Study Guide for Inequalities Quiz

Algebra I

Solve the inequality. Graph your solution.

1. $2x + 4 \geq 6$

2. $-2y + 3 \geq 3$

3. **Greeting Cards** Your school club is making greeting cards to raise money for a trip. You spend \$60 on supplies and plan to sell the cards for \$2 each.
   - **a.** Write an inequality that gives the possible numbers c of cards you need to sell in order for the profit to be positive.
   - **b.** What are the possible numbers of cards you need to sell in order for the profit to be positive?

4. **Gasoline** A grocery store chain that owns gasoline stations is offering its customers a deal. For every \$50 customers spend on groceries, the service station charges \$.10 less per gallon of gasoline.
   - **a.** If gasoline costs \$2.15 per gallon, how much will it cost per gallon if you spend \$50 at the grocery store?
   - **b.** Write an inequality that gives the possible numbers g of gallons of gasoline you can buy if you spend exactly \$50 on groceries and want to spend at most \$60 on groceries and gasoline.
   - **c.** What are the possible numbers of whole gallons of gasoline you can buy?

Solve the inequality. Graph your solution.

5. $-5(2 - n) \geq -30$

6. $4 - \frac{3}{2}m \leq -6 + m$

7. $0 < x + 6 \leq 15$

8. $2x - 1 < 3$ *or* $2x + 1 \geq 11$

9. **Turnpike** The Pennsylvania Turnpike Commission requires that all over-sized vehicles get a permit to travel on the roadway. A vehicle is considered over-sized if it is over 10 feet in width. However, the maximum width of a vehicle that the commission will allow on the roadway is 11.5 feet.

a. Write a compound inequality that represents the widths w of over-sized vehicles that can travel on the Pennsylvania Turnpike.

b. Graph the inequality.

10. $-24 < 2(2x - 3) \leq 32$

11. $9 > \frac{3}{4}(8x - 12) > -15$

12. $6x + 3 < 5x + 1$ *or* $\frac{1}{3}x - 4 \geq -2$

13. $2(4x + 5) < 5x - 2$ *or* $\frac{1}{4}(x + 3) \geq 1$

Write the verbal sentence as an inequality. Then solve the inequality and graph your solution.

14. Three more than $2x$ is greater than or equal to 1 *and* less than or equal to 11.

15. Six more than two times the sum of x and 1 is less than 0 *or* the difference of $2x$ and 4 is greater than 8.

16. **Post Cards** The United States Postal Service requires that a post card not have dimensions greater than 4.25 inches by 6 inches and not have dimensions less than 3.5 inches by 5 inches.

a. Write and graph a compound inequality that represents the possible areas of a post card. *Explain* how you got your answer.

b. Give the dimensions of a post card that meets these requirements and does not have the dimensions already given. *Explain* how you got your answer.

17. **Basketball** You live 6.5 miles from the basketball courts and 2.25 miles from your friend's house. Write an inequality that represents the distance between the basketball courts and your friend's house. Write an inequality that represents the distance you travel if you go to your friend's house and then to the basketball courts.