Equations & Inequalities

Unit Plan

LESSON	RESOURCES
Unit Prep (pgs. 7 – 13)	• Weekly Warm Up Sheet • Exit Tickets • Lesson Plan Template • Vocabulary Pages • Unit Pre-Assessment
(1) Identifying and Understanding Equations (pgs. 14 – 26)	• Two Warm Ups • Equations Notes • Equations Graphic Organizer • Mathematical Statements Fold and Flip Notes • Identifying and Understanding Equations Practice • Independent and Dependent Variables Notes • Independent and Dependent Variables Practice
(2) Writing Equations (pgs. 27 – 32)	• Two Warm Ups • Writing Equations Notes • Writing Equations Practice (2 pages)
(3) Solving Equations (pgs. 33 – 47)	• Three Warm Ups • Solving Equations Notes (2 pages) • Solutions to Equations Practice • Solving Equations Practice • Writing and Solving Equations Practice • Write and Solve Equations Matching Activity
(4) Writing and Graphing Inequalities (pgs. 48 – 68)	• Three Warm Ups • Inequalities Notes (2 pages) • Inequalities Graphic Organizer • Inequalities Symbols Fold and Flip Notes • Inequalities Matching Activity • Inequalities Practice (4 pages)
End of Unit (pgs. 69 – 72)	• Study Guide • Unit Exam

Equations and Inequalities Unit Lesson Plan

STANDARD(S): _____ DATE(S): _____

STUDENT MATERIALS:

- ❑ CALCULATOR
- ❑ COLORED PENCILS
- ❑ RULER
- ❑ SCISSORS
- ❑ GLUE
- ❑ PROTRACTOR
- ❑ COMPASS
- ❑ GRAPH PAPER
- ❑ DRY ERASE
- ❑ _____
- ❑ _____
- ❑ _____

LESSON PROGRESSION:

_____

_____

_____

_____

Name _____ Date _____

Equations and Inequalities Unit Pre-Assessment

{Show all work on a separate sheet of paper.}

1. Is 4 a solution to the equation $8 \div m = 32$?
2. Pam bought 8 notebooks and spent a total of $40. Write and solve an equation to determine how much she paid (x) for each notebook.
3. Write an equation to represent "twice a number is fifty."
4. Identify the independent and dependent variable : The height of a tree and the age of the tree.

I : _____

D : _____

Definition:

Examples:

Equations

Name _____ Date _____

Writing Equations PRACTICE

Michael is packing up boxes of books to ship off for his company. Each box holds 30 books.

1. Complete the table to the right.
2. Write an equation for the number of books (b) shipped if x boxes were packed.

_____

3. What is the independent variable?

_____

Boxes (x)	Books (b)
1	30
2	
3	
4	
10	

Name _____ Date _____

Writing & Solving Equations PRACTICE

Write and solve an equation for each situation.

1. You are cans of soda. A single can of soda costs $0.35. Write an equation relating th total cost (x) to the number of cans of soda (c) you purchase.
   - Define your variables: _____
   - Write the equation: _____
   - What is the total cost if you purchase 25 cans of soda? _____
2. A cell phone plan will cost you $49.99 per month. Write an equation relating the tot cost (c) to the number of months (m) you have the data plan.

Name _____ Date _____

Inequalities Notes

Identify : How do you "read" each symbol?

- $>$: _____
- $<$: _____
- $\geq$: _____
- $\leq$: _____

Open or Closed?

- An open circle represents : _____
- A closed circle represents :

Name _____ Date _____

Equations and Inequalities Unit Study Guide

KEY TERMS :

Expression
Numbers, symbols and operations that are grouped together that show the value of something.

Equation
A mathematical sentence that says two expressions are equal. The equal sign (=) is used to show equality.

Inequality
A mathematical sentence that says two expressions are NOT equal. One of four inequality symbols is used to show the expressions are not the same.

GRAPHING INEQUALITIES :

Open or Closed?

- An open circle indicates that the circled number is not included in the solution set.
- A closed circle indicates that the circled number is included in the solution set.

The Direction :

- The direction the arrow points shows which numbers are included in the solution set for the inequality.

SOLVING EQUATIONS :

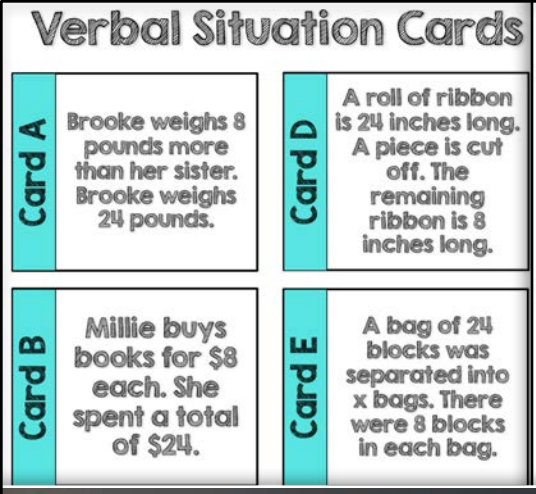
WRITING EQUATIONS KEY WORDS

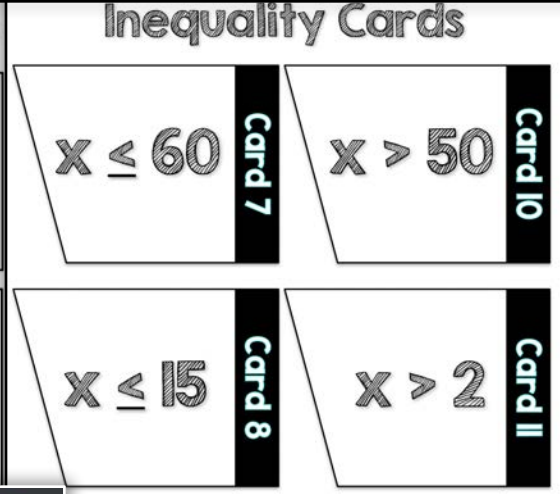
Name _____ Date _____

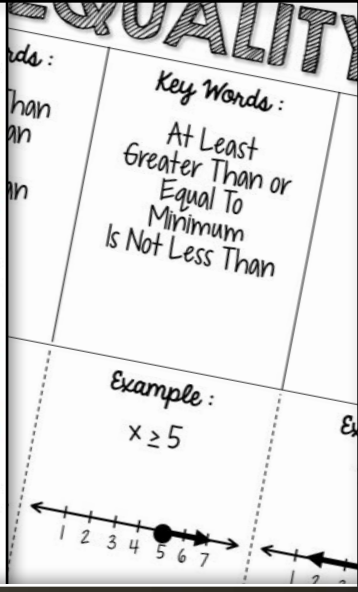
Equations and Inequalities Unit Exam

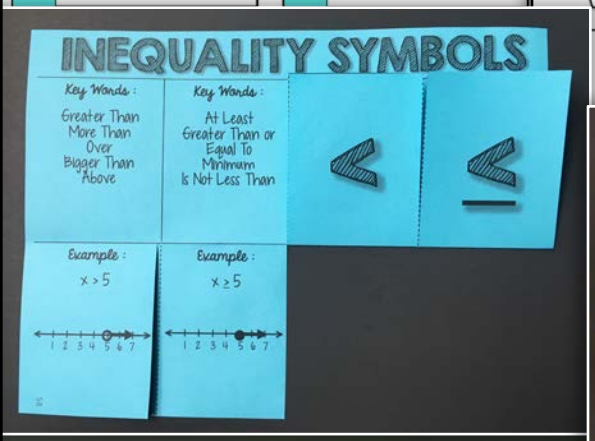
SHOW YOUR WORK WHENEVER POSSIBLE. USE A SEPARATE SHEET OF PAPER IF YOU NEED MORE ROOM!

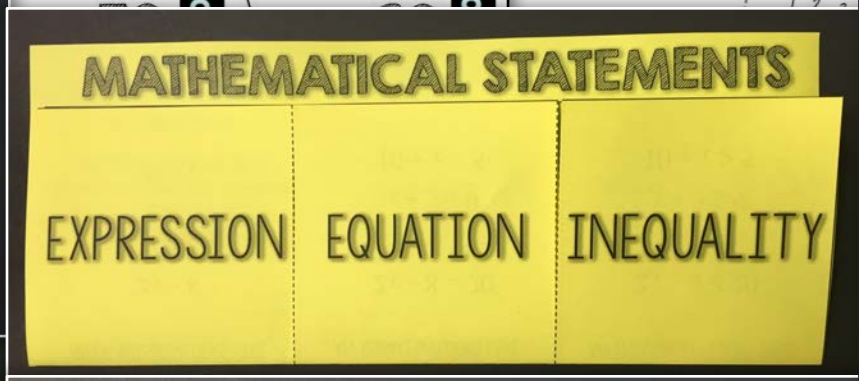
1. Is 5 a solution to the equation $5 \cdot m = 17$?
2. Carla roller skates 3 miles each day for x days. She completed a total of 60 miles. Write and solve an equation to determine how many days she roller skated.
3. Write an equation to represent four less than n is equal to ten.
4. Write an equation to represent fourteen more than a number is twenty.
5. Is 15 a solution to the equation $x - 7 = 8$?
6. Identify the independent and dependent variable : The cost of filling up a tank of gas and the number of gallons of gas put in the tank.

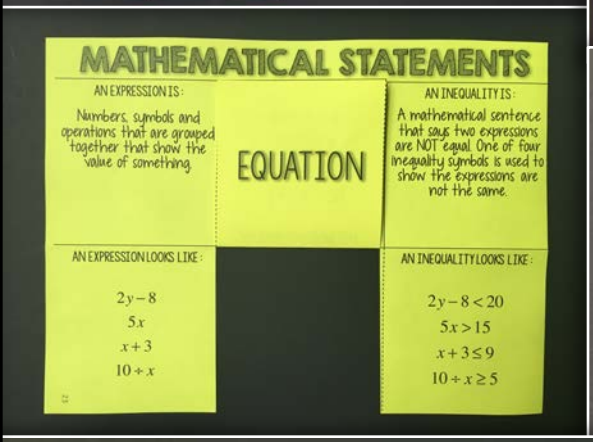

Verbal Situation Cards
Card A
Brooke weighs 8 pounds more than her sister. Brooke weighs 24 pounds.
Card D
A roll of ribbon is 24 inches long. A piece is cut off. The remaining ribbon is 8 inches long.
Card B
Millie buys books for $8 each. She spent a total of $24.
Card E
A bag of 24 blocks was separated into x bags. There were 8 blocks in each bag.

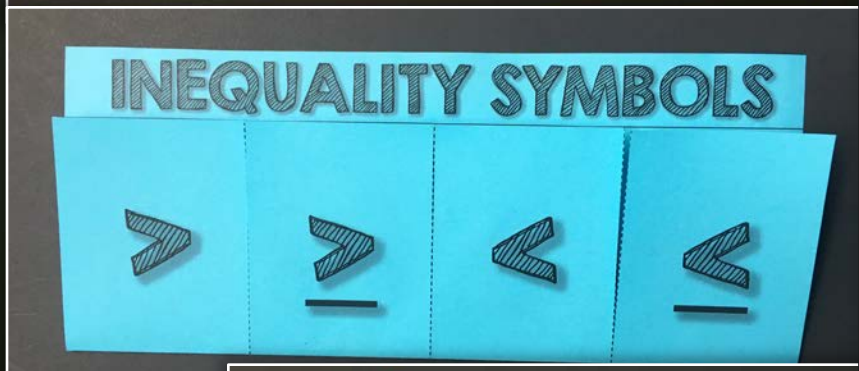

Inequality Cards
x ≤ 60
Card 7
x > 50
Card 10
x ≤ 15
Card 8
x > 2
Card 11

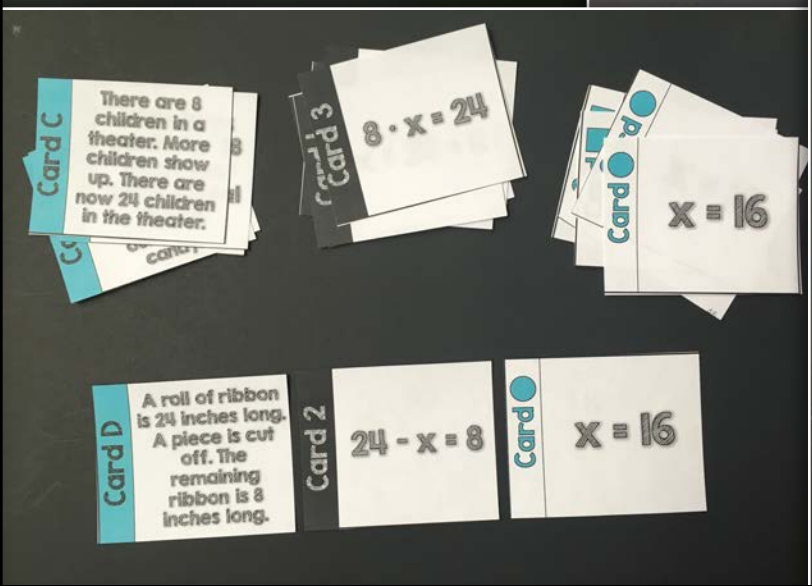

Key Words :
At Least
Greater Than or
Equal To
Minimum
Is Not Less Than
Example :
x ≥ 5

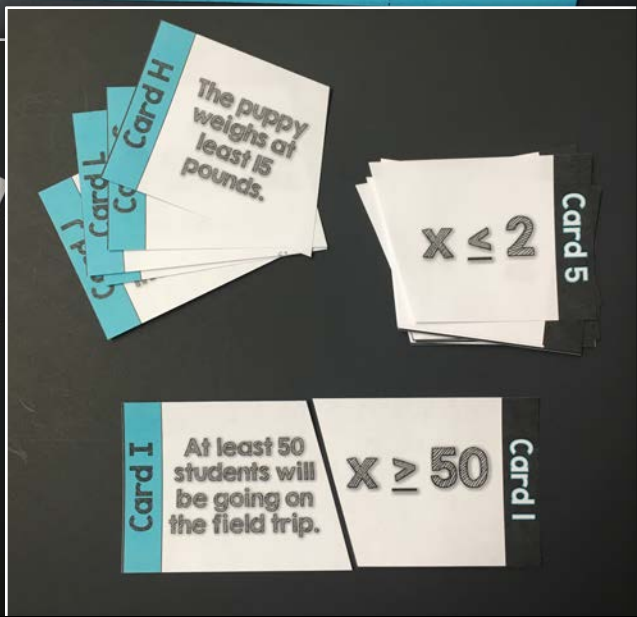

INEQUALITY SYMBOLS
Key Words :
Greater Than
More Than
Over
Bigger Than
Above
Key Words :
At Least
Greater Than or
Equal To
Minimum
Is Not Less Than
Example :
x > 5
Example :
x ≥ 5


MATHEMATICAL STATEMENTS
EXPRESSION
EQUATION
INEQUALITY


MATHEMATICAL STATEMENTS
AN EXPRESSION IS :
Numbers, symbols and operations that are grouped together that show the value of something.
EQUATION
AN INEQUALITY IS :
A mathematical sentence that says two expressions are NOT equal. One of four inequality symbols is used to show the expressions are not the same.
AN EXPRESSION LOOKS LIKE :
2y − 8
5x
x + 3
10 ÷ x
AN INEQUALITY LOOKS LIKE :
2y − 8 < 20
5x > 15
x + 3 ≤ 9
10 ÷ x ≥ 5


INEQUALITY SYMBOLS


Card C
There are 8 children in a theater. More children show up. There are now 24 children in the theater.
Card 3
8 • x = 24
Card
x = 16
Card D
A roll of ribbon is 24 inches long. A piece is cut off. The remaining ribbon is 8 inches long.
Card 2
24 - x = 8
Card
x = 16


Card H
The puppy weighs at least 15 pounds.
x ≤ 2
Card 5
Card I
At least 50 students will be going on the field trip.
x ≥ 50
Card 1

LESSON ONE

Identifying and Understanding Equations

SUGGESTED TIME FRAME : THREE - FOUR DAYS

Resources Included:

- Two Warm Ups
- Equations Notes
- Equations Graphic Organizer
- Mathematical Statements Fold and Flip Notes
- Identifying and Understanding Equations Practice – Can be used for homework or classwork
- Independent and Dependent Variables Notes
- Independent and Dependent Variables Practice – Can be used for homework or classwork

Essential Skills :

- Identifying and understanding the parts of an equation and the difference(s) between expressions, equations and inequalities.

LESSON TWO
Writing Equations

SUGGESTED TIME FRAME : TWO DAYS

THIS LESSON SHOULD BE QUICK SINCE STUDENTS HAVE ALREADY LEARNED HOW TO WRITE EXPRESSIONS AND THIS GOES JUST ONE STEP BEYOND THAT.

Resources Included:

- Two Warm Ups
- Writing Equations Notes
- Writing Equations Practice (2 pages) – Can be used for homework or classwork

Essential Skills :

- Use variables to represent two quantities in a real-world situation, where one variables changes based on the other.
- Write an equation to express two variable relationships.
- Write equations to represent real world and mathematical situations.

LESSON THREE

Solving Equations

SUGGESTED TIME FRAME : THREE TO FOUR DAYS

Resources Included:

- Three Warm Ups
- Solving Equations Notes (2 pages)
- Solutions to Equations Practice – Can be used for homework or classwork
- Solving Equations Practice – Can be used for homework or classwork
- Writing and Solving Equations Practice – Can be used for homework or classwork
- Write and Solve Equations Matching Activity

Essential Skills :

- Determine which values from a given set make the equation true.
- Solve real-world and mathematical problems by writing and solving equations.
- Analyze the relationship between the dependent and independent variables using graphs and tables, and relate to equations.

LESSON FOUR
Writing and Graphing Inequalities

SUGGESTED TIME FRAME : THREE TO FOUR DAYS

Resources Included:

- Three Warm Ups
- Inequalities Notes (2 pages)
- Inequalities Graphic Organizer
- Inequalities Symbols Fold and Flip Notes
- Inequalities Matching Activity
- Inequalities Practice (4 pages) – Can be used for homework or classwork

Essential Skills :

- Determine which values from a given set make the equation or inequality true.
- Write statements of inequalities $(x > c)$ to represent a constraint or condition in a real-world or mathematical problem.
- Represent solutions of inequalities $(x > c)$ on number lines.