables, graphs, verbal descriptions, and equations.<br><br>*Related: Graphing Linear Functions* |
| **8.AF.7** | Compare properties of two linear functions given in different forms, such as a table of values, equation, verbal description, and graph (e.g., compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed).<br><br>*Related: Scale and Slope Graphs* |

# GRADES 6-8 - AUTO ASSIGNMENTS OBJECTIVES

## Visual Fraction Concepts

| Game Name | 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 | Build a model to represent a given fraction, including fractions greater than or equal to 1. |
| Alien Bridge | Write the fraction that is represented by a given visual model. |
| Match Fraction Mixed Numbers | Build a model to represent a given fraction or mixed number, by using blocks and dividing them into equal parts. |
| Crank Pies Mixed Numbers | 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 Mixed Numbers | Write the mixed number that is represented by a given visual model. |

## Fractions on the Number Line

| Game Name | Game Description |
|---|---|
| JiJi Cycle Basket | Estimate on a number line the location of a fraction represented by a diagram. |
| Scale Fraction | Given a fraction or mixed number represented visually as equal parts of rectangular blocks, select the denominator to make tick marks on the number line, then plot the point by selecting the number of number line segments needed. |
| JiJi Cycle | Select the fraction corresponding to the marked point on the number line. The fractions are represented visually as equal parts of a disc. |
| Estimate Fractions on Number Line | Estimate the location of fractions on a number line. |
| JiJi Cycle Select Wheel LI | Given a location on a number line, select the number of unit fractions with a given denominator needed to reach it. |
| Fraction Trap | Estimate on a number line the location of a given fraction, including whole numbers represented as fractions. |

# Comparing and Equivalent Fractions

| Game Name | Game Description |
|---|---|
| Fraction Trap | Estimate on a number line the location of a given fraction, including whole numbers represented as fractions, and fractions with numerator 0. |
| Fricks | Bulid an understanding of fraction equivalence by selecting blocks partitioned into differing number of parts and shading the same total amount of area on each of them. |
| Common Denominator with Wholes | Given two blocks that are partitioned into different numbers of equal parts, select another block that is partitioned into a number of parts that is a multiple of both these numbers. |
| Fraction More or Less | Compare unit fractions and other pairs of fractions that have either the same numerator of the same denominator. |
| Common Denominator with Fractions | Find a common denominator for two fractions using the model of partitioning blocks into equal parts. |
| Simplify Fraction | Learn how to simplify fractions by canceling common factors from the numerator and denominator. |
| Equivalent Fractions | Identify equivalent fractions using rectangular diagrams displaying equal parts of a whole. |
| Fractions on Number Line | Estimate on a number line the location of fourths, halves, 6ths, 8ths, 9ths and 12ths. |

# Fraction Addition and Subtraction

| Game Name | Game Description |
|---|---|
| Fraction Robot | Add proper and improper fractions with like denominators using rectangular diagrams displaying equal parts of a whole. |
| Fraction Robot Addition and Subtraction LI | Subtract proper and improper fractions with like and unlike denominators. |
| Crank Pies Addition and Subtraction LI | Add fractions and mixed numbers with like and unlike denominators. |
| JiJi Cycle Select Basket | Relate a collection of fractions represented with circular diagrams to a single point on the number line. |
| Alien Bridge Common Denominators LI | Add mixed numbers with the same denominator. In some levels, students fill in the missing addend when given one addend and the sum. |
| Crank Pies Addition and Subtraction | Add fractions and mixed numbers with like and unlike denominators using circular diagrams displaying equal parts of whole. |
| Alien Bridge Addition | Learn the meaning of fraction addition using visual models. |
| Scale Fraction Addition and Subtraction LI | Add and subtract fractions and mixed numbers with like and unlike denominators on the number line. |
| Alien Bridge Mixed Numbers | 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 | Add and subtract fractions and mixed numbers on the number line. The fractions and mixed numbers are presented using visual models. |

## Fraction Multiplication

| Game Name | Game Description |
|---|---|
| Alien Bridge | Learn to multiply fractions by a whole number using a visual model. |
| Alien Bridge Symbolic | 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. |
| Unit Multiples | Multiply fractions and whole numbers using an area model. |
| Unit Multiplication on the Number Line | Multiply fractions and estimate the locations of the products on a number line. |
| Fraction Area | Multiply fractions and whole numbers using an area model. |

## Unlike Denominator Concepts and Strategies

| Game Name | Game Description |
|---|---|
| Number Line Equivalence | Identify equivalent fractions using a number line model. |
| Fraction Grid | Write one- and two-place decimals as fractions with denominators of 2, 4, 10, or 100. |
| Equivalent Fractions | Identify equivalent fractions using rectangular diagrams displaying equal parts of a whole. |
| Pie Monster | Implicitly add two fractions together. |

# Unlike Denominator Addition and Subtraction

| Game Name | Game Description |
|---|---|
| JiJi Cycle Select Basket | Estimate the location of a fraction represented with a diagram on the number line. |
| Common Denominator | Match the partitioning of two rectangular blocks. |
| Fraction Robot Addition | Add proper and improper fractions with like and unlike denominators using rectangular diagrams displaying equal parts of a whole. |
| Scale Fraction Visual | Add and subtract fractions and mixed numbers on the number line. The fractions and mixed numbers are presented using visual models. |
| Alien Bridge | Learn the meaning of fraction addition using visual models. |
| Common Denominator Symbolic | Match the partitioning of two rectangular blocks in order to create fractions with a common denominator. |
| Alien Bridge Symbolic | Learn the meaning of fraction addition using visual models. |
| Fraction Grid | Select a number of partitions on a given grid to represent the the sum or difference of two fractions. |
| Scale Fraction | Add and subtract fractions and mixed numbers on the number line. The fractions and mixed numbers are presented using visual models. |
| Crank Pies Addition and Subtraction | Add fractions and mixed numbers with like and unlike denominators. |

# Fraction Division

| Game Name | Game Description |
|---|---|
| Select Peanuts | Given the rate of peanuts per elephant and the whole or fractional number of elephants to feed, select the total number of peanuts. |
| Select Elephants | Select the whole or fractional number of elephants needed to eat the given quantity of peanuts. |
| Select Peanuts per Elephant | Given the number of peanuts and the whole or fractional number of elephants, select the rate of peanuts per elephant. |
| Select Peanut or Elephant Multiplier | Multiply and divide whole numbers by whole numbers and by fractions using the elephants and peanuts model. |
| Model Peanuts Equation | Given a numeric division prompt of a whole number divided by a whole number or by a unit fraction, use the model to generate the corresponding scenario. |
| Build Peanuts Equation | Fill in the blanks to write a division expression that represents the situation. |
| Peanuts - Whole Numbers and Unit Fractions | Divide whole numbers by whole numbers and by unit fractions. |
| Area Divide | Divide whole numbers by whole numbers and by unit fractions. The answers are demonstrated using an area model. |
| Linear Transform | Multiply and divide whole numbers by unit fractions. In the last level, identify the operation that will transform the first number into the second. |
| Visual Fraction Division | Divide fractions by unit fractions using the elephants and peanuts model, now with fractional peanuts as well as whole peanuts. |
| Model Division | Given an expression showing a whole number divided by a fraction or a fraction divided by a unit fraction, select elephants and peanuts to model the expression. |
| Convert to Multiplication | Rewrite a fraction division expression as a multiplication expression. |
| Fraction Division Symbolic | Divide whole numbers and fractions by fractions. |

# Base Ten Concepts

| Game Name | Game Description |
|---|---|
| Petals Multiple Choice | Represent ones, tens, hundreds and thousands using words, numerals and visual models. |
| Pulling Petals | Gain an understanding of place value by transforming the pile of petals into thousands (boxes with 1,000 petals each), hundreds (bouquets with 100 petals each), tens (flowers with 10 petals each), and ones (single petals). |
| Bee Petals | Represent numbers using a place value based flower petal model. In some levels, students determine the order of magnitude, given a number and a pile of petals (e.g. given the number 4, identify the size of the pile as 4 ones, 4 tens, or 4 hundreds, or 4 thousands). |
| Petals Bubble Select | Find the total number of petals by counting the boxes (thousands), bouquets (hundreds), flowers (tens) and single petals (ones) and then filling in the hundreds, tens and ones places with the correct numerals. |
| How Many Petals | Write a numeral to represent the quantity of petals. |
| 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. |

## Whole Number Addition

| Game Name | Game Description |
|---|---|
| Visual Addition | Using the petals model, add two three-digit whole numbers with regrouping in the ones or tens place. |
| Petals Addition with Numbers | Increase symbolism in the petals model to add two three-digit whole numbers with regrouping in the ones or tens place. |
| Petals Addition Method | Symbolically add two three-digit whole numbers with regrouping in the ones or tens place. Use the petals model as support. |
| Symbolic Addition | Symbolically add two three-digit whole numbers with regrouping in the ones or tens place. |
| Three-Digit Addition Algorithm | Add two- and three-digit whole numbers using the standard algorithm. |
| Addition Algorithm | Add four-digit whole numbers using the standard algorithm. |

## Whole Number Subtraction

| Game Name | Game Description |
|---|---|
| Whole Number Subtraction | Using the petals model, subtract two three-digit whole numbers with regrouping in the ones or tens place. |
| Petals Subtraction with Numbers | Increase symbolism in the petals model to subtract two three-digit whole numbers with regrouping in the ones or tens place. |
| Petals Subtraction Method | Symbolically subtract two three-digit whole numbers with regrouping in the ones or tens place. Use the petals model as support. |
| Symbolic Subtraction | Symbolically subtract two three-digit whole numbers with regrouping in the ones or tens place. |
| Subtraction Algorithm | Subtract four-digit whole numbers using the standard algorithm. |
| Addition and Subtraction Algorithm | Add and subtract whole numbers (up to five digits) using the standard algorithm. |

# Multiplication Algorithm

| Game Name | Game Description |
| --- | --- |
| Grid Expressions | Multiply whole numbers using an area model. |
| Area Multiplication | Multiply two-digit whole numbers using visual models. |
| Multiplication Algorithm | Multiply multi-digit whole numbers by one-digit whole numbers using the standard algorithm. |
| Area Multiplication 2 | Multiply two-digit whole numbers using visual models. |

# Division Algorithm

| Game Name | Game Description |
|---|---|
| Visual Division | This game introduces division as the separation of a set of objects into equally sized subsets. |
| Long Division Snake | Divide small two-digit numbers by one-digit numbers, with the numbers represented as quantities. |
| Exploratory Division | Explore division without remainder on the number line using a place value model. |
| Number Line Sliders | Explore division with remainder on the number line using a place value model. |
| Number Line Division | Introduction to the full algorithm with single digit divisor and two digit dividends. |
| Range Trap | Estimate how many times a divisor goes into a dividend, using a number line model. |
| Vertical Range Trap | Estimate division of two-digit numbers by one- and two-digit divisors. |
| Double Digit Divisors | Explore the division algorithm with double-digit divisors. |
| Number Line Division Algorithm | Carry out the division algorithm using two-digit divisors and large dividends. |
| Division Snake Sliders | Introduce the idea of partitioning the dividend using strategies of place value and number sense. |
| Exploratory Number Sense | Select the digits of the quotient in a long division problem. |

## Fraction Decimal Equivalence

| Game Name | Game Description |
|---|---|
| Fraction Decimal Grid | Write one- and two-place decimals as fractions with denominators of 2, 4, 10, or 100. |
| Complementary Fraction | Select the number of unit fractions with the given denominator that will add up to the given decimal. |
| Estimate Decimals and Fractions on Number Line | Estimate on a number line the location of fourths and halves in fraction and decimal form. |
| Fraction Decimal Grid 2 | Add one- and two-place decimals and decimal fractions. |
| Fraction Decimal Trap | Plot on a number line one- and two-place decimals and fractions with denominators of 2, 4, 10, and 100. |

## Decimal Place Value

| Game Name | Game Description |
|---|---|
| Number Line Journey | Plot one-, two-, and three-place decimals on a number line. |
| Decimal Greenies | Write the decimal that represents a given place-value based visual model. |
| Decimal Place Value | Identify and interpret the digit values of a given decimal. |
| Decimal Place Value Clouds | Identify the place of a given digit within a decimal up to the thousandths place. The places are expressed with the words or symbols for the powers of ten. |
| Expanded Form | Write whole numbers and decimals in standard notation when given expanded form representations. |
| Decimal Comparison | Compare two decimals and record the result with an ordering symbol. |
| Decimal Order Fill | Fill the hole in the ground by correctly ordering the given decimals. |

## Decimal Addition and Subtraction

| Game Name | Game Description |
|---|---|
| Estimate Total Cost | Estimate the total cost of the items placed in the shopping cart and plot the cost on the number line. |
| Shop Total Cost | Choose items whose total cost adds up to a given amount. |
| Place Value Align | Set up addition and subtraction problems involving whole numbers and decimals by aligning their digits by place value. |
| Arithmetic Algorithm | Add one- and two-place decimals using the standard algorithm. |
| Estimate Addition and Subtraction Number Line | Compute and estimate sums and differences of whole numbers and decimals on a number line. |

## Decimal Multiplication

| Game Name | Game Description |
|---|---|
| Jelly Blocks Fixed Platform | Visually select the multiplicand that solves the problem in this model. |
| Jelly Blocks | Select the product of two numbers using this model. |
| Jelly Blocks Number Sense | Numerically select the multiplicand that solves the problem in this model. |
| Jelly Blocks LI | Given a numeric multipication prompt of an integer with a decimal, determine the product. |
| Money Multiplication | Multiply money amounts by whole numbers. |
| Decimal Multiplication | Multiply decimals by whole numbers. |
| Decimal Moves | Given decimal and the corresponding integer, by multilpying by 10 or a tenth to move the decimal that turns the integer into the given decimal. |
| Decimal Multiplication Algorithm | Set up and carry out the mutliplication algorithm numerically. Finish the question by moving the decimal place appropriately. |
| High Wire Final Stage | Given two decimals and the product of their integer counterparts, determine where the decimal place should be placed to solve the product of the decimals. |

## Decimal Division

| Game Name | Game Description |
|---|---|
| Jelly Blocks Fixed Platform | Visually select the divisor that solves the problem in this model. |
| Jelly Blocks | Select the visual quotient of two numbers using this model. |
| Jelly Blocks Decimals | Select the numeric quotient of two integers or an integer and a decimal. Introduce quotients less than one. |
| Exploratory Division | Explore division with decimals. In particular, develop the strategy of appending zeros after the decimal point. |
| Decimal Snake | Using the model, carry out division by a single digit integer where the dividend may be a decimal and may need to append zeros. |
| Whole Number Divisors | Carry out the division alogrithm with whole number divisors and dividends that may be decimals and may need to append zeros. |
| Range Trap Decimals | Given a decimal divisor and dividend, estimate the number of times the divisor goes into the dividend. |
| Introduction to Decimal Divisors | Given decimal divisors, first set up an equivalent division question where the divisor becomes an integer. |
| Decimal Division | Carry out decimal division using the standard algorithm, appending zeros as needed, and setting up an equivalent problem where the divisor becomes an integer. |

## Area and Perimeter

| Game Name | Game Description |
|---|---|
| Select Area Perimeter | Find the area and perimeter of a rectangle using visual models. |
| Area Perimeter Select Shape | Construct a rectangle that has the given area and perimeter. |
| Area Perimeter with Units | Construct a rectangle that has the given area and perimeter. Later levels require students to make rectangles that have the same area and different perimeters or the same perimeter and different areas. Areas and perimeters are expressed using metric and U.S. customary units. |
| Perimeter Select | Calculate the perimeters of rectangles, triangles and other polygons and express them using metric and U.S. customary units. |
| Area Select | Calculate the areas of rectangles, triangles and parallelograms and express them using metric and U.S. customary units. |
| Area or Perimeter | Calculate the areas of rectangles, triangles and parallelograms and express them using metric and U.S. customary units. |

## Shapes and Attributes

| Game Name | Game Description |
|---|---|
| Dot Shapes | Connect dots to form shapes which will fill holes in the ground. |
| Parallel or Perpendicular | Identify parallel, perpendicular, and intersecting lines within a given set of lines. |
| Parallel or Perpendicular with Labels | Identify parallel, perpendicular, and intersecting lines within a given set of lines. This game also teaches the use of variables to label distinct lines. |
| Shape Types | Identify different types of triangles (equilateral, acute, etc.) and different types of polygons (rectangle, rhombus, etc.) |
| Shape Names | Identify the given polygon. |
| Which Angle | Identify an angle as acute, obtuse, straight, or right when given its numerical or pictorial representation. |
| Circle Parts | Identify the radius, circumference and diameter of a circle |
| Pick Geometric Shapes 3D By Attributes | Identify the number of faces, edges, or vertices on a three-dimensional shape. |
| Pick Geometric Shapes 3D By Shapes | Select the three-dimensional shape that has the given number of faces, edges, or vertices. |

## Area of Polygons

| Game Name | Game Description |
|---|---|
| Area of rectangle | Find the area and perimeter of a rectangle using visual models. |
| Complete Box | Write an expression to describe the area. Includes adding or deducting from the area. |
| Equal Areas | Determine which figure is divided up equally based on area. |
| Bricks | Arrange the shapes to create the composite shape shown. |
| Mean Height | Find the mean height of a collection of stacks of blocks, or the mean of a collection of numbers. |
| Area Select | Calculate the areas of rectangles, triangles and parallelograms and express them using metric and U.S. customary units. |

## Volume

| Game Name | Game Description |
|---|---|
| Volume Fill | Calculate the volume of a right rectangular prism and express it using metric or U.S. customary cubic units. |
| Volume Select | Calculate the volumes of rectangular and triangular prisms and express them using metric or U.S. customary cubic units. |