Indiana Mathematics Content Connectors

Grade 6

Number Sense NS

1 **Use positive and negative numbers to represent and compare quantities in real-world contexts, explaining the meaning of 0 in each situation. (E)** 6.NS.1

- a In a real-world context, identify if a situation represents a positive value, a negative value, or zero. (E) 6.NS.1A

2 **Explain how opposite signs of numbers indicate locations on opposite sides of 0 on the number line; identify the opposite of the opposite of a number.** 6.NS.2

- a Locate whole numbers and their opposites on a number line. (E) 6.NS.2A

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.** 6.NS.3

- a Use a number line to plot integers and positive fractions. Order up to three integers and positive fractions using a model or number line. 6.NS.3A

4 **Solve real-world problems with positive fractions and decimals by using one or two operations. (E)** 6.NS.4

- a Solve one-step real-world problems using decimals to the hundredths place or fractions. For addition and subtraction, limit denominators to 2, 3, 4, 5, 6, 8, 10, and 12. (E) 6.NS.4A

5 **Apply the order of operations and properties of operations (i.e., identity, inverse, commutative properties of addition and multiplication, associative properties of addition and multiplication, and distributive property) to evaluate numerical expressions with nonnegative rational numbers, including those using grouping symbols, such as parentheses, and involving whole number exponents. (E)** 6.NS.5

- a Apply the order of operations and properties (commutative, associative, and distributive property) to evaluate numerical expressions with whole numbers. (E) 6.NS.5A

6 **Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers from 1 to 100, with a common factor as a multiple of a sum of two whole numbers with no common factor.** 6.NS.6

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a Find the greatest common factor of two whole numbers less than or equal to 60 and the least common multiple of two whole numbers less than or equal to ten. Use the distributive property to express a sum of two whole numbers from 1 to 60, with a common factor as a multiple of a sum of two whole numbers with no common factor. 6.NS.6A

7 **Apply the properties of operations (i.e., 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. (E)** 6.NS.7

a Identify equivalent linear expressions by using the properties of operations. 6.NS.7A

8 **Evaluate positive rational numbers with whole number exponents.** 6.NS.8

a Understand that exponents represent repeated multiplication. Evaluate whole numbers (0-10) using exponents (limit to an exponent of 5). (E) 6.NS.8A

Ratios and Proportional Reasoning RP

1 **Convert between any two representations (fractions, decimals, percents) of positive rational numbers without the use of a calculator. (E)** 6.RP.1

a Given two numbers in different forms (decimals, fractions, or percents) identify that numbers are equivalent. Include the use of visual models. (E) 6.RP.1A

2 **Understand the concept of a unit rate and use terms related to rate in the context of a ratio relationship.** 6.RP.2

a Understand the concept of a unit rate in the context of a ratio relationship. (E) 6.RP.2A

3 **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.** 6.RP.3

a Find missing values in a table that represents a proportional relationship. Plot provided values on a coordinate plane. (E) 6.RP.3A

4 **Solve real-world and other mathematical problems involving rates and ratios using models and strategies such as reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. (E)** 6.RP.4

a Solve real-world and other mathematical one-step problems with whole number unit rates and ratios using models and various strategies (e.g., table of equivalent ratios, double number lines, tape diagrams, or equations). 6.RP.4A

5 **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 elationship between the dependent and independent variables using graphs and ables, and relate these to the equation. (E)** 6.RP.5

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a Given a real-world problem and a graph or table representing a proportional relationship, identify the independent and dependent variables and explain the relationship between them. 6.RP.5A

Algebra and Functions AF

1 Define and use multiple variables when writing expressions to represent real-world and other mathematical problems, and evaluate them for given values. (E) 6.AF.1

a Write one-operation single-variable expressions to represent real-world problems and evaluate them for given values (e.g., Miguel has a stack of cards. He added three cards to the stack. An expression that represents how many total cards Miguel has is x + 3). (E) 6.AF.1A

2 Demonstrate 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. (E) 6.AF.2

a Given a set of whole numbers, use substitution to determine which number makes an equation or inequality true. 6.AF.2A

3 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 nonnegative rational numbers. Represent real-world problems using equations of these forms and solve such problems. (E) 6.AF.3

a Solve real-world one-step linear equations using whole numbers. 6.AF.3A

4 Write an inequality of the form x > c, x ≥ c, x < c, or x ≤ c, where c is a rational number, to represent a constraint or condition in a real-world or other mathematical problem. Explain that inequalities have infinitely many solutions and how to represent solutions on a number line diagram. 6.AF.4

a Represent a real-world problem as a one-step inequality in the form of x > c, x ≥ c, x < c, or x ≤ c, where c is a whole number. (E) 6.AF.4A

5 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. (E) 6.AF.5

a Plot and find the distance between points that either have the same first coordinate or the same second coordinate on the coordinate plane. 6.AF.5A

Geometry and Measurement GM

1 Convert between measurement systems (Customary to metric and metric to Customary) given the conversion factors, and use these conversions in solving real-world problems. 6.GM.1

a Convert between measurement systems (Customary to Customary and metric to metric) given the conversion factors. (E) 6.GM.1A

2 Apply the sums of interior angles of triangles and quadrilaterals to solve real-world and mathematical problems. 6.GM.2

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a Find the unknown angle in triangles and quadrilaterals when provided the sum of interior angles. 6.GM.2A

3 **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.** 6.GM.3

a In real-world and mathematical problems, find the area of complex shapes consisting of rectangles and triangles by composing or decomposing into simple shapes when provided the formulas. (E) 6.GM.3A

4 **Find the volume of a right rectangular prism with fractional edge lengths using unit cubes of the appropriate unit fraction edge lengths (e.g., using technology or concrete materials) and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas V = lwh and V = Bh to find volumes of right rectangular prisms with fractional edge lengths to solve real-world and other mathematical problems. (E)** 6.GM.4

a Find the volume of a right rectangular prism with fractional number side lengths limited to halves when given the formula V = lwh, a model, and all required measurements. 6.GM.4A

Data Analysis and Statistics DS

1 **Select, create, and interpret graphical representations of numerical data, including line plots, histograms, and box plots.** 6.DS.1

a Create histograms given a data set. Use box plots to interpret data. 6.DS.1A

2 **Formulate statistical questions; collect and organize the data (e.g., using technology), and display and interpret the data with graphical representations (e.g., using technology). (E)** 6.DS.2

a Formulate a statistical question. Organize data to create line plots. (E) 6.DS.2A

3 **Summarize numerical data sets in relation to their context in multiple ways, such as: a. Report the number of observations; b. Describe the nature of the attribute under investigation, including how it was measured and its units of measurement; c. Determine quantitative measures of center (mean and/or median) and spread (range and interquartile range); d. Describe any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered; and e. 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. (E)** 6.DS.3

a Given a data set: report the number of observations; identify the unit of measurement; calculate mean and/or median, range, and IQR (Interquartile Range); describe the pattern. (E) 6.DS.3A