Math 9 –Solving Linear Inequalities In-class Practice Test

Name: _Answer Key_

**PLEASE CHECK YOUR ANSWERS WITH THE ANSWER KEY PROVIDED AND ASK FOR HELP IF YOU CANNOT GET THE SOLUTION ON YOUR OWN.**

1. State 3 values of the variable that satisfy each inequality.

   a) $c < 7$
   Varies
   6, 5, 4

   b) $a \geq -3$
   Varies
   -3, -2, -1

   c) $5 < n$
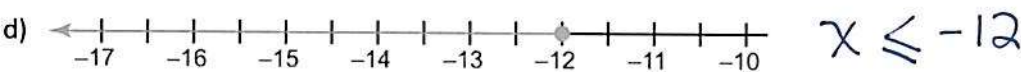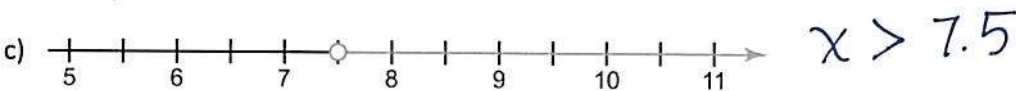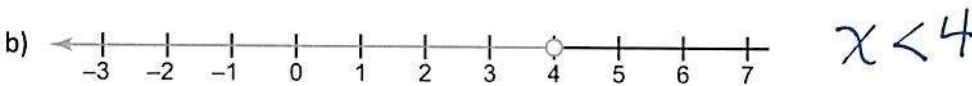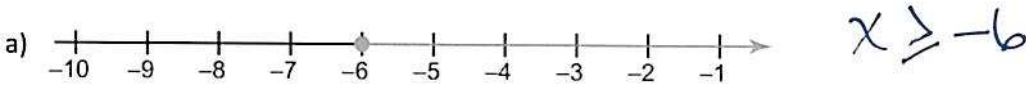   Varies
   6, 7, 8

   d) $-1 \geq y$
   Varies
   -1, -2, -3

2. Verify which of the following satisfy the inequality given.

   a. $x - 3 \leq 19$

   | $x = 22$ | | $x = 21$ | | $x = 23$ | |
   |---|---|---|---|---|---|
   | Left Side | Right Side | Left Side | Right Side | Left Side | Right Side |
   | $x - 3 \leq 19$ | | $x - 3 \leq 19$ | | $x - 3 \leq 19$ | |
   | $22 - 3 \leq 19$ | | $21 - 3 \leq 19$ | | $23 - 3 \leq 19$ | |
   | $19 \leq 19$ ✓ | | $18 \leq 19$ ✓ | | $20 \leq 19$ ✗ | |

3. Write the inequality that is graphed on each number line.

   a)   $x \geq -6$
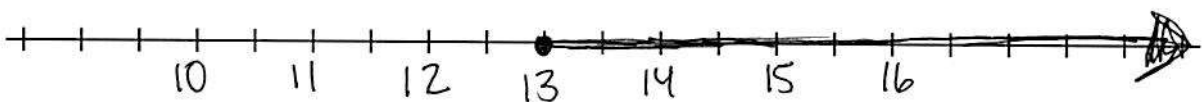
   b)   $x < 4$

   c)   $x > 7.5$

   d)   $x \leq -12$

4. Write an inequality to describe each situation, then graph it.

   a) The gas tank in a car contains no more than 55 L of gas. $x \leq 55\ L$

   
   52 53 54 55 56 57 58
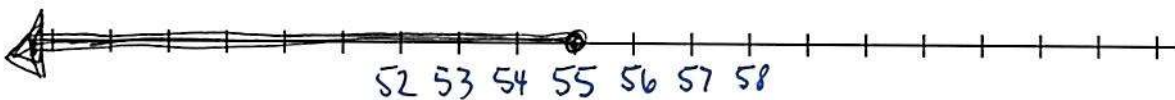
   b) The minimum age you must be to watch the movie is 13. $x \geq 13$

   
   10  11  12  13  14  15  16

   c) Children under 36" get into the water park for free. $x < 36$
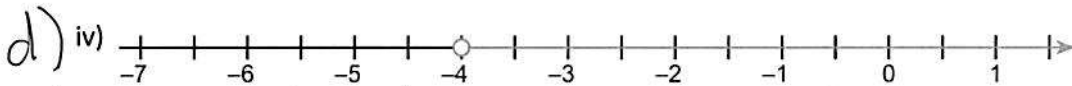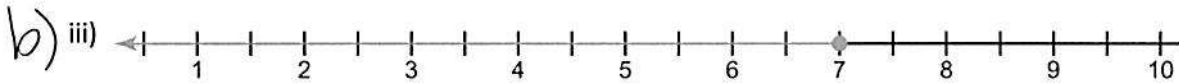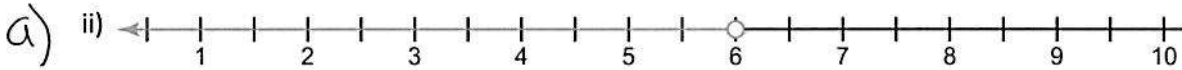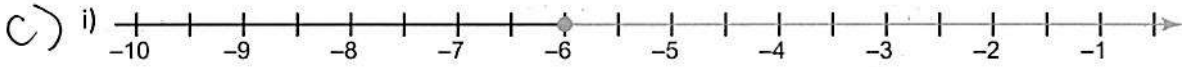
   
   33  34  35  36  37  38  39
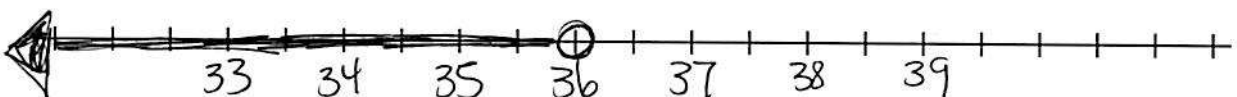
5. Solve each inequality and find the graph of its solution below.

a) $g + 3 < 9$
   $\phantom{g}-3 \quad -3$   Graph (ii)
   $g < 6$

c) $2 + y \geq -4$
   $-2 \quad\quad -2$   Graph (i)
   $y \geq -6$

b) $5 \geq m - 2$
   $+2 \quad\quad +2$   Graph (iii)
   $7 \geq m$ or $m \leq 7$

d) $-1 < f + 3$
   $-3 \quad\quad -3$   Graph (iv)
   $-4 < f$ or $f > -4$

c) i)



a) ii)



b) iii)



d) iv)



5. Solve each inequality and graph the solution. Please show all your work.

a) $-3.5a < -1.3a + 6.6$
   $+1.3a \quad\quad +1.3a$
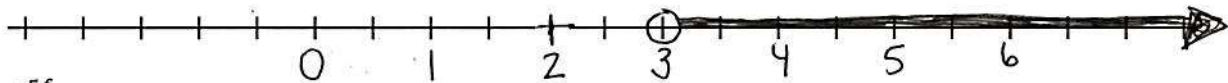
   $\dfrac{-2.2a}{-2.2} < \dfrac{6.6}{-2.2}$

   $a > 3$



b) $\dfrac{-5f}{6} - 2 > 3$
   $\phantom{\dfrac{-5f}{6}}+2 \quad +2$

   $6\left(\dfrac{-5f}{6}\right) > (5)6$

   $\dfrac{-5f}{-5} > \dfrac{30}{-5}$

   $f < -6$



c) $1 - 3x \leq -2x - 4$
   $+3x \quad\quad +3x$

   $1 \leq x - 4$
   $+4 \quad\quad +4$

   $5 \leq x$ OR $x \geq 5$



d) $-3(n - 3) \leq 4(5 - n)$
   $-3n + 9 \leq 20 - 4n$
   $+4n \quad\quad\quad +4n$

   $n + 9 \leq 20$
   $\phantom{n}-9 \quad\; -9$

   $n \leq 11$

Claire has $18. She wants to buy a book and a magazine. The book costs $13.28. How much can Claire spend on a magazine?

   a)  Choose a variable, then write an inequality that can be used to solve this problem.
   b)  Solve the problem.

Let $x$ represent the cost of the magazine

$13.28 + x \leq 18$
$-13.28 \qquad -13.28$

$x \leq 4.72$

The magazine must be ~~less than~~ at most $4.72.

6.  Company A charges $17, plus $11 per day to rent a piece of equipment.
    Company B charges $33, plus $9 per day to rent the same piece of equipment. **(4)**
   a)  How many days must the piece of equipment be rented for the cost to be the same at both companies?
   b)  How many days must the piece of equipment be rented for Company B to be less expensive?

✻ Let d represent the number of days ✻

a)  $17 + 11d = 33 + 9d$
    $\quad -9d \qquad\quad -9d$

$17 + 2d = 33$
$-17 \qquad\quad -17$

$\dfrac{2d}{2} = \dfrac{16}{2}$

$d = 8$

For a rental of 8 days, the costs would be the same.

b)  define variable: Let d represent the number of days

Cost A must be <u>more</u> than Cost of B.

$17 + 11d > 33 + 9d$

OR

Cost B must be less than Cost A

$33 + 9d < 17 + 11d$
$\quad -11d \qquad\quad -11d$

$33 - 2d < 17$
$-33 \qquad\quad -33$

$\dfrac{-2d}{-2} < \dfrac{-16}{-2}$

$\boxed{d > 8}$

For Company B to be cheaper, you'd need to rent it for more than 8 days