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For intervention tips, [click here](#) to head to my blog post,
“6 Tips for Making Math Intervention Work in the Middle Grades.”

DATA TRACKING

PROGRESS TEST

INDEPENDENT & DEPENDENT VARIABLE

[illegible]

PROGRESS TRACKING

SOLVING ONE-STEP INEQUALITIES

[illegible]

PROGRESS TRACKING

TWO-VARIABLE RELATIONSHIPS

[illegible]

PRE AND POST ASSESSMENT TRACKING

EQUATIONS & INEQUALITIES

[illegible]

TRACK STUDENT PROGRESS

PRE + POST ASSESSMENTS

Name: _____ Date: _____

EQUATIONS & INEQUALITIES

Directions: Complete each problem. Show your work when needed.

1) The number of customers waiting in line changes as more customers arrive at a restaurant. Identify the independent and dependent variables.

2) A printer uses ink as it prints. The amount of ink remaining depends on the number of pages printed. Write an equation for the dependent variable. Explain.

3) Write an equation for the statement: Eight more than a number is 35.

4) A baker divides 96 cupcakes among 8 trays. Write an equation to represent the number of cupcakes per tray. Do not solve.

5) Solve. $x - 19 = 34$

6) Solve. $\frac{m}{7} = 35$

7) Write an inequality for the statement: A suitcase must weigh less than 50 pounds.

8) A suitcase must weigh less than 50 pounds.

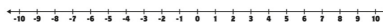
PRE-ASSESSMENT

EQUATIONS & INEQUALITIES PRE-ASSESSMENT

9) Solve. $n + 16 < 39$

10) Solve. $5a \geq 65$

11) Graph $x \leq -2$ on a number line.



12) A number line has an open circle at 6 and is shaded to the right. Write the inequality represented by the graph.

13) Write an equation for the relationship shown in the table.

x	0	1	2	3
y	4	10	16	22

14) A museum charges a \$10 admission fee plus \$2 for each special exhibit visited. Write an equation for the total cost (c) when visiting e exhibits. Find the total cost if 5 special exhibits are visited.

Equations & Inequalities (Post-Assessment)

Directions: Find each answer. Show your work on a separate piece of paper.

* Required

1a) Identify the INDEPENDENT variable from the following situation: The longer I study the better my test grade will be. *

1 point

- ☐ my age
- ☐ test grade
- ☐ subject
- ☐ time spent studying

1b) Identify the DEPENDENT variable from the following situation: The longer I study the better my test grade will be. *

1 point

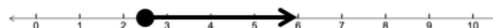
1c) Identify the INDEPENDENT variable from the following situation: June

1 point

- ☐ # of movies
- ☐ # of dance lessons

8) Which inequality is displayed on the number line? *

1 point



$$x > 3.5$$

$$x \geq 2.5$$

☐ A

☐ B

$$x \leq 3.5$$

$$x > 2.5$$

☐ C

☐ D

9) Solve for x . Show your work on paper. *

1 point

$$x + 9 > 19$$

Your answer

21

10) Solve for x . Show your work on paper. *

1 point

PRE/POST
ASSESSMENTS
IN PRINT AND
GOOGLE
FORMS

INDEPENDENT & DEPENDENT VARIABLES

Key Concepts:

- **Independent Variable:** The quantity you choose or change.
- **Dependent Variable:** The quantity that changes because of the independent variable.
- **Example:**
A dog walker earns \$12 per hour.
 - Independent: Hours worked (h)
 - Dependent: Total earnings (e)

How I feel about this concept:

- ☐ I Completely Get It ☐ I'm Struggling
☐ I've Almost Got It ☐ I'm Lost

I still don't understand:

Practice:

Directions: Identify the independent and dependent variables in each situation.

- 1) A movie theater charges \$9 per ticket. The total cost depends on how many tickets are purchased.
- 2) A plant grows taller as time passes.
- 3) The equation $d = 45t$ represents the distance traveled (d) after (t) hours at a constant speed.

Independent: _____ Independent: _____ Independent: _____

Dependent: _____ Dependent: _____ Dependent: _____

- 4) A bathtub fills with water 5) The equation $p = 6n$ 6) A student's total score

WRITING EQUATIONS

Key Concepts:

- An **equation** is a mathematical statement showing that two expressions are equal.
- Use a **variable** for an unknown number.
 - Identify the operations described.
 - Use an **equal sign** to connect quantities with the same value.

Example:

Five more than twice a number is 19.
 $2x + 5 = 19$

How I feel about this concept:

- ☐ I Completely Get It ☐ I'm Struggling
☐ I've Almost Got It ☐ I'm Lost

I still don't understand:

Practice:

Directions: Write an equation for each phrase or situation. Do not solve.

- 1) Seven more than a number is 24. 2) Four times a number equals 36. 3) A number decreased by 11 is 18.

- 4) The quotient of a number 6 is 9. 5) Three less than twice a number is 25. 6) Five times the sum of a number and 4 equals 45.

SOLVING EQUATIONS

Key Concepts:

Solving an equation means finding the value of the variable that makes the equation true.

- Use inverse operations to isolate the variable.
- Addition $\leftrightarrow$ Subtraction
 - Multiplication $\leftrightarrow$ Division

Do the same operation to both sides to keep the equation balanced.

Example:

$$\begin{aligned} x + 9 &= 23 \\ -9 &-9 \\ x &= 14 \end{aligned}$$

How I feel about this concept:

- ☐ I Completely Get It ☐ I'm Struggling
☐ I've Almost Got It ☐ I'm Lost

I still don't understand:

Practice:

- For #1 - 4:** Solve each equation.
- 1) $x + 1 = 5$ 2) $2y - 18 = 27$ 3) $3z = 12$ 4) $\frac{a}{4} = 8$

- 5) $2x - 1 = 58$ 6) $y = 32$

GUIDED
PRACTICE
AND
STUDENT
RESPONSE

GRAPHING ONE-VARIABLE INEQUALITIES

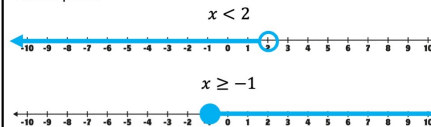
Key Concepts:

A number line shows all the values that make an inequality true.

- Open circle ($\circ$)
 - The number is not included ($<$ or $>$).
- Closed circle ($\bullet$)
 - The number is included ($\leq$ or $\geq$).

Shade left: Less than.
Shade right: Greater than.

Examples:



How I feel about this concept:

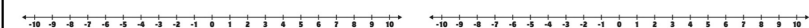
- ☐ I Completely Get It ☐ I'm Struggling
☐ I've Almost Got It ☐ I'm Lost

I still don't understand:

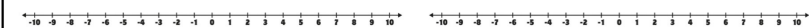
Practice:

For #1 - 4: Graph each inequality on a number line.

- 1) $x > 3$ 2) $m \leq -2$



- 3) $p < 5$ 4) $a \geq 0$



For #5 - 6: Write the inequality represented by each description.

- 5) A number line has an open circle at -4 and is shaded to the right. 6) A number line has a closed circle at 7 and is shaded to the left.

EXTRA PRACTICE

EXTRA PRACTICE

TWO-VARIABLE RELATIONSHIPS

GRAPHING ONE-VARIABLE INEQUALITIES

1) Complete the table using $y = 6x$.

2) Write an equation for the relationship shown.

x	0	2	5	7
y				

x	1	3	5	7
y	11	33	55	77

3) Complete the table using $y = x + 8$.

4) Write an equation for the relationship shown.

x	0	3	6	10
y				

x	0	1	2	3
y	4	5	6	7

5) Use $y = 4x + 1$ to find the ordered pairs when $x = 0, 1, 2, 3$.

6) A relationship is generated by the ordered pairs below. Write an equation representing the relationship.

$(0, 0), (2, 10), (4, 20), (6, 30)$

7) A student graphs the relationship $y = 4x$. Which of the following points appears on the graph?

8) A graph contains the points below. Describe how y changes when x increases by 1.

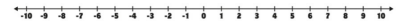
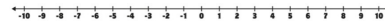
$(1, 7), (2, 14), (3, 21)$

- A. $(3, 8)$
- B. $(4, 16)$
- C. $(6, 4)$

For #1 – 6: Graph each inequality on the number line.

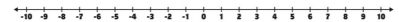
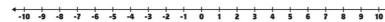
1) $x < -3$

2) $n \geq 4$



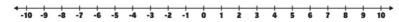
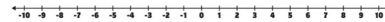
3) $y \leq 7$

4) $t > -5$



5) $r \geq -1$

6) $b < 6$



For #7 – 9: Write the inequality represented by each number line description.

7) An open circle at 2 with shading to the left.

8) A closed circle at -6 with shading to the right.

9) A closed circle at 8 with shading to the left.

10) A student graphs $x \geq -8$ using a closed circle at -8 and shading to the left. Is the graph correct? Explain.

EXTRA PRACTICE

Which values from the set $\{-4, -2, 0, 3, 5\}$ would be included in the graph of $x > -2$?

SOLVING ONE-STEP INEQUALITIES

EXTRA PRACTICE

WRITING INEQUALITIES

For #1 – 6: Write an inequality for each statement. Do not solve.

1) A number is no less than 17.

2) A number is fewer than 46.

3) The sum of a number and 12 is at least 30.

4) Seven times a number is less than 63.

5) A number decreased by 8 is greater than 21.

6) A number divided by 5 is at most 11.

For #7 – 10: Define a variable and write an inequality for each situation.

7) A roller coaster requires riders to be at least 48 inches tall.

8) A delivery service allows packages weighing no more than 35 pounds.

9) A student needs to read more than 120 pages to earn a reading award.

10) A community center can accommodate fewer than 85 people in a meeting room.

11) Which inequality represents "three times a number is at least 27?"

- A. $3 + x \geq 27$
- B. $3x > 27$
- C. $3x \geq 27$

12) A student writes $p + 15 \leq 60$. Describe a real-world situation that could be represented by this inequality. Explain what p represents.

BASIC
PRACTICE
FOR EACH
SKILL

ERROR ANALYSIS

ERROR ANALYSIS

INDEPENDENT & DEPENDENT VARIABLES

Directions: Each student made a mistake when identifying variables or representing a relationship. Explain the error and correct it.

1) A gym charges \$18 per class.

A student identifies:

Independent variable: Total cost
Dependent variable: Number of classes

Explain the mistake and identify the correct variables.

2) The equation $a = 9b$ represents the number of apples (a) in b bags.

A student says: "The number of apples is independent because it's written first in the equation."

Explain the mistake and identify the dependent variable.

3) A student is tracking the distance a bicycle travels at a constant speed.

The student says: "The time traveled depends on the distance because the farther the bicycle goes, the longer it takes."

Explain the mistake. Identify the independent and dependent variables when distance is being tracked over time.

4) A school orders 12 markers for each classroom.

A student identifies:
Independent variable: 12 markers
Dependent variable: Number of classes

Explain the mistake and identify the correct variables.

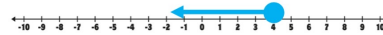
ERROR ANALYSIS

GRAPHING ONE-VARIABLE INEQUALITIES

Directions: Each student made a mistake when graphing or interpreting an inequality. Explain the error and correct it.

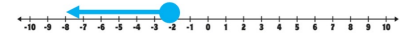
1) $x < 4$

Student's graph:



2) $n \geq -2$

Student's graph:



3) $p \leq 6$

Student's graph:



4) $a < -5$

Student's graph:



5) A graph has an open circle at -1 and shading to the left.

Student's inequality:

$$x \geq -1$$

6) A graph has a closed circle at 9 and shading to the left.

Student's inequality:

$$x > 9$$

ERROR ANALYSIS

WRITING EQUATIONS

Directions: Each student wrote an equation incorrectly. Identify the error and write the correct equation. Do not solve.

1) Phrase: Nine less than a number is 31.

Student's equation: $9 - x = 31$

2) Phrase: Seven times a number equals 56.

Student's equation: $7 + x = 56$

3) Phrase: The quotient of 48 and a number is 6.

Student's equation: $\frac{x}{48} = 6$

4) Phrase: Three times the sum of a number and 8 equals 42.

Student's equation: $3x + 8 = 42$

5) Phrase: A gym charges a \$25 registration fee and \$8 per class. A member pays \$97 in total.

Student's equation: $25c + 12 = 97$

7) Phrase: Six is equal to four less than a number.

Student's equation: $6 = 4 - 2x$

STUDENTS
IDENTIFY
AND
CORRECT
ERRORS

ERROR ANALYSIS

SOLVING ONE-STEP INEQUALITIES

Directions: Each student made a mistake when solving or interpreting an inequality. Explain the error and correct the work.

1) $x + 15 > 38$

Student's work:

$$\begin{aligned} x &> 38 + 15 \\ x &> 53 \end{aligned}$$

2) $7m \leq 84$

Student's work:

$$\begin{aligned} m &\leq 84 \div 7 \\ m &\leq 12 \end{aligned}$$

3) $p - 16 < 29$

Student's work:

$$\begin{aligned} p &= 29 + 16 \\ p &= 45 \end{aligned}$$

4) $\frac{a}{5} \geq 9$

Student's work:

$$\begin{aligned} a &\geq 9 \div 5 \\ a &\geq 1.8 \end{aligned}$$

5) $y + 4.7 \leq 13.2$

Student's work:

$$\begin{aligned} y &\leq 13.2 - 4.7 \\ y &\leq 9.5 \end{aligned}$$

6) $3n \geq 36$

Student's work:

$$\begin{aligned} n &> 36 \div 3 \\ n &> 12 \end{aligned}$$

7) $k + 6 < 21$

Student's answer: $k < 15$

The student said, "Since 14 is less than 15, the only solutions are 14 and 15."

8) A recreation center can hold no more than 80 people. There are already 34 people inside.

Student's work: $34 + p \geq 80$
 $p \geq 46$

The student said, "at least 46 more people can enter."