

Test 3: Review

Topics:

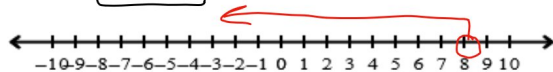
- Inequalities
 - Simple
 - Compound
 - Interval Notation
 - Inequality $\leftrightarrow$ Graph $\leftrightarrow$ Interval Notation
 - Graph intervals
 - Percent Change
 - Find percent change
 - Find new or original amount
 - Find Final amounts
 - Weighted Averages
 - Mixture, Mixture Percent, Distance
 - Old Stuff? Solving Equations, Clearing Fractions, Functions, Graph Features?
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Review Practice:

Solve the following inequalities. Graph your solution.

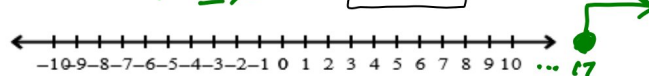
1. $x - 3 < 5$

$$\begin{array}{r} +3 \quad +3 \\ x - 3 < 5 \\ \hline x < 8 \end{array}$$



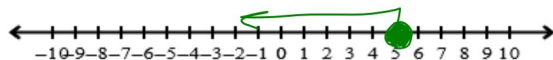
2. $12 \leq x - 5$

$$\begin{array}{r} +5 \quad +5 \\ 12 \leq x - 5 \\ \hline 17 \leq x \end{array} \rightarrow x \geq 17$$



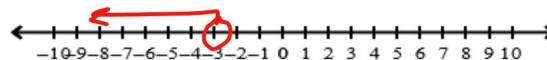
3. $n - 7 \leq -2$

$$\begin{array}{r} +7 \quad +7 \\ n - 7 \leq -2 \\ \hline n \leq 5 \end{array}$$



4. $-4 > b - 1$

$$\begin{array}{r} +1 \quad +1 \\ -4 > b - 1 \\ \hline -3 > b \\ b < -3 \end{array}$$



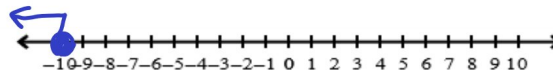
5. $\frac{-2}{3}n \leq 2$

$$\begin{array}{r} -2n \leq 6 \\ \hline n \geq -3 \end{array}$$



6. $5.6 \leq \frac{-3}{5}w$

$$\begin{array}{r} 30 \leq -3w \\ \hline -10 \geq w \\ w \leq -10 \end{array}$$



$$2 \cdot \frac{x}{2} < -1 \cdot 2$$

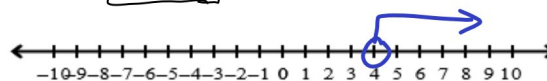
$$x < -2$$



$$\frac{-20}{-5} > \frac{-7c}{-5}$$

$$4 < c$$

$$c > 4$$



Practice: Solving Inequalities (Multi-Step)

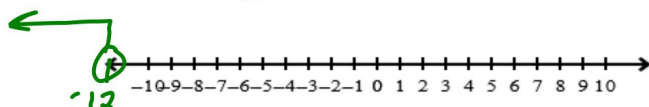
Solve the following inequalities and graph the solution on the number line.

9. $-15c - 28 > 152$

$$+28 \quad +28$$

$$\frac{-15c}{-15} > \frac{180}{-15}$$

$$c < -12$$

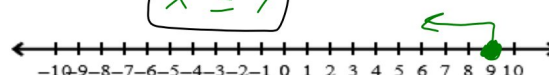


10. $4x - x + 8 \leq 35$

$$3x + 8 \leq 35$$

$$\frac{3x}{3} \leq \frac{27}{3}$$

$$x \leq 9$$



11. $2x - 3 > 2(x - 5)$

$$\frac{2x}{2} - 3 > \frac{2x}{2} - 10$$

$$-3 > -10 \rightarrow \text{True}$$

$$\rightarrow \text{All Real Num}$$

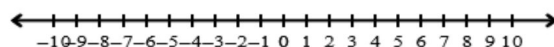


12. $7x + 6 \leq 7(x - 4)$

$$7x + 6 \leq 7x - 28$$

$$6 \leq -28 \rightarrow \text{False}$$

$$\rightarrow \text{No Sol.}$$



Practice: Solving Compound Inequalities (and/or)

Solve the following compound inequalities and graph the solution on the number line.

13. $-6 < 3x < 15$

$$\frac{-6}{3} < \frac{3x}{3} < \frac{15}{3}$$

$$-2 < x < 5$$



14. $-3 < 2x - 1 < 7$

$$+1 \quad +1 \quad +1$$

$$\frac{-2}{2} < \frac{2x}{2} < \frac{8}{2}$$

$$-1 < x < 4$$

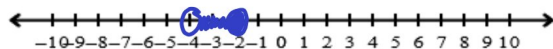


$$15. \quad 7 < -3n + 1 \leq 13$$

$$\frac{6}{-3} < \frac{-3n}{-3} \leq \frac{12}{-3}$$

$$-2 > n \geq -4$$

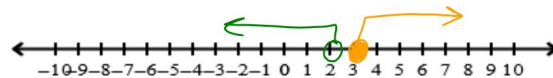
$$\boxed{-4 < n \leq -2}$$



$$16. \quad -2x + 7 > 3 \text{ or } 3x - 4 \geq 5$$

$$\frac{-2x}{-2} > \frac{-4}{-2} \quad \left| \quad \frac{3x}{3} \geq \frac{9}{3} \right.$$

$$x < 2 \text{ or } x \geq 3$$



$$17. \quad 2d + 5 \leq -1 \text{ or } -2d + 5 \leq 5$$

$$\frac{2d}{2} \leq \frac{-6}{2} \quad \left| \quad \frac{-2d}{-2} \leq \frac{0}{-2} \right.$$

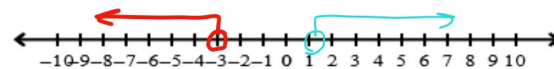
$$d \leq -3 \text{ or } d \geq 0$$



$$18. \quad 3x + 2 < -7 \text{ or } -4x + 5 < 1$$

$$\frac{3x}{3} < \frac{-9}{3} \quad \left| \quad \frac{-4x}{-4} < \frac{-4}{-4} \right.$$

$$x < -3 \text{ or } x > 1$$



	Inequality	Interval
1.	$5 < x \leq 8$	$(5, 8]$
2.	$x < -3$	$(-\infty, -3)$
3.	$x \geq 0$	$[0, \infty)$

Rewrite as an inequality and graph:

4. $[5, 9)$
 $5 \leq x < 9$

6. $(-\infty, 5]$
 $x \leq 5$

Graph	Set Notation
	$\{x \mid 5 < x \leq 8\}$
	$\{x \mid x < -3\}$
	$\{x \mid x \geq 0\}$

5. $[-3, 10]$
 $-3 \leq x \leq 10$

7. $(-3, \infty)$
 $x > -3$

Rewrite in interval notation, set notation, and graph:

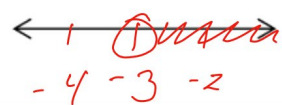
8. $-6 \leq x \leq 6$

$[-6, 6]$



9. $x > -3$

$(-3, \infty)$



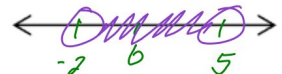
10. $x \leq -2$

$(-\infty, -2]$



11. $-2 < x < 5$

$(-2, 5)$



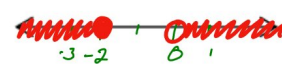
12. $x < 4$ or $x > 6$

$(-\infty, 4) \cup (6, \infty)$



13. $x \leq -2$ or $x > 0$

$(-\infty, -2] \cup (0, \infty)$



Write as an inequality, in interval notation and in set notation:

14.

$(-\infty, -1] \cup (3, \infty)$

$x \leq -1$ or $x > 3$

15.

$x \leq -8$

$(-\infty, -8]$

16.

$[-4, 3]$

$-4 \leq x \leq 3$

17.

$[7, 18]$

$7 \leq x \leq 18$

18.

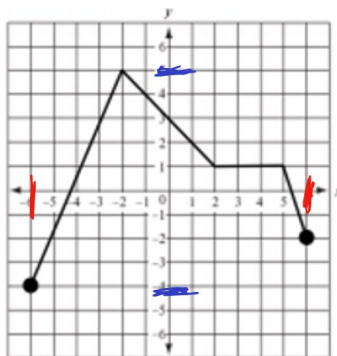
$x \leq 6$

$(-\infty, 6]$

19.

$x \geq -9$

$[-9, \infty)$



Find Domain/Range in Int Not.

$D: [-5, 5]$

$R: [-4, 5]$

An alloy of metals is 25% copper. Another alloy is 50% copper. How much of each should be used to make 1000 grams of an alloy that is 45% copper?

	%	grams	Total
25%	25	x	$25x$
50%	50	$1000 - x$	$50000 - 50x$
Mix	40	1000	40000

Eq: $25x + 50000 - 50x = 40000$

$-25x = -10000$

$x = 400$

400 grams of 25% and 600 grams of 50%