

Teacher(s): Mrs. Breazeale & (Ms. DeBlanc)

Subject/Grade: 7th /Grade Math

Week of: Nov 27, 2023

Domain: Expressions & Equations

Lesson Plan Title: Equations

MATHEMATICS - Mississippi College and Career Readiness Standards for 7 th Grade	
Numbers & Operations	7.NS.1 Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addi...
Ratios & Proportions	7.RP Analyze proportional relationships and use them to solve real-world and mathematical problems.
Expressions & Equations	<p>7.EE Solve real-life and mathematical problems using numerical and algebraic expressions and equations.</p> <p>7.EE.1 Apply properties as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.</p> <p>7.EE.2 Understand that rewriting an expression in different, yet equivalent, forms in a problem can show how the quantities in it are ...</p> <p>7.EE.3 Write an expression from a real world context possibly involving sales tax, tip, discount, gratuity, markup, selling price, perim...</p> <p>7.EE.4 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequaliti...</p> <p>7.EE.4a Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbe...</p> <p>7.EE.4b Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers...</p>
Geometry	<p>7.G Draw, construct, and describe geometrical figures and describe the relationships between them.</p> <p>7.G.1 Solve problems involving geometric figures, including actual lengths and area of a scale drawing.</p>
Statistics & Probability	<p>7.SP.3 Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the di...</p> <p>7.SP.3 Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the di...</p>

ESSENTIAL QUESTION(S): How will I use variables to represent quantities in a real-world mathematical problem, and construct simple equations to solve problems by reasoning about quantities?

Date	Objective	Focus Question	I will...
11/27 M	TSWBAT translate real-world mathematical problems into simple equations by identifying the constant, variable, rate, and total using the format $mx + b = y$.	How will I construct an equation once the variable, constant, and rate have been identified?	<p>Read and analyze real-world problems by identifying the rate/variable, constant, and sum or difference (total).</p> <p>Write a simple equation using $y=mx+b$ format.</p>

11/28 T	TSWBAT complete the iReady lesson titled "Solve Multi Step Equations Part 1."	How do I solve one-variable equations of the form $mx + b = y$ in which m , b , and y are non-zero rational numbers?	Solve one-variable equations of the form $mx + b = y$ in which m , b , and y are non-zero rational numbers.
11/29 W	TSWBAT examine and analyze real world problems in order to write and solve equations with two or more addends.	How can I write and solve equations with two or more addends?	Write and solve equations with two or more addends.
11/30 TH	TSWBAT examine and analyze real world problems in order to write and solve equations with grouping symbols.	How can I write and solve equations with grouping symbols?	Write and solve equations with grouping symbols?
12/1 F	TSWBAT write equations in the format $MX+B=Y$ and solve for x .	How do I write and solve equations? (Review for the week)	Write and solve equations.

REMEDIATION & ENRICHMENT

Students	Skill(s) & Activity
P25	<p>M - Mrs. Breazeale & Ms. DeBlanc will take turns helping students individually at their desk while the other one demonstrates problems to the whole group.</p> <p>W - Ms. DeBlanc will invite individual students to her desk to discuss their iREADY math diagnostic goals.</p>
Bubbles	<p>M - Mrs. Breazeale & Ms. DeBlanc will take turns helping students individually at their desk while the other one demonstrates problems to the whole group.</p> <p>W - Bubbles will also be given opportunities to help students in the P25 group as a peer tutor.</p> <p>W - Ms. DeBlanc will invite individual students to her desk to discuss their iREADY math diagnostic goals.</p>
T25	<p>M - Mrs. Breazeale will help students individually at their desk and whole group based on students needs.</p> <p>W - T25 will also be given opportunities to help students in the P25 & Bubble groups as a peer tutor.</p> <p>W - Ms. DeBlanc will invite individual students to her desk to discuss their iREADY math diagnostic goals.</p>

MONDAY_ Nov 27, 2023

BELL RINGER: *The student will copy and solve an MAAP style question from the board . TTW review.* (7 minutes)

ANTICIPATORY SET: (5-7 minutes)

HOOK: Show students a hanger and ask what it is. (Discuss) Ask students what a hanger is used for. (Discuss.) Ask students what would happen if I placed something on one side and not the other. (Discuss) Ask how we can keep the hanger from being lopsided? (Discuss.)

IMPORTANCE/RELEVANCE: TTW Say, "Algebra is a form of arithmetic in which abstract entities, usually represented by letters, are used in place of numbers. Algebra challenges you to think abstractly in order to solve problems."

INTRODUCTION: Show students the MS state standard we will be focusing on today, then explain what we are learning, why we are learning it, and how they will know they mastered it.

TEACHER INPUT: (10 minutes)

The teacher will...

- Say, "An equation is a mathematical sentence with an equal sign. To solve an equation, we find the missing number, or variable, that makes the sentence true. The number is called the solution."
- Instruct students to look at the family letter on page 353.
- Call students by name to read parts of the text.
- **Deblanc** & **Breazeale** will stop at key parts and ask **B25** students to repeat what was read.. Ask **BUBBLES** to rephrase what was read. Ask **T25** to summarize what was read. Ask select students questions about the text.

REAL-WORLD CONNECTION: (15 minutes)

The teacher will...

- Say, "The Jewish holiday of Purim is celebrated on specific dates in the Hebrew calendar that generally falls in early spring. Purim commemorates a story of triumph of the Jewish people of ancient Persia. An evil Prime minister named Haman was plotting to kill the Jews of the country. Haman was defeated by the hero's Esther and Mordechai.
- Today Jews celebrate Purim with carnivals and pageants. One of the traditional Purim delicacies is a triangle-shaped pastry called hamentashen, named after the villain of the story."

- Show the video titled “What is Purim? An introduction to the Jewish holiday” at <https://www.youtube.com/watch?v=6mmZDYogjCk>
- Ask students if they know of other holidays celebrated with pageants and special foods?
- Instruct students to turn to page 355 (RCC Workbook/Lesson 18: Write & Solve Multi-Step Equations)
- Read the opening problem. (A problem that relates to the Purim celebration.)
- Tell students to record “what is the problem about? What are they trying to find out? and what information is important?”
- Invite students to record their responses.
- Help students solve the problem.

INDEPENDENT PRACTICE: (10 minutes)

The student will ...

- Complete page 356/problems 1-3.
- **Deblanc** will work with a small group while **Breazeale** laps the room.

EARLY FINISHERS/HOMEWORK: Complete pages 357-358

STUDENT REFLECTION/EXIT TICKET: *The teacher will* call on students to read their response the the “Reflect” section on page 356. **(5 minutes)**

MATERIALS: RCC workbooks, pencils, calculators, notecards

ASSESSMENT(S): Teacher observation, and page 356

TUESDAY_ Nov 28, 2023

WARM-UP/HOOK: *The student will* login to iReady. Write down the lesson title (**Solve Multi-Step Equations Part 1**), class period, and date on the recording sheet. Take notes on lesson vocabulary and lesson goals. **(5 minutes)**

TEACHER INPUT: (5 minutes)

The teacher will ...

- Remind students to take notes on lesson vocabulary and lesson goals.
- Review the requirements to receive help on the lesson quiz - all vocabulary with definitions must be written down, at least 3 examples recorded from the lesson, and I need to see evidence that the students attempted to work out the current problem on paper.

INDEPENDENT PRACTICE: (35 minutes)

The student will ...

- Listen and complete a lesson (**Solve Multi-Step Equations Part 1**).
- Complete the lesson quiz with 80% or higher accuracy.

STUDENT REFLECTION/EXIT TICKET: *The student will* reflect on what they learned from the iReady lesson they just took based on their individual learning target. The teacher will use this data to determine which students need extra support. **(5 minutes)**

MATERIALS: notebook paper or “iReady Notes template,” computers, projector, exit tickets

ASSESSMENT(S): Teacher observation, exit tickets, iReady lesson quiz results

WEDNESDAY_ Nov 29, 2023

READING DIAGNOSTICS WILL BE GIVEN TODAY!

Bell Ringer: *The student will* copy and solve an MAAP style question from the board . TTW review. **(7 minutes)**

Review: Monday’s homework.

ANTICIPATORY SET: **(5 minutes)**

Hook/Real World Connection: Show students the video, Building Broadway: HAMILTON Set Designer David Korins, found at

<https://www.youtube.com/watch?v=wETgMUYQwus> Discuss.

Teacher Input (Breazeale & DeBlanc): (15 minutes)

The teacher will...

- Instruct students to turn to page 359.
- Read the opening problem. (A problem that relates to set building)
- Tell students to record “what is the problem about? What are they trying to find out? and what information is important?”
- Invite students to record their responses.
- Use pages 360-361 to help us solve.

Independent Practice: (15 minutes)

The student will...

- Complete pages 362-364.
- **Deblanc** will work with a small group while **Breazeale** laps the room.

Closure: Choose a **BUBBLE** student to summarize the lesson. Choose a **B25** to repeat what was said. Choose a **T25** student to share common misconceptions.

Assessment: Completed work.

THURSDAY_ Nov 30, 2023

MATH DIAGNOSTICS WILL BE GIVEN TODAY!

Bell Ringer: *The student will copy and solve an MAAP style question from the board . TTW review.* (7 minutes)

ANTICIPATORY SET: (5 minutes)

Hook/Real World Connection: Show students the video, Toronto Vacation Travel Guide | Expedia, found at <https://www.youtube.com/watch?v=7uY0Ab5HlZ0> Discuss..

Teacher Input: (15 minutes)

The teacher will..

- Instruct students to turn to page 365.
- Read the opening problem. (A problem that relates to Toronto, Canada.)
- Tell students to record “what is the problem about? What are they trying to find out? and what information is important?”
- Invite students to record their responses.
- Use pages 366-367 to help us solve.

Independent Practice: (15 minutes)

The student will..

- Complete pages 368-374.

Closure: Choose a **BUBBLE** student to summarize the lesson. Choose a **B25** to repeat what was said. Choose a **T25** student to share common misconceptions.

Assessment: Completed work.

FRIDAY_ Dec 1, 2023

Bell Ringer: *The student will copy and solve an MAAP style question from the board . TTW review. (7 minutes)*

Teacher Input: 10 minutes)

The teacher will...

- Write $MX + B = Y$ on the board.
- Say, "Today, we will be solving solving for "X" in $MX + B = Y$
- Equations such as $mx + b = y$ are called linear equations because when graphed, they will give you a straight line. The x variable does not have an exponent with it, because linear equations never have exponents for their variables.
- You can easily solve equations of this form, along with equations of the form $m(x + b) = y$. In both equations, the m, b, and y represent rational numbers, either integers or fractions.
- It's really quite easy to solve the equation $mx + b = y$. Remember, you want to isolate your x variable and move everything over to the other side. Here are your steps: 1) Subtract b from both sides if positive, or add b to both sides if negative. This gives you $mx + b - b = y - b$, which simplifies to $mx = y - b$. 2) Divide by m on both sides. This gives you $mx / m = (y - b) / m$, which simplifies to $x = (y - b) / m$.
- Let's take a look at some real-world examples of such a problem.
- Pass out a practice sheet.
- Present the focus question and learning goal.
- Rewrite the following format on the board: $mx + b = y$ where m is the coefficient and rate, x is the variable, b is the constant, and y is the total (sum or difference).
- Explain how we construct equations is to identify the variable, constant, and rate while reviewing this vocabulary and asking select students to give examples of each.
- (Say the variable is the letter and usually what we are trying to find. This variable is the unknown. The constant is a stand alone number not attached to any variables. The coefficient is paired with a variable. This is what the variable

is being multiplied by. A rate is a special ratio in which the two terms are in different units. Explain that in the first problem we will practice, the rate is cost per month.)

- Explain that completing this task is like being on a scavenger hunt looking for clues in the word problem.
- Present the first problem. Instruct students to underline the questions and now predict which operation we will use.
- Read the first example while circling key words and numbers.

Writing and Solving Equations from Word Problems

Guided Notes

A. A new one-year membership at RecPlex costs \$160. A registration fee of \$28 is paid up front, and the rest is paid monthly. How much do new members pay each month?

1. Define the variable (What do we not know?):
2. Determine the constant (if there is one):
3. What is the rate (look for “each”, “per”, something that will repeat):
4. Write the equation and solve:

- Think aloud, “ I see the total cost is \$160 so that must go where r is. The \$28 is paid up front and this cost does not depend on anything else so this must be the constant.” Replace the q with \$28. “I know there are 12 months in a year so this must be my rate that goes with the variable.” Finish writing the equation.
- Okay, now I know how to solve it. Combine like terms and isolate the variable using the inverse operations.” Solve the equation.
- Demonstrate in this same manner problems B and C.

Guided Practice: 15 minutes)

The teacher will...

- Present problem D.

- Call on different students for different tasks. One to underline the question. Another student to predict which operation we will use. Another to read the problem while circling important information. Another to write the template on the board: $mx + b = y$, another to replace the r with the total, another student to replace the q with the constraint, and another to replace the rate. Lastly choose a student to solve the equation and that student chooses another to explain what they did.
- Repeat this process for problem E.

Independent Practice: 10 minutes)

The student will...

- Complete problems F-I which the teachers lap and check work.

Closure: TTW Choose a **BUBBLE** student to summarize the lesson. Choose a **B25** to repeat what was said. Choose a **T25** student to share common misconceptions. (5 minutes)

Assessment: Teacher Observation & Completed work.

MISSISSIPPI STATE STANDARDS ACROSS CURRICULUM

Math Standards

Numbers & Operations:

7.NS. 1 Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.

7.NS.1a Describe situations in which opposite quantities combine and make 0.

7.NS.1b Understand that $p + q$ is the number located a distance from the absolute value of 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. Interpret sums of rational numbers by describing real-world contexts.

7.NS.1c Understand subtraction of rational numbers as adding the additive inverse. Show that the distance between two rational numbers on a number line is the absolute value of their difference, and apply this principle in real-world contexts.

7.NS.1d Apply properties of operations as strategies to add and subtract rational numbers.

7.NS.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.

7.NS.2a 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. Interpret products of rational numbers by describing real-world contexts.

7.NS.2b Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-p/q = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts.

7.NS.2c Apply properties of operations as strategies to multiply and divide rational numbers.

7.NS.2d Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.

7.NS.3 Solve real-world and mathematical problems involving the four operations with rational numbers.

Ratios & Proportions:

7.RP Analyze proportional relationships and use them to solve real-world and mathematical problems.

7.RP.1 Compute unit rates associated with ratios and fractions, including ratios or lengths, areas and other quantities measured in like of different units.

7.RP.2 Recognize and represent proportional relationships between quantities.

7.RP.2a 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.

7.RP.2b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.

7.RP.2c. Represent proportional relationships by equations.

7.RP.2d . Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where r is the unit rate.

Expressions & Equations:

7.EE Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

7.EE.1 Apply properties as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.

7.EE.2 Understand that rewriting an expression in different, yet equivalent, forms in a problem can show how the quantities in it are related.

7.EE.3 Write an expression from a real world context possibly involving sales tax, tip, discount, gratuity, markup, selling price, perimeter, area, and angle measures of a triangle. • Evaluate an expression given a value for the variable. • Translate a verbal expression into an algebraic expression. • Use manipulatives such as algebra tiles to factor expressions.

7.EE.4. Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

- a. Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q , and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. *For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?*

Geometry:

7.G Draw, construct, and describe geometrical figures and describe the relationships between them.