**Barron’s Let’s Review Regents – Algebra I**

# Chapter 7: Linear Inequalities

## 7.1 One-Variable Linear Inequalities

A linear equation line has just one solution, . This changes when the = is replaced with a > or a <. The inequality does not have 8 as a solution, but it does have many other solutions, including 9, 10, and 11. Solving one-variable linear inequalities is very similar to solving one-variable linear equations with one important exception – dealing with negative coefficients.

**When both sides of an inequality are divided by a negative number, the direction of the inequality sign must be reversed.** For example, it is true that  
 6 > 4. However, if both sides are divided by -2, the inequality would say -3 > -2, which is not true.

**Example 1**

What is the solution set to the inequality   
?

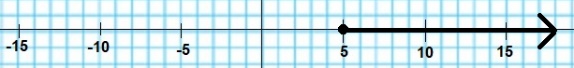
**Example 2**

What is the smallest integer that is a solution for x in the inequality   
Answer: 5

**Example 3**

If and x = -2, what is the greatest integer value for a stat satisfies this inequality?  
  
(1) -6

### Check Your Understanding of Section 7.1

1. Multiple-Choice
2. What is the solution set for   
   **(3)**
3. What is the solution set for ?  
   **(1)**
4. What is the solution set for ?  
   **(3)**
5. What is the solution set for ?  
   **(3)**
6. What is the smallest integer that satisfies the inequality ?  
   **(2) 4**
7. What is the smallest integer that satisfies the inequality ?  
   **(2) 3**
8. What is the greatest integer that satisfies the inequality ?  
   **(3) 6**
9. What is the greatest integer that satisfies the inequality ?  
   **(2) 7**
10. Which number satisfies the inequality   
    ?  
    **(4) -4**
11. What is the smallest number that satisfies the inequality ?  
    **(1) -15**
12. Show how you arrived at your answers.
13. Graph the solution set to the inequality   
     on a number line.  
    
14. Alejandra says that has the solution set . Lorenzo says that it has the solution set . Which student is correct and why?  
      
    **Lorenzo is correct.**  
    **When both sides of an inequality are divided by a negative number, the direction of the inequality sign must be reversed.**
15. Genevieve solves the inequality the following way:  
      
    Is this a valid way of finding the solution set? Explain why or why not.  
      
    **Her method produces the correct answer, but it is a long way to do it. Also, the steps involve the Addition Property of Equality. Whether this property can be extended to inequalities appears to work.**
16. What is the solution set of the inequality
17. Josephine has $60 and wants to go to a restaurant. The bill, including a 20% tip, must be no more than $60. The inequality for what the price of the meal without the tip is   
    . What is the solution set for this inequality?