



Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

**Vocabulary: Define each word and give an example.**

1. Less Than
2. Absolute Value Equation
3. Compound Inequality

**Short Answer:**

4. Solving a linear inequality is similar to solving linear equations with what one exception?
5. Describe and give an example of the difference between a compound inequality that is an “or” statement and a compound inequality that is an “and” statement.
6. Explain why an absolute value equation can have two solutions. Illustrate with an example.

**Review:**

7. Find the first and third quartiles and interquartile range for the following set of data: 2, 5, 5, 8, 10, 15, 20, 22, 25  
Q1 = \_\_\_\_\_      Q3 = \_\_\_\_\_      IQR = \_\_\_\_\_
8. Name the property illustrated by  $a(b + c) = ab + ac$ .
9. Solve the equation.  $8p - 8 = 2(5 - 2p) + 10$
10. For Vera’s cellular phone service, she pays \$32 a month, plus \$0.75 for each minute over the allowed minutes in her plan. Vera received a bill for \$47 last month. For how many minutes did she use her phone beyond the allowed minutes?

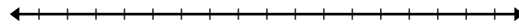
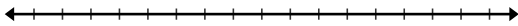
**Problems:**

\*\*Be sure to show all work used to obtain your answer. **Circle or box in the final answer.**\*\*

11. Solve the linear inequality and graph the solution on a number line.

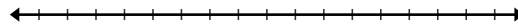
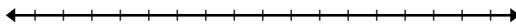
a.  $\frac{3}{4}d \leq -6$

b.  $4 > -2 - a$



c.  $-4t - 2 \geq 14$

d.  $x + 3 < 2(x - 1)$



12. Lorene's employer pays her \$8.50 per hour plus an additional \$45 per week. Lorene would like to earn enough money to purchase a stereo system that costs \$300. Write and solve an inequality that represents the number of hours,  $h$ , that Lorene can work this week in order to be able to purchase the stereo.

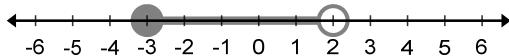
13. Write an inequality for each verbal statement.

a. Karen has \$3 to spend in the arcade. The game she likes costs \$0.50 to play. What are the possible number of times that she can play? (Let  $p$  represent the # of games she can play.)

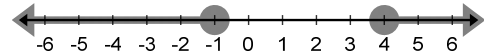
b. The minimum score to stay in the game is 80. (Let  $m$  represent the minimum score.)

14. Write a compound inequality for each number line shown below.

a.



b.

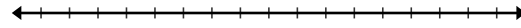
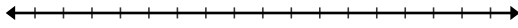




15. Solve the compound inequality and graph the solution on the number line.

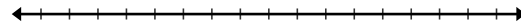
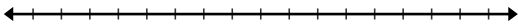
a.  $6 + 2x > 20$  or  $8 + x \leq 0$

b.  $8 \leq 2y + 6 < 18$



c.  $-4x - 7 \geq x + 8$  or  $-31 \geq -2x - 11$

d.  $-13 \leq 5 - 2x < 9$



16. Solve the absolute value equations.

a.  $6 = |x|$

b.  $-2|w| + 5 = 13$

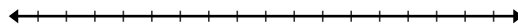
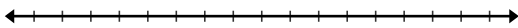
c.  $6 = |3x - 1| - 8$

d.  $-3|x - 1| + 5 = -13$

17. Solve the absolute value inequalities and graph the solution on the number line.

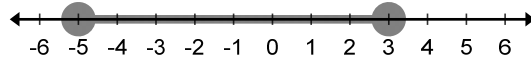
a.  $|x - 4| + 1 < 3$

b.  $|2x + 1| - 3 > 6$





18. Write an absolute value inequality that represents the graph on the number line below.



19. Suppose you start with at least \$52 in your savings account and deposit \$27 each week. Write an inequality to describe how much money  $m$  you have after  $w$  weeks. If you do this for 11 weeks, will you have enough to buy a bicycle that costs \$340? Show your work.

20. Alexandria wants to go hiking on Saturday. She will choose from several parks considering these conditions.

- She wants to hike for 2 hours.
- She wants to spend no more than 6 hours away from home.
- She can average 65 miles per hour to and from the park.

Write and solve an inequality to find possible distances from Alexandria's home to a park that satisfies the conditions.

**Multiple Choice Questions: Circle the best answer.**

21. Students' scores on an Algebra exam ranged from 60 to 100. Let  $e$  be the exam scores of the students. Which absolute value inequality represents all of the possible values of  $e$ ?

A.  $|e - 80| \leq 20$

B.  $|e + 80| \leq 20$

C.  $|e - 20| \leq 80$

D.  $|e + 20| \leq 80$

22. What are the values of  $x$  when  $\frac{x}{4} - 6 > -2$ ?

A.  $x < -32$

B.  $x < -16$

C.  $x > 1$

D.  $x > 16$



23. What is the solution set of  $|8x - 3| = 13$ ?

A.  $\left\{-2, \frac{5}{4}\right\}$

B.  $\left\{2, -\frac{5}{4}\right\}$

C.  $\{2\}$

D.  $\left\{\frac{5}{4}\right\}$

24. Which graph represents the solution set for  $2x - 4 \leq 8$  and  $x + 5 \geq 7$ ?

