Name_____ Date_____

Chapter 4 Quiz

For use after Section 4.2

Write the word sentence as an inequality.

1. A number b subtracted from 9.8 is greater than –4.

2. The quotient of a number y and –3.6 is less than 6.5.

Tell whether the given value is a solution of the inequality.

3. $x - 2 \geq -1.6; x = 0.8$

4. $-\frac{2}{5}c < 9; c = -25$

Graph the inequality on a number line.

5. $x \geq -2$

6. $a > 1.5$

7. $k < \frac{2}{3}$

Solve the inequality. Graph the solution.

8. $x - \frac{4}{5} > \frac{1}{5}$

9. $\frac{1}{2} + x < 4$

10. $c - 2.8 \geq -0.3$

11. A person who is at least 65 years old is often considered a senior citizen. Write an inequality that represents this situation.

12. The solution of $x + b > -14$ is $x > -21$. What is the value of b?

13. Your gas tank can hold no more than 14.5 gallons of gasoline. On a trip to the grocery store, you use 1.5 gallons of gasoline. Write and solve an inequality that represents the amount of gasoline left in your gas tank.

14. The requirements for a roller coaster are shown.

Roller Coaster Requirements

1. At least 5 feet tall
2. Weigh no more than 350 pounds
3. Must be 16 years or older

a. Write and graph three inequalities that represent the requirements.

b. You are 64 inches tall. Do you satisfy the height requirement for the roller coaster? Explain.

Answers

1. _____
2. _____
3. _____
4. _____
5. See left.
6. See left.
7. See left.
8. _____
   See left.
9. _____
   See left.
10. _____
    See left.
11. _____
12. _____
13. _____
    _____
14. a. _____
    _____
    _____
    See left.
    b. _____
    _____

Name _____ Date _____

Chapter 4 Quiz

For use after Section 4.4

Solve the inequality. Graph the solution.

1. $4c < 28$

2. $\frac{x}{-2} > 4$

3. $-15y \le -45$

4. $-1.2b \ge 4.8$

Write the word sentence as an inequality. Then solve the inequality.

5. The product of a number and -5 is at least 35.

6. A number divided by 3 is no more than 12.

Solve the inequality. Graph the solution.

7. $3t - 1 < 8$

8. $1.6w + 1.7 \ge 4.9$

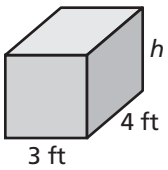
9. $-\frac{k}{4} - 5 \le -2$

10. $\frac{x}{3} + \frac{2}{3} > \frac{1}{6}$

11. You need to score at least 1500 points on your new video game to obtain the high score. You get 300 points after completing each level. Write and solve an inequality to find the number of levels you must beat in order to obtain the high score.

12. A baseball team has 30 players. They need to make cuts so that there are at most 25 baseball players on the team. Write and solve an inequality to find the number of players that must be cut from the team.

13. The volume of the rectangular prism must be at least 36 cubic feet. Write and solve an inequality that represents the value of h.



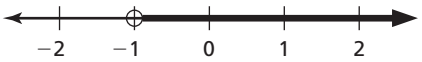
Answers

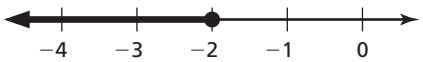
1. _____ See left.
2. _____ See left.
3. _____ See left.
4. _____ See left.
5. _____
6. _____
7. _____ See left.
8. _____ See left.
9. _____ See left.
10. _____ See left.
11. _____
12. _____
13. _____

Name_____ Date_____

Chapter 4 Test A

Write an inequality for the graph.

1. 

2. 

Write the word sentence as an inequality.

3. A number n is no less than -3.

4. A number q plus 7 is less than 45.

5. A number x divided by -1 is at least -4.

6. The children in the class are more than 10 years old.

7. The minimum cost for parking is \$3.

Tell whether the given value is a solution of the inequality.

8. $j + 1 > 10;\ j = 9$

9. $-3 \le \frac{k}{2};\ k = -1$

10. A freezer is set to turn on and start cooling if the temperature rises above $-10°$ Celsius. The cooling turns off when the freezer has reached a temperature of $-16°$ Celsius. Write two inequalities to model the situation. Give a sample value at which the cooling would turn on, and a sample value at which the cooling would be off.

11. An elevator can carry 800 pounds of weight.

a. A student weighing 95 pounds gets on the elevator. Write and solve an inequality to represent the remaining weight that can be added.

b. A football player weighing 280 pounds gets on the elevator with the student. Write and solve an inequality representing the remaining weight that can be added.

c. Two more football players weighing a total of 470 pounds come to the elevator. Can they get on safely? Explain.

Answers

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. See left.
11. a. _____

b. _____

c. _____

Name _____ Date _____

Chapter 4 Test A (continued)

Solve the inequality.

12. $x - 3 > 7$

13. $m + 2 \leq -4$

14. $6y > 8$

15. $p \div 5 < -3$

16. $4z - 3 \geq -1$

17. $6 > 3(t + 2)$

Solve the inequality. Graph the solution.

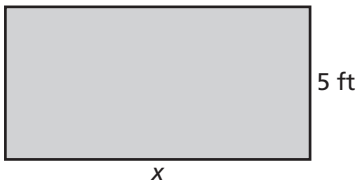
18. $-4 + x \leq 1$

19. $2 < -\frac{y}{5}$

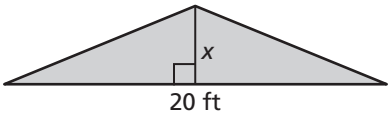
20. $3(x + 4) \geq 12$

Write and solve an inequality that represents the value of *x*.

21. The perimeter is more than 15 feet.



22. The area is no more than 40 square feet.



23. The basketball team spends 20 minutes running laps and at least 15 minutes discussing plays. Practice lasts one hour and 45 minutes. Write an inequality to represent the amount of time to work on other drills.

Answers

12. _____

13. _____

14. _____

15. _____

16. _____

17. _____

18. _____

See left.

19. _____

See left.

20. _____

See left.

21. _____

_____

22. _____

_____

23. _____

_____

Name_____ Date_____

Chapter 4 Test B

Write the word sentence as an inequality.

1. A number x is less than $\frac{1}{4}$.

2. A number n is no more than 8.

3. A number m minus 3 is more than -4.

4. Sixteen times a number j is no less than -2.

5. Twice a number q minus 1 is less than 5.

6. A number a divided by 2 is no more than 6.

7. To pass the test you must score at least 60 on the test.

8. The maximum cost is \$35.

Tell whether the given value is a solution of the inequality.

9. $\frac{x}{2} - 1 < -1; x = -\frac{3}{4}$

10. $5x - 17 > 62; x = 13$

11. A video game gives you 100 seconds to complete the level and move to the next. You are halfway through the level after 55 seconds.

a. Write and solve an inequality to find out how much time you have left to complete the level.

b. You will receive a time bonus if you finish in 70 seconds or less. Write and solve an inequality to find how much time you have left to earn a time bonus.

c. You finish the game in another 32 seconds. Do you earn a time bonus? Do you move to the next level? Explain.

12. An isosceles triangle has a base of 5 centimeters and legs x centimeters long. The perimeter is no more than 30 centimeters. Write and solve an inequality to find the possible values of x.

Solve the inequality.

13. $b + 8 > 7$

14. $-3 \geq x - 4.5$

15. $-\frac{7}{8}c \leq 35$

16. $\frac{p}{-3} > -5$

17. $6 < 2g - 4$

18. $-\frac{1}{4}(w - 5) \geq -2$

Answers

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. a. _____
b. _____
c. See left.
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____

Name _____ Date _____

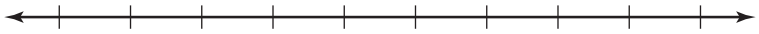
Chapter 4 Test B (continued)

Solve the inequality. Graph the solution.

19. $w - 8 \geq -4$

20. $-4 > -\frac{m}{10}$

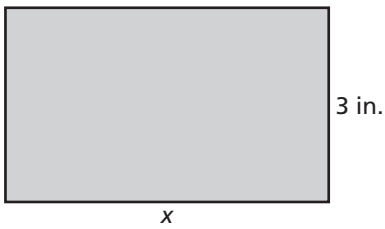
21. $\frac{1}{4}(3x - 2) < -5$



22. $\frac{z - 1}{2} \geq \frac{1}{3}$

23. A music teacher budgets \$150 for new books. The minimum cost of a new book is \$12. How many books can she buy? Is this a minimum or a maximum amount? Explain.

24. The perimeter of the rectangle is at least 12 inches. The area is no more than 27 inches. Write and solve an inequality for each condition. Give two possible values for x.



Answers

19. _____

See left.

20. _____

See left.

21. _____

See left.

22. _____

See left.

23. _____

24. _____

Name_____ Date_____

Chapter 4 Cumulative Assessment

1. Which inequality is represented by the graph shown below?

A. $x > 3$

B. $x \geq 3$

C. $x < 3$

D. $x \leq 3$

2. Which of the following decimals is equivalent to $\frac{9}{11}$?

F. 0.81

G. $0.\overline{81}$

H. 0.82

I. $1.\overline{2}$

3. GRIDDED RESPONSE Two inequalities are given below.

$$x - 2\frac{1}{2} \geq 2 \qquad 2.7 - x > -3.3$$

What whole number value of x is a solution to both inequalities?

4. Which inequality represents the word sentence below?

The quotient of a number c and -8 is at least -5.

A. $\frac{c}{-8} < -5$

B. $\frac{c}{-8} \leq -5$

C. $\frac{c}{-8} > -5$

D. $\frac{c}{-8} \geq -5$

5. Which description is a correct way to solve the equation below?

$$\frac{d}{-3} + 8.2 = 6.4$$

F. Subtract 8.2 from both sides, then divide both sides by -3.

G. Add 8.2 to both sides, then multiply both sides by -3.

H. Subtract 8.2 from both sides, then multiply both sides by -3.

I. Add 8.2 to both sides, then divide both sides by -3.

Name _____ Date _____

Chapter 4 Cumulative Assessment (continued)

6. What is the value of the expression below?

$$-23 - 17$$

A. -40

B. -6

C. 6

D. 40

7. Edwin was evaluating the expression below when $a = 3$ and $b = -6$.

$$a^2 - 18 + 4b$$

His work is shown in the box below.

$$\begin{aligned} a^2 - 18 + 4b &= 3^2 - 18 + 4(-6) \\ &= 9 - 18 + (-24) \\ &= 9 - (-6) \\ &= 15 \end{aligned}$$

What should Edwin do to correct the error that he made?

F. Add -18 and 4 before multiplying by -6.

G. Substitute 3 for b and -6 for a.

H. Add 4 and -6.

I. Subtract 18 from 9 before adding.

8. **SHORT RESPONSE** A freight elevator can hold a maximum weight of 3,500 pounds.

Part A A deliveryman weighs 200 pounds. He is delivering cartons that each weigh 48 pounds. He wants to know how many cartons he can safely put on the elevator at one time. Let c represent the number of cartons. Write an inequality that represents this situation.

Inequality _____

Part B Solve your inequality from Part B. Show your work fully. Explain what your solution means.

Chapter 4 Cumulative Assessment Item Analysis

1. **A.** The student confuses the meaning of the symbols and excludes the number 3.
   B. The student confuses the meaning of the symbols.
   C. The student forgets to include 3.
   D. Correct answer
2. **F.** The student only uses the first two decimal places.
   G. Correct answer
   H. The student rounds off to the nearest hundredth.
   I. The student divides 11 by 9.
3. Correct answer: 5
   Common error: The student thinks that 6 is a solution to $2.7 - x > -3.3$ and gets an answer of 6.
4. **A.** The student interprets "at least" to mean "less than."
   B. The student interprets "at least" to mean "less than or equal to."
   C. The student interprets "at least" to mean "greater than."
   D. Correct answer
5. **F.** The student divides by -3 instead of multiplies by -3.
   G. The student adds 8.2 instead of subtracts 8.2.
   H. Correct answer
   I. The student adds 8.2 instead of subtracts 8.2 and divides by -3 instead of multiplies by -3.

Cumulative Assessment Item Analysis
(continued)

6. A. Correct answer

B. The student adds –23 and 17.

C. The student subtracts 17 from 23.

D. The student adds 23 and 17.

7. F. The student forgets that multiplication comes before addition in the order of operations.

G. The student confuses the values of the variables.

H. The student forgets that parentheses can represent multiplication.

I. Correct answer

8. 2 points The student demonstrates a thorough understanding of writing and solving inequalities. In Part A, the inequality $48c + 200 \leq 3500$, or its equivalent, is written. In Part B, the solution $c \leq 68.75$ is obtained and the student points out that the deliveryman can safely load 68 cartons at one time.

1 point The student demonstrates an essential but less than complete understanding. Either a small error is made in Part A (with consistent work being carried forward in Part B) or the student fails to correctly interpret the solution of 68.75 in Part B.

0 points The student provides no response, a completely incorrect or incomprehensible response, or a response that demonstrates insufficient understanding of writing and solving inequalities.

Name_____ Date_____

Chapter 4 Alternative Assessment

1. A number z added to 3.1 is less than or equal to 7.6.
A number q subtracted from 3.1 is greater than or equal to 7.6.

a. Write an inequality for each statement.

b. Solve each inequality you wrote in part (a).

c. Graph each solution you found in part (b). Explain why the circle you used is closed or open.

d. What do you notice about the solutions?

e. Write a word problem that can be answered using one of the inequalities.

2. A number t multiplied by $\frac{2}{3}$ is greater than 4.

A number v multiplied by $-\frac{2}{3}$ is less than 4.

a. Write an inequality for each statement.

b. Solve each inequality you wrote in part (a).

c. Graph each solution you found in part (b). Explain why the circle you used is closed or open.

d. What do you notice about the solutions?

3. A number m divided by 3 minus $\frac{1}{2}$ is greater than or equal to $-\frac{1}{3}$.
Four times a number w minus 3.5 is less than or equal to -1.5.

a. Write an inequality for each statement.

b. Solve each inequality you wrote in part (a).

c. Graph each solution you found in part (b). Explain why the circle you used is closed or open.

d. What do you notice about the solutions?

Name _____ Date _____

Chapter 4 Alternative Assessment Rubric

Score	Conceptual Understanding	Mathematical Skills	Work Habits
4	Shows complete understanding of: • solving and graphing inequalities • describing a real-life situation for an inequality	Writes, solves, and graphs all pairs of inequalities correctly. Described relationships in the solutions of all pairs of inequalities. Wrote a word problem that could be solved using one of the given inequalities.	Answers all parts of all questions. All calculations are done carefully. All work is neat and well organized.
3	Shows nearly complete understanding of: • solving and graphing inequalities • describing a real-life situation for an inequality	Writes, solves, and graphs two pairs of inequalities correctly. Described relationships in the solutions of two pairs of inequalities. Wrote a word problem that could be solved using one of the given inequalities.	Answers almost all parts of all questions. Most of the calculations are done carefully. Most of the work is neat and well organized.
2	Shows some understanding of: • solving and graphing inequalities • describing a real-life situation for an inequality	Writes, solves, and graphs one pair of inequalities correctly. Described relationships in the solutions of one pair of inequalities. Wrote a word problem that could be solved using an inequality, but not one of the given inequalities.	Answers some parts of the three questions. Some calculations are done carefully. Some work is neat and well organized.
1	Shows little understanding of: • solving and graphing inequalities • describing a real-life situation for an inequality	Did not write, solve, or graph any inequality correctly. Did not describe relationships in the solutions of any pair of inequalities. Wrote a word problem that could not be solved using any inequality.	Answers only a few parts of some questions. No calculations are done carefully. All work is sloppy and disorganized.