Lesson Objective: Solve and graph inequalities in one variable.

Vocabulary Box

inequality — A mathematical statement that shows that two quantities are not equal. Examples: $-5 \geq -8$; $x < 12$.

Guided Practice

You will complete the following practice problems with your partner. Then your teacher will review the answers. Make sure that you show all important work.

Directions: Solve and graph each inequality. Show your work.

1. $z + 18 < 13$

2. $11 > x - 3$

3. $-7c \leq -42$

4. $2v + 3v - 9 < 26$

5. $-4n + 18 \geq -6$

Summary/Closure

A. Vocabulary Words

Directions: Write each of the four inequality symbols. To the right of each, write its name. Then write a true statement using the symbol.

B. Summarize What We Learned Today

Directions: Write, solve, and graph three inequalities like the ones that we studied today. Be sure to include one in which you will need to change the direction of the inequality symbol. You will use this explanation as a reference.

Lesson Objective: Solve and graph inequalities in one variable.

Vocabulary Box

inequality – A mathematical statement that shows that two quantities are not equal. Examples: $-5 \geq -8$ and $x < 12$.

Independent Practice

Please complete the following practice problems on your own. Your teacher will review the answers. Make sure that you show all of your work.

Directions: Solve and graph each inequality.

1. $p + 16 < 9$

2. $7 > k - (-4)$

3. $m - 13 \leq -5$

4. $5j < -60$

5. $-u > 7$

6. $11 \geq \dfrac{n}{-2}$

7. $-8h + 40 < 56$

8. $6y - 15 > -27$

9. $4(3v + 10) \leq 4$

10. $-3(2 - f) < 27$

BONUS?

Directions: Solve and graph each inequality.

1. $\dfrac{5r + 2}{-3} > -4$

2. $-3c - (-4) \geq 8c + (-12)$

Problem Solving

For each problem, write and solve an inequality. Then interpret the inequality to sensibly answer the problem.

1. Astrid is going to the market to buy some tomatoes for Oskar and for herself. After she gives 12 tomatoes to Oskar, she wants to have more than 9 left for herself. What is the least number of tomatoes she must buy?

2. Tony knows that his tomatoes won't freeze if the temperature is at least 32° F. He knows that, on average, the temperature drops 17° F overnight. If tonight will be an average night, how warm must it be this evening so that Tony's tomatoes will not freeze overnight?

3. Ms. Pak has 23 students. She wants to share some candy-coated chocolates equally among her students so that each student receives at least 11. How many chocolates should Ms. Pak bring to class?

4. Vivian has a $100 gift certificate to redeem at the music store. She wants to buy some headphones that will cost $39. Each CD will cost $11. What is the greatest number of CDs she can buy if she buys the headphones and uses only the gift certificate?

5. For Mr. Ten Eyck's math class, anyone who stays after school for help gets 10 bonus points, plus an additional 2 bonus points for every 5 minutes he or she works. Feki wants to earn more than 20 bonus points this afternoon. What is the least number of minutes, as a multiple of 5, that he should stay?

Directions: Solve and graph each inequality.

1. $9c + 45 > -63$

2. $56 \leq -8c$

3. $-4(2m + 6) < 3 - 9$

Lesson Objective: Represent relations as ordered pairs, tables, mappings, or graphs. Describe domains and ranges of relations.
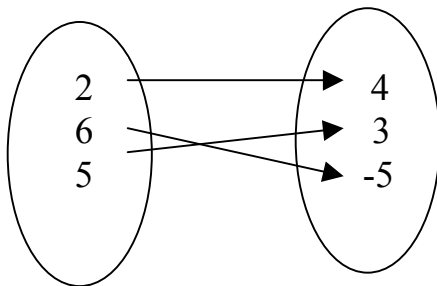
Vocabulary Box

relation – A set of ordered pairs. Example: {(4, 7), (3, –2), (-7.5, 0)}

ordered pair – A set of two numbers in which the order has an agreed-upon meaning, such as the Cartesian coordinates (x, y), where the first coordinate represents the horizontal position, and the second coordinate represents the vertical position. Example: (4,7)

domain – All possible inputs for a relation or function; the set of first numbers in ordered pairs of a function or relation. Example: For {(4, 7), (3, –2), (-7.5, 0)} the domain is 4, 3, and -7.5.

range – All possible outputs for a relation or function; the set of second numbers in ordered pairs of a function or relation. Example: For {(4, 7), (3, –2), (-7.5, 0)} the range is 7, -2, and 0.

**mapping** – Illustrates how each element of the domain is paired with each element of the range. Example:

Guided Practice

You will complete the following practice problems with your partner. Then your teacher will review the answers.

<u>Directions</u>: Use the data below to answer the questions.

- Alex is 8 years old and walked 4 miles in the walk-a-thon.
- Sam is 12 years old and walked 10 miles in the walk-a-thon.
- Ryan is 13 years old and walked 9 miles in the walk-a-thon.
- Chelsie is 15 years old and walked 13 miles in the walk-a-thon.
- Christian is 9 years old and walked 4 miles in the walk-a-thon.
- Christian's twin brother Brett is also 9 years old, and he walked 5 miles in the walk-a-thon.

1. Make an input-output table for the data. Use "Age" for the input and "Miles Walked" for the output.

2. Write ordered pairs for the data.

3. Draw a mapping for the data.

4. On graph paper below, create a graph for the data.
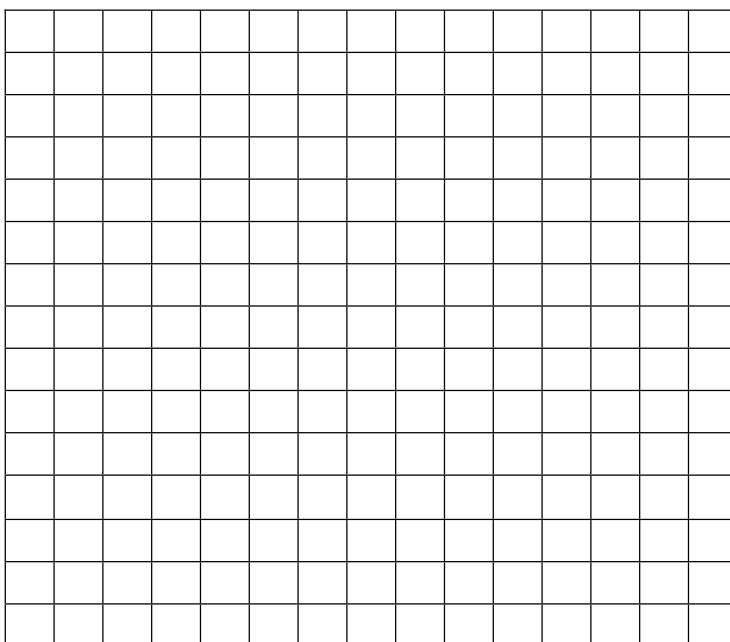
5. State the domain of the relation.

6. State the range of the relation.

A. Vocabulary Words

<u>Directions</u>: Answer the following questions about the input-output table below.

Input	Output
–7	4
–4	2
–1	0
2	–2

1. Write an ordered pair from the input-output table.

2. For the values in the input-output table, write the relation as a set of ordered pairs.

3. What is the domain of the relation?

4. What is the range of the relation?

B. Summarize What We Learned Today

Directions: Write the ordered pairs, (2, 7), (5, 3), and (9, 3). Then draw a mapping for your ordered pairs. Then, on graph paper, draw a graph and plot your ordered pairs. Finally, state the domain and range of this relation. Then explain how input-output tables, ordered pairs, mappings, graphs, and domain and range are all related. You will use this explanation as a personal reference sheet.