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| **ESTABLISHED GOALS:** | | | |
| **Major (m) Idaho Core cluster for the Unit:**  **Apply and extend previous understandings of numbers to the system of rational numbers.**   * 6.NS.5. Understand that positive and negative numbers are used together 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 quantities in real-world contexts, explaining the meaning of 0 in each situation.   **6.NS.6. Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.**   * **6.NS.6a 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.** * **6.NS.6b Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.** * **6.NS.6c Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.**   **6.NS.7. Understand ordering and absolute value of rational numbers.**   * **6.NS.7a Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. *For example, interpret –3 > –7 as a statement that –3 is located to the right of –7 on a number line oriented from left to right.*** * **6.NS.7b Write, interpret, and explain statements of order for rational numbers in real-world contexts. *For example, write –3 oC > –7 oC to express the fact that –3 oC is warmer than –7 oC.*** * **6.NS.7c Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. *For example, for an account balance of –30 dollars, write |–30| = 30 to describe the size of the debt in dollars.*** * **6.NS.7d Distinguish comparisons of absolute value from statements about order. *For example, recognize that an account balance less than –30 dollars represents a debt greater than 30 dollars.*** * **6.NS.8. Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second** **coordinate.**   **Not previously in Idaho State Standards for 6th grade** | | **Supporting and Additional (s/a) Idaho Core Standards for the Unit:**  **Apply and extend previous understandings of multiplication and division to divide fractions by fractions.**   * 6.NS.1. Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, create a story context for (2/3) ÷ (3/4) and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that (2/3) ÷ (3/4) = 8/9 because 3/4 of 8/9 is 2/3. (In general, (a/b) ÷ (c/d) = ad/bc.) How much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 3/4-cup servings are in 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length 3/4 mi and area 1/2 square mi? Compute fluently with multi-digit numbers and find common factors and multiples.*   **Compute fluently with multi-digit numbers and find common factors and multiples.**   * 6.NS.2. Fluently divide multi-digit numbers using the standard algorithm. * 6.NS.3. Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. * 6.NS.4. 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 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. *For example, express 36 + 8 as 4 (9 + 2). Apply and extend previous understandings of numbers to the system of rational numbers.* * 6.RP.1. Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. For example, “The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak.” “For every vote candidate A received, candidate C received nearly three votes.” * 6.RP.3. Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. | **Bridging Idaho Core Standards from Previous Grade(s):**   * 5.NBT.1. Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left. * 5.NBT.2. Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10. * 5.NBT.3. Read, write, and compare decimals to thousandths. * 5.NBT.4. Use place value understanding to round decimals to any place. * 5.G.2. Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. |
| **TRANSFER**  ***Students will be able to independently use their learning to…***  Persevere in solving real-world problems involving integers, rational numbers and absolute value and model those problems on a number line or coordinate plane.  Persevere in comparing integers and rational numbers using inequalities. | | | |
| **MEANING** | | | |
| **Structure of Math / Overarching Understanding(s):**  Numbers affect everything in our lives.  Real-world situations can be represented and solved using a coordinate plane.  *Teacher note: Students will be exploring integers, whole numbers, and rational numbers on a number line, inequalities, absolute values, and coordinate plane.* | | **Understanding:**  **Students will understand:**   * Positive and negative numbers represent opposite directions on a number line * the progression of zero on a number line * rational numbers are related on a number line (absolute value, statements of order, opposites) * real-world problems can be solved on a coordinate plane * inequalities compare quantities * inequalities are a set of answers * statements of order are different than inequalities | **Essential Questions:**  **Students will keep considering:**   * How do numbers affect real-world situations? * What is the progression of number systems? * How are real-world situations solved on a coordinate plane? * Why do inequalities have a set of answers? * Why do statements of order make a difference in real-world situations? |
| **STUDENT-FRIENDLY LEARNING TARGET STATEMENTS** | | | |
| 6.NS.5. Understand that positive and negative numbers are used together 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 quantities in real-world contexts, explaining the meaning of 0 in each situation. | MP.1 Make sense of problems and persevere in solving them.  MP.2 Reason abstractly and quantitatively.  MP.3 Construct viable arguments and critique the reasoning of others.  MP.4 Model with mathematics.  MP.5 Use appropriate tools strategically.  MP.6 Attend to precision.  MP.7 Look for and make use of structure.  MP.8 Look for and express regularity in repeated reasoning.   * Recognize the meaning of the positive and negative numbers when given context (real world examples).   + I understand that positive and negative numbers represent opposite directions or values.   + I can explain the difference between positive and negative numbers in the whole number system.   + I can recognize the meaning of positive and negative numbers given real world examples. * Explain the meaning of “zero” within a given context (zero is a point of reference or the point of origin).   + I understand that “zero” is a point of reference or point of origin.   + I can explain “zero” within a given context. | | |
| 6.NS.6a 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. | MP.1 Make sense of problems and persevere in solving them.  MP.2 Reason abstractly and quantitatively.  MP.3 Construct viable arguments and critique the reasoning of others.  MP.4 Model with mathematics.  MP.5 Use appropriate tools strategically.  MP.6 Attend to precision.  MP.7 Look for and make use of structure.  MP.8 Look for and express regularity in repeated reasoning.   * Define rational numbers and integers.   + I can define rational numbers as whole numbers, fractions, and terminating decimals   + I can define integers as whole numbers including positive, negative, and zero * Classify rational numbers and integers.   + I can determine if a number is rational.   + I can determine if a number is an integer. * Show that a negative sign and a positive sign indicate the direction from zero.   + I can demonstrate that a positive sign indicates a direction from zero.   + I can demonstrate that a negative sign indicates a direction from zero. * Conclude that a negative sign indicates “the opposite of.”   + I can conclude that a negative sign indicates the “opposite of.” * Plot a rational number on a number line.   + I can create a number line.   + I can use the number line to plot rational numbers. * Recognize that opposite signs of numbers indicate locations equidistant either direction from zero on the number line.   + I can recognize that a number demonstrates a distance from zero.   + I can recognize that a number with opposite signs (example 3 and -3) is equidistant from zero on the number line. * Identify that the opposite of the opposite of a number is the number itself.   + I can determine that when you subtract a negative number it equals the value of the number itself. (example: - (-3) = 3 * Recognize that zero is its own opposite   + I can explain that 0 is neither negative or positive   + I can recognize that zero is its own opposite | | |
| 6.NS.6b Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes. | MP.1 Make sense of problems and persevere in solving them.  MP.2 Reason abstractly and quantitatively.  MP.3 Construct viable arguments and critique the reasoning of others.  MP.4 Model with mathematics.  MP.5 Use appropriate tools strategically.  MP.6 Attend to precision.  MP.7 Look for and make use of structure.  MP.8 Look for and express regularity in repeated reasoning.   * Locate the four quadrants on a coordinate plane.   + I can define the x-axis and the y-axis   + I can define a coordinate plane.   + I can locate the four quadrants on a coordinate plane.   + I can define a quadrant by the Roman numeral name of the quadrant. * Recognize that larger numbers are on the right or the top of the number line and smaller numbers are to the left or bottom of the number line.   + I can recognize that numbers larger than zero are on the right of the x-axis or the top of the y-axis   + I can recognize that numbers smaller than zero are on the left of the x-axis or the bottom of the y-axis * Locate positive and negative numbers on the x and y- axis.   + I can locate positive and negative numbers on the x- and y-axis. * Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane.   + I can define an ordered pair.   + I understand the quadrant location is determined by the signs of the ordered pair * Recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections (mirror images) across one or both axes.   + I can define a reflection   + I can recognize that when only the signs change between two ordered pairs, the points are related by a reflection over one or both axes. | | |
| 6.NS.6c Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane. | MP.1 Make sense of problems and persevere in solving them.  MP.2 Reason abstractly and quantitatively.  MP.3 Construct viable arguments and critique the reasoning of others.  MP.4 Model with mathematics.  MP.5 Use appropriate tools strategically.  MP.6 Attend to precision.  MP.7 Look for and make use of structure.  MP.8 Look for and express regularity in repeated reasoning.   * Plot ordered pairs of integers and other rational numbers on a coordinate plane in all four quadrants.   + I can plot ordered pairs of integers in all four quadrants.   + I can plot ordered pairs of rational numbers in all four quadrants. | | |
| 6.NS.7a Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. *For example, interpret –3 > –7 as a statement that –3 is located to the right of –7 on a number line oriented from left to right.* | MP.1 Make sense of problems and persevere in solving them.  MP.2 Reason abstractly and quantitatively.  MP.3 Construct viable arguments and critique the reasoning of others.  MP.4 Model with mathematics.  MP.5 Use appropriate tools strategically.  MP.6 Attend to precision.  MP.7 Look for and make use of structure.  MP.8 Look for and express regularity in repeated reasoning.   * Recognize that larger numbers are on the right of the number line and smaller numbers are to the left of the number line.   + I can recognize that numbers larger than zero are on the right of the number line.   + I can recognize that numbers smaller than zero are on the left of the number line. * Use a number line to show the relationship between two numbers.   + I can use a number line to show the relationship between two numbers. * Demonstrate understanding that inequalities are a comparison of quantities.   + I can define an inequality as a comparison of quantities.   + I can demonstrate an inequality on a number line. * Use comparison signs (< , >, ≤ , ≥ , ≠) to show the relationship between quantities.   + I can show the relationship between quantities using the appropriate comparison sign. | | |
| 6.NS.7b Write, interpret, and explain statements of order for rational numbers in real-world contexts. *For example, write –3 oC > –7 oC to express the fact that –3 oC is warmer than –7 oC.* | MP.1 Make sense of problems and persevere in solving them.  MP.2 Reason abstractly and quantitatively.  MP.3 Construct viable arguments and critique the reasoning of others.  MP.4 Model with mathematics.  MP.5 Use appropriate tools strategically.  MP.6 Attend to precision.  MP.7 Look for and make use of structure.  MP.8 Look for and express regularity in repeated reasoning.   * Explain statements of order for rational numbers in real-world contexts.   + I can explain statements that compare values in real-world contexts. * Interpret statements of order for rational numbers in real-world contexts.   + I can interpret statements that compare values in real-world contexts. * Write statements of order for rational numbers in real-world contexts.   + I can write statements that compare values in real-world contexts. | | |
| 6.NS.7c Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. *For example, for an account balance of –30 dollars, write |–30| = 30 to describe the size of the debt in dollars.* | MP.1 Make sense of problems and persevere in solving them.  MP.2 Reason abstractly and quantitatively.  MP.3 Construct viable arguments and critique the reasoning of others.  MP.4 Model with mathematics.  MP.5 Use appropriate tools strategically.  MP.6 Attend to precision.  MP.7 Look for and make use of structure.  MP.8 Look for and express regularity in repeated reasoning.   * Describe the absolute value of a rational number as its distance from 0 on the number line.   + I can model and discuss distance from zero using rational numbers   + I understand that the distance from zero is represented by absolute value. * Read and write absolute value.   + I can read absolute value.   + I can write absolute value using the correct symbol. * Interpret absolute value in a real-world situation.   + I can understand the use of absolute value in real-world situations. | | |
| 6.NS.7d Distinguish comparisons of absolute value from statements about order. *For example, recognize that an account balance less than –30 dollars represents a debt greater than 30 dollars.* | MP.1 Make sense of problems and persevere in solving them.  MP.2 Reason abstractly and quantitatively.  MP.3 Construct viable arguments and critique the reasoning of others.  MP.4 Model with mathematics.  MP.5 Use appropriate tools strategically.  MP.6 Attend to precision.  MP.7 Look for and make use of structure.  MP.8 Look for and express regularity in repeated reasoning.   * Compare statements of absolute value.   + I can compare absolute values using the correct comparison symbol.   + I can determine the difference between comparisons of absolute value and statements of order.   + I can model a number line with two values   + I can use the model to write statements and inequalities about the relationship of two numbers   + I can compare absolute values of different numbers on the same number line.   + I can use the number line to write statements and inequalities about the absolute value of two numbers * Apply statements of a comparison using absolute value in real-world situations   + I can use absolute value to solve real-world problems | | |
| 6.NS.8. Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate. | MP.1 Make sense of problems and persevere in solving them.  MP.2 Reason abstractly and quantitatively.  MP.3 Construct viable arguments and critique the reasoning of others.  MP.4 Model with mathematics.  MP.5 Use appropriate tools strategically.  MP.6 Attend to precision.  MP.7 Look for and make use of structure.  MP.8 Look for and express regularity in repeated reasoning.   * Graph ordered pairs in all four quadrants.   + I can graph positive and negative numbers on the x- axis   + I can graph positive and negative numbers on the y-axis   + I can graph ordered pairs in all four quadrants   + I can identify absolute value of each coordinate within ordered pairs.   + I can use the absolute value to find the distance between points on a coordinate plane.   + I can solve mathematical problems by graphing points in all four quadrants of the coordinate plane.   + I can solve real-world problems by graphing points in all four quadrants of the coordinate plane. | | |
| **ASSESSMENT EVIDENCE:**  **Assessment Tasks that Provide Evidence for Claims including DOK** | * **Claim #1/DOK 1, 2, 3, 4 (circle one):**   Coordinate maps  Coordinate plots 1  Coordinate plots 2  Coordinate Town  Ocean Diving  Tasty treat cake factory 1  Tasty treat cake factory 2  Tasty treat cake factory 3  Tasty treat cake factory 4 | | |
| * **Claim #2/DOK 1, 2, 3, 4 (circle one):** | | |
| * **Claim #3/DOK 1, 2, 3, 4 (circle one):** | | |
| * **Claim #4/DOK 1, 2, 3, 4 (circle one):** | | |
| |  |  | | --- | --- | | **Goal** |  | | **Role** |  | | **Audience** |  | | **Situation** |  | | **Product/Performance** |  | | **Standards** |  | | | | |
| **Materials/Resources** |  | | |
| **Teacher Notes** |  | | |

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| **Sample Learning Plan**  **This is not intended to be a scope and sequence** | | |
| **Exploring and Making Connections**  **(Conceptual Understanding)** | **Practice**  **(Procedural Fluency)** | **Assessments**  **(Application)** |
| **6.NS.50** | | |
| **Focus Task (to begin unit)**:  Shane is keeping track of the temperature for a week for a class project. The following table shows his data.   |  |  | | --- | --- | | **Day** | **Temperature** | | Sunday | 3◦ F | | Monday | 5◦ F | | Tuesday | 0◦ F | | Wednesday | 1◦ F | | Thursday | -5◦ F | | Friday | -8◦ F | | Saturday | -7◦ F |   Show the data using a variety of visual models. | **Material Resources:**  Prentice Hall chapter 10 section 1  Story Problem Workbook page 85 | **Formative assessment by teacher using I Can statement checklist** |
| **6.NS.6a-c** | | |
| **Focus Task (to begin unit)**:  Denver, CO is called “The Mile High City” because its elevation is 5280 feet above sea level. Someone tells you that the elevation of Death Valley, CA is -282 feet.   1. Is Death Valley located above or below sea level? Explain. 2. How many feet higher is Denver than Death Valley? 3. What would your elevation be if you were standing near the ocean? | **Sample learning tasks:**  **Teacher note: These tasks may need refinement based on the needs of your students. Not all tasks have been vetted. These documents can be found in Moodle.**  Animal Altitude  Staging the Dance  Tug of War Student Task Sheet  **Material Resources:**  Prentice Hall chapter 10 sections 1 and 6 | **Formative assessment by teacher using I Can statement checklist** |
| **6.NS.7a-c** | | |
| **Focus Task (to begin unit)**:  A flea is jumping around on a number line.   1. If he starts at 1 and jumps 3 units to the right, then where is he on a number line? How far away from 0 is he? 2. If he starts at 1 and jumps 3 units to the left, then where is he on a number line? How far away from 0 is he? 3. If the flea starts at 0 and jumps 5 units away, where might he have landed? 4. If the flea jumps 2 units and lands at 0, where might he have started? | **Sample learning tasks:**  **Teacher note: These tasks may need refinement based on the needs of your students. Not all tasks have been vetted. These documents can be found in Moodle.**  M&M  School Map  Take me out the Ball Game  Absolute Value Account Balance  **Material Resources:**  Prentice Hall chapter 10 sections 1 and 7  Story Problem Workbook page 91 | **Formative assessment by teacher using I Can statement checklist** |
| **6.NS.8** | | |
| **Focus Task (to begin unit)**:  You have been hired to be the City Planning Committee Chair for a new town being built around an archeological dig where dinosaur bones have been found. They are building a city around it because it will take years to excavate. Using a coordinate grid, create the blueprint for your city using the dig site as the origin. Make sure you use all four quadrants.   1. Make sure your city includes all of the following:    1. Hospital    2. City Hall    3. School (K-12 will all be at the same school)    4. Park    5. Library    6. Grocery Store    7. Gas Station    8. Church    9. Doctor’s Office    10. Airport    11. Police Station 2. Write the coordinates of each location 3. How far from the dig site is each location? (For example, if the Hospital is at (-5, 3) it is 5 blocks west and 3 blocks north) | **Material Resources:**  Prentice Hall chapter 10 sections 6 and9 | **Formative assessment by teacher using I Can statement checklist** |

**Stage 3 Learning Plan**

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| **Focus** | | | **Coherence** | **Rigor** | |
| Learning Goal(s):  Understand that the place of a digit inside a number determines its value. | Success Criteria: | Learning Targets  I can statements…  (completed by PLCs): | Activate Prior Knowledge:  Previous Grade Level:  Number Talks:  Number Strings: | Conceptual Understanding/  Application: | Procedural Fluency: |
| Learning Goal(s):  Understand that place value is essential in addition and subtraction. | Success Criteria: | Learning Targets  I can statements…  (completed by PLCs): | Activate Prior Knowledge:  Previous Grade Level:  Number Talks:  Number Strings: | Conceptual Understanding/  Application: | Procedural Fluency: |
| Learning Goal(s):  Understand that place value is essential in multiplication and division. | Success Criteria: | Learning Targets  I can statements…  (completed by PLCs): | Activate Prior Knowledge:  Previous Grade Level:  Number Talks:  Number Strings: | Conceptual Understanding/  Application: | Procedural Fluency: |
| Learning Goal(s):  Understand that multi-digit whole numbers can be read and written using base-ten numerals, number names, and expanded form. | Success Criteria: | Learning Targets  I can statements…  (completed by PLCs): | Activate Prior Knowledge:  Previous Grade Level:  Number Talks:  Number Strings: | Conceptual Understanding/  Application: | Procedural Fluency: |
| Learning Goal(s): | Success Criteria: | Learning Targets  I can statements…  (completed by PLCs): | Activate Prior Knowledge:  Previous Grade Level:  Number Talks:  Number Strings: | Conceptual Understanding/  Application: | Procedural Fluency: |
| Learning Goal(s): | Success Criteria: | Learning Targets  I can statements…  (completed by PLCs): | Activate Prior Knowledge:  Previous Grade Level:  Number Talks:  Number Strings: | Conceptual Understanding/  Application: | Procedural Fluency: |
| Learning Goal(s): | Success Criteria: | Learning Targets  I can statements…  (completed by PLCs): | Activate Prior Knowledge:  Previous Grade Level:  Number Talks:  Number Strings: | Conceptual Understanding/  Application: | Procedural Fluency: |
| Learning Goal(s): | Success Criteria: | Learning Targets  I can statements…  (completed by PLCs): | Activate Prior Knowledge:  Previous Grade Level:  Number Talks:  Number Strings: | Conceptual Understanding/  Application: | Procedural Fluency: |
| Learning Goal(s): | Success Criteria: | Learning Targets  I can statements…  (completed by PLCs): | Activate Prior Knowledge:  Previous Grade Level:  Number Talks:  Number Strings: | Conceptual Understanding/  Application: | Procedural Fluency: |