

Chapter 3 Test Review

Is each number a solution of the given inequality? Show all work.

$2y - 2 \leq -5$

1. -3

2. -1

3. 3

$$\begin{aligned} 2(-3) - 2 \\ -6 - 2 \\ -8 \leq -5 \end{aligned}$$

① Yes

$$\begin{aligned} 2(-1) - 2 \\ -2 - 2 \\ -4 \leq -5 \end{aligned}$$

NO

NO

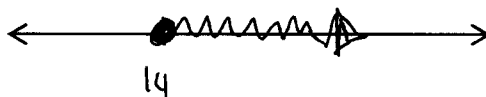
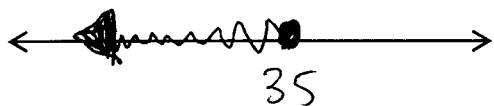
Define the variable and write an inequality to model each situation and graph.

4. The high temperature will be at most 35°F today.

$x \leq 35$ $x = \text{temp.}$

5. The class contains a minimum of 14 students.

$x \geq 14$ $x = \text{students}$



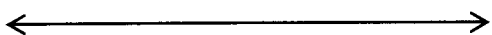
For problems #6 - 9 - Solve each absolute value equation or inequality. Write the sentence, Graph on the number line and then tell me the solution or solutions.

6. $-4|x - 1| - 3 = 21$

$$\begin{aligned} +3 \quad +3 \\ -4|x - 1| &= 24 \\ \underline{-4} \quad \underline{-4} \end{aligned}$$

$|x - 1| = -6$

N.S.

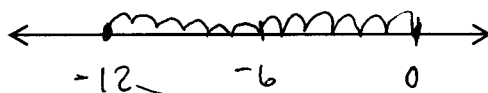


7. $\frac{5}{5}|y + 6| = \frac{30}{5}$

$|y + 6| = 6$

$|y - (-6)| = 6$

The distance between y & -6 is 6

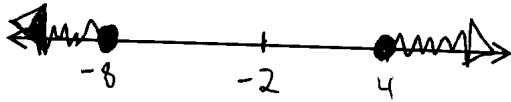


0 & -12

$$8. |r+2| \geq 6$$

$$|r-(-2)| \geq 6$$

The distance between r & -2 is greater than or equal to 6



$$x \leq -8 \text{ or } x \geq 4$$

Solve each inequality. Graph the solution.

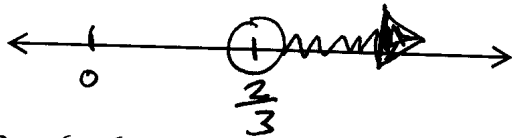
$$10. 3(x-4) > -10$$

$$3x - 12 > -10$$

$$+12 \quad +12$$

$$\frac{3x}{3} > \frac{2}{3}$$

$$x > \frac{2}{3}$$



$$12. -6 \leq 6c+6 < 12$$

$$-6 \leq 6c+6 \quad 6c+6 < 12$$

$$-6 \quad -6$$

$$\frac{-12}{6} < \frac{6c}{6}$$

$$-2 < c$$

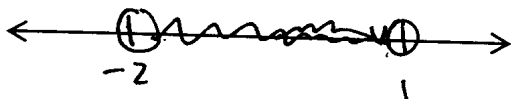
$$6c+6 < 12$$

$$-6 \quad -6$$

$$\frac{6c}{6} < \frac{6}{6}$$

$$c < 1$$

$$-2 < c < 1$$



$$9. -2|d+2|+2 < -2$$

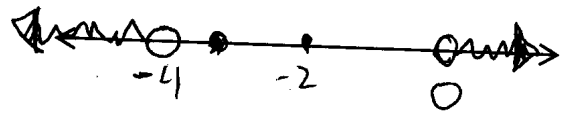
$$\frac{-2 \quad -2}{-2 \quad -2}$$

$$\frac{-2|d+2|}{-2} < \frac{-4}{-2}$$

$$|d+2| > 2$$

$$|d-(-2)| > 2$$

The distance between d & -2 is greater than 2



$$x < -4 \text{ or } x > 0$$

$$11. -3x+8 < 6x+12$$

$$\frac{-8 \quad -8}{-8 \quad -8}$$

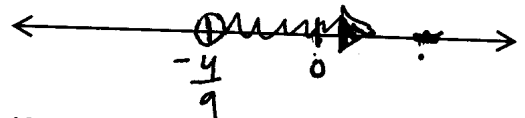
$$-3x < 6x+4$$

$$\frac{-6x \quad -6x}{-6x \quad -6x}$$

$$-9x < 4$$

$$\frac{-9 \quad -9}{-9 \quad -9}$$

$$x > \frac{-4}{9}$$



$$13. -5b > 40 \text{ or } 3b+6 > 0$$

$$\frac{-5 \quad -5}{-5 \quad -5} \quad \frac{-6 \quad -6}{-6 \quad -6}$$

$$b < -8$$

$$\frac{3b}{3} > \frac{-6}{3}$$

$$b > -2$$

$$b < -8 \text{ or } b > -2$$



Define a variable for problem #14, #15 and #16. Write your equation and/or inequality and then solve to find the answer.

14. Jim is earning money by mowing lawns. He charges \$25 per yard. Lawn mower rental costs \$20. Write and solve an inequality to find the minimum number of yards he must mow to make a profit of at least \$100.

$$\begin{array}{r} 25y + 20 \geq 100 \\ \underline{-20 \quad -20} \\ 25y \geq 80 \\ \underline{25 \quad 25} \\ y \geq 3.2 \end{array}$$

$y = \text{yards}$

At least 4 lawns (yards)

15. The ideal diameter of a machine part is 10.05mm. At the factory, the quality control inspector is told that the actual diameter can vary from ideal by at most 0.035mm. Write and solve an absolute value inequality to find the range of acceptable diameters.

$$|x - 10.05| < .035$$

$x = \text{diameter of machine part}$

~~$$9.70 < x < 10.40$$~~

$$9.70 < x < 10.40$$

16. James left school and traveled toward her friend's house at an average speed of 30 km/h. Jack left one hour later and traveled in the opposite direction with an average speed of 40 km/h. Find the number of hours Jack needs to travel before they are 500 km apart.

$t = \text{time in hours}$

~~$$30t + 40(t-1) = 500$$~~

$$30t + 40(t-1) = 500$$

$$\begin{array}{r} 30t + 40t - 40 = 500 \\ \underline{\quad \quad +40 \quad +40} \\ 70t = 540 \end{array}$$

$$\begin{array}{r} 70t = 540 \\ \underline{70 \quad 70} \end{array}$$

$$t = 7.71$$

7.71 hrs.