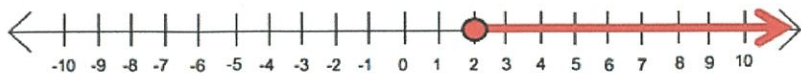


Algebra Test #2 Review

1. The number line that represent the expression, $x \geq 2$, is

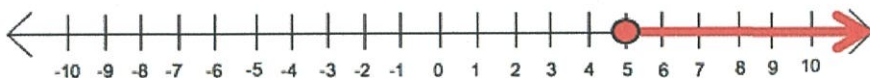


- a) *True*
- b) *False*

2. Round or “open” parenthesis () indicate that the number is included in the solution.

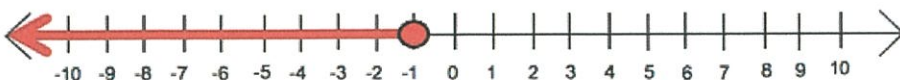
- a. *True*
- b. *False*

3. The graph below represents this set notation: $\{t \mid t \leq 5\}$



- a) *True*
- b) *False*

4. Which of the following expressions match the graph of the number line?



- a) $[-1, \infty)$
- b) $\{x \mid x < -1\}$
- c) $x \leq -1$
- d) none of the above

5. Evaluate: $-25 < 3x - 4 \leq 11$

- a. $-7 < x \leq 5$
- b. $-10 < x \leq 3$
- c. $-7 \leq x < 5$
- d. $-10 \leq x < 3$

6. Solve for x : $\frac{1}{4}(8x - 16) < 4$ or $11 < 3(x + 5)$

7. The compound inequality: $-2.5 < x \leq 4.5$ is the same as this interval notation: $(-2.5, 4.5]$.

- a) *True*
- b) *False*

8. John needs to save more than \$6,500 to renovate his master bedroom. Which of the following inequalities matches the situation?

- a) $s > \$6,500$
- b) $s < \$6,500$
- c) $s \leq \$6,500$
- d) $s \geq \$6,500$

9. The width of a rectangle is 12 feet. The perimeter is greater than 89. Determine the inequality that matches this situation.

- a) $2(12) + 2l > 89$
- b) $2(12) + 2l < 89$
- c) $2l < 65$
- d) None of the above

10. Jill is selling cookie boxes for The Girl Scouts. She wants to meet her goal of \$750 or more. Each cookie box is sold for \$5.50. What is the minimum number of cookie boxes Jill must sell to meet her goal?
- a) 135 boxes
 - b) 136 boxes
 - c) 137 boxes
 - d) None of the above

11. Tom's wrestling goal is to be under 140 pounds. Find the inequality that matches this situation.
- a) $w > 140$ pounds
 - b) $w < 140$ pounds
 - c) $w \geq 140$ pounds
 - d) $w \leq 140$ pounds

12. Is the product of $\frac{1}{3}$ and $\sqrt{100}$ rational or irrational? Explain.

13. How many solutions does the following equation have?

$$2(x + 8) = 5x - 3x + 8 + 8$$

- a) One
- b) None
- c) Infinite
- d) Eight

14. True or False: The product of two irrational numbers is always irrational.

15. How many solutions does $3a + 10 = 3a + 20$?

- a) 1
- b) 0
- c) infinite
- d) 12

16. Solve for x:

$$\frac{x+4}{3} + \frac{1}{2} = \frac{5}{2}$$

17. Solve the linear inequality, write your answer in set notation and graph your solution on a number line

$$7x - 1 > 13$$



18. Solve the linear inequality, write your answer in interval notation and graph your solution on a number line

$$-\frac{1}{3}(x+2) \geq 7x+3$$



19. Solve. Write the solution in interval notation. Graph the solution on the number line.

$$-3x > 3 \text{ OR } 2x + 3 \geq 11$$



20. Solve. Write the solution in interval notation. Graph the solution on the number line.

$$-15 < x - 8 < -4$$



21. Solve and graph the following compound inequality

$$6 < 2x + 4 \leq 12$$



22. Solve and graph the following inequality:

$$-3x + 6 \leq 15$$



23. Solve the following literal equation for x:

$$C = \frac{1}{3}xy$$

24. Solve the following literal equation for x:

$$\frac{x-c}{2} \geq d$$

25. Given: $-\frac{1}{3}x - \frac{2}{3} \geq 7x + 3$, which property is used below?

$$3\left(-\frac{1}{3}x - \frac{2}{3}\right) \geq 3(7x + 3)$$

A) Distributive Property

C) Subtraction Property of Inequality

B) Multiplication Property of Inequality

D) Associative Property of Multiplication

26. Write 0.003 in scientific notation.

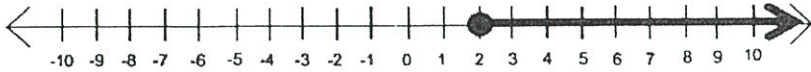
*Set notation = set builder

Name Key
Algebra 1: 8A

Date _____
Period _____

Algebra Test #2 Review

1. The number line that represent the expression, $x \geq 2$, is



a) True

b) False

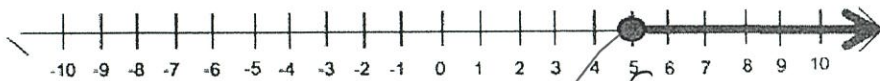
2. Round or "open" parenthesis () indicate that the number is included in the solution.

a. True

b. False

[] = included

3. The graph below represent this set notation: $\{t \mid t \leq 5\}$

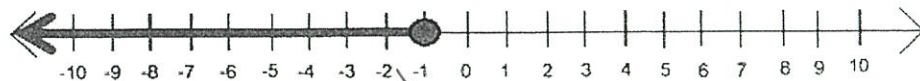


a) True

b) False

SB: $\{t \mid t \geq 5\}$

4. Which of the following expressions match the graph of the number line?



a) ~~$[-1, \infty)$~~

b) ~~$\{x \mid x < -1\}$~~

c) $x \leq -1$

d) none of the above

IN: $(-\infty, -1]$

5. Evaluate:
- a. $-7 < x \leq 5$
- b. $-10 < x \leq 3$
- c. $-7 \leq x < 5$
- d. $-10 \leq x < 3$

$$\begin{array}{r} -25 < 3x - 4 \leq 11 \\ +4 \quad +4 \quad +4 \\ \hline -21 < 3x \leq 15 \\ \frac{-21}{3} < \frac{3x}{3} \leq \frac{15}{3} \\ -7 < x \leq 5 \end{array}$$

* AND Statement

6. Solve for x: $\frac{1}{4}(8x - 16) < 4$ or $11 < 3(x + 5)$

$$\begin{array}{l} 2x - 4 < 4 \\ +4 \quad +4 \\ \hline 2x < 8 \\ \frac{2x}{2} < \frac{8}{2} \\ x < 4 \end{array} \quad \begin{array}{l} 11 < 3x + 15 \\ -15 \quad -15 \\ \hline -4 < 3x \\ \frac{-4}{3} < \frac{3x}{3} \\ -1\frac{1}{3} < x \end{array}$$

$x < 4$ OR $x > -1\frac{1}{3}$

7. The compound inequality: $-2.5 < x \leq 4.5$ is the same as this interval notation: $(-2.5, 4.5]$.

- a) True
- b) False



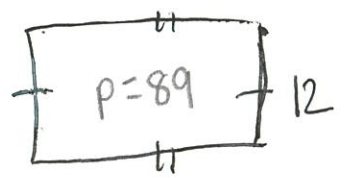
8. John needs to save **more than** \$6,500 to renovate his master bedroom. Which of the following inequalities matches the situation?

- a) $s > \$6,500$
- b) $s < \$6,500$
- c) $s \leq \$6,500$
- d) $s \geq \$6,500$

9. The width of a rectangle is 12 feet. The perimeter is greater than 89. Determine the inequality that matches this situation.

- a) $2(12) + 2l > 89$
- b) $2(12) + 2l < 89$
- c) $2l < 65$
- d) None of the above

$$\begin{aligned} P &= 2L + 2W \\ 2L + 2W &= P \\ 2L + 2(12) &> 89 \end{aligned}$$



10. Jill is selling cookie boxes for The Girl Scouts. She wants to meet her goal of \$750 or more. Each cookie box is sold for \$5.50. What is the minimum number of cookie boxes Jill must sell to meet her goal?

- a) 135 boxes
- b) 136 boxes
- c) 137 boxes**
- d) None of the above

L

let
 $x = \#$
of
cookie
boxes

I

$$\frac{5.50x \geq 750}{5.50} \quad \frac{750}{5.50}$$

$$x \geq 136 \frac{4}{11} \text{ OR}$$

$$x \geq 136 \overline{.36}$$

↑
DO NOT round

C

$$137(5.50) = 753.5$$

$$753.5 \geq 750 \checkmark$$

$$136(5.5) = 746$$

$$746 \not\geq 750$$

x

11. Tom's wrestling goal is to be under 140 pounds. Find the inequality that matches this situation.

- ~~a) $w > 140$ pounds~~
- b) $w < 140$ pounds**
- c) $w \geq 140$ pounds
- d) $w \leq 140$ pounds

12. Is the product of $\frac{1}{3}$ and $\sqrt{100}$ rational or irrational? Explain.

$\frac{1}{3} \cdot \sqrt{100} = \frac{10}{3} = 3\frac{1}{3}$ The product of $\frac{1}{3}$ and $\sqrt{100}$ is rational because it can be written as the ratio of 2 integers where the denominator isn't 0.
 $\text{rational} \times \text{rational} = \text{rational}$ is always rational

13. How many solutions does the following equation have? ~~get rid of the variables first~~

$$2(x+8) = 5x - 3x + 8 + 8$$

$$2x + 16 = 5x - 3x + 16$$

$$2x + 16 = 2x + 16$$

$$-2x \quad -2x$$

$$16 = 16$$

a) One
b) None
c) Infinite
d) Eight

D
C
M
S

14. True or False: The product of two irrational numbers is always irrational.

False. The product of 2 irrational #'s is sometimes irrational. It can be rational or irrational
ex $\sqrt{3} \cdot \sqrt{3} = \sqrt{9} = 3$ Rational
or $\sqrt{3} \cdot \sqrt{5} = \sqrt{15}$ Irrational

15. How many solutions does $3a + 10 = 3a + 20$?

~~get rid of variables first~~

$$3a + 10 = 3a + 20$$

$$-3a \quad -3a$$

$$10 \neq 20$$

a) 1
b) 0 OR NONE
c) infinite
d) 12

16. Solve for x:

$$\frac{x+4}{3} + \frac{1}{2} = \frac{5}{2}$$

$$\begin{array}{r} -\frac{1}{2} \quad -\frac{1}{2} \\ \hline 3 \left(\frac{x+4}{3} \right) = \left(\frac{5}{2} \right) 3 \\ \hline x+4 = 6 \\ -4 \quad -4 \\ \hline x = 2 \end{array}$$

OR

$$\frac{x+4}{3} + \frac{1}{2} = \frac{5}{2}$$

$$\begin{array}{r} 2(x+4) = 12 \\ 2x+8 = 12 \\ -8 \quad -8 \\ \hline 2x = 4 \\ \frac{2x}{2} = \frac{4}{2} \\ x = 2 \end{array}$$

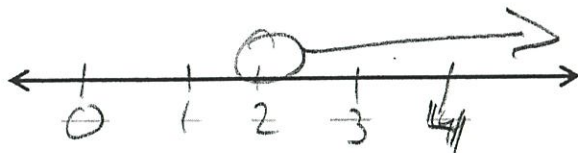
17. Solve the linear inequality, write your answer in **set notation** and graph your solution on a number line

$$7x - 1 > 13$$

$$\begin{array}{r} +1 \quad +1 \\ \hline 7x > 14 \\ \frac{7x}{7} > \frac{14}{7} \\ x > 2 \end{array}$$

Set builder

IN: $(2, \infty)$



18. Solve the linear inequality, write your answer in **interval notation** and graph your solution on a number line

$$-\frac{1}{3}(x+2) \geq 7x+3$$

$$-\frac{1}{3}x - \frac{2}{3} \geq 7x + 3$$

$$\begin{array}{r} +\frac{1}{3}x \quad +\frac{1}{3}x \\ \hline -\frac{2}{3} \geq 7\frac{1}{3}x + \frac{3}{3} \\ -3 \quad -3 \\ \hline -3 \geq 7\frac{1}{3}x \end{array}$$

$$-3\frac{2}{3} \geq 7\frac{1}{3}x$$

$$-\frac{1}{2} \geq x$$

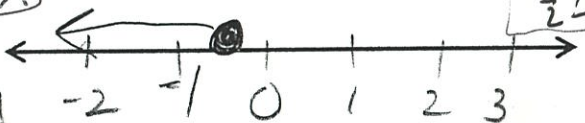
OR

$$x \leq -\frac{1}{2}$$

$$\text{IN: } (-\infty, -\frac{1}{2}]$$

$$\left(\frac{3}{22}\right) - 3 \frac{2}{3} \geq \frac{22}{3} x \left(\frac{3}{22}\right)$$

$$-\frac{1}{2} \geq x$$



19. Solve. Write the solution in interval notation. Graph the solution on the number line.

$$3x > 3 \text{ OR } 2x + 3 \geq 11$$

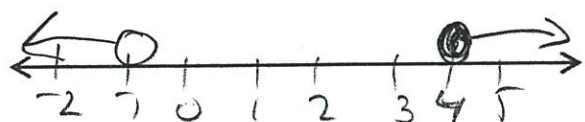
$$x < -1 \text{ OR } \frac{2x}{2} \geq \frac{8}{2}$$

$$x < -1 \text{ OR } x \geq 4$$

IN: $(-\infty, -1) \cup [4, \infty)$

must be in numerical order!

SB: $\{x \in \mathbb{R} \mid x < -1 \text{ OR } x \geq 4\}$



20. Solve. Write the solution in interval notation. Graph the solution on the number line.

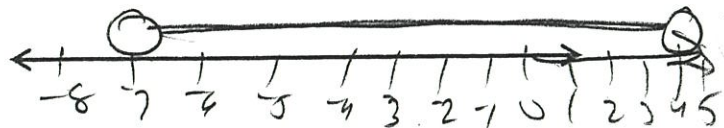
$$-15 < x - 8 < -4$$

$$-7 < x < 4$$

IN: $(-7, 4)$

SB: $\{x \in \mathbb{R} \mid -7 < x < 4\}$

AND statement



Switch the direction when dividing by a negative #

21. Solve and graph the following compound inequality

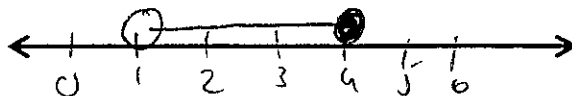
$$\frac{6 < 2x + 4 \leq 12}{-4 \quad -4 \quad -4}$$

$$\frac{2 < 2x \leq 8}{2 \quad 2 \quad 2}$$

$$1 < x \leq 4$$

Set builder notation
 And statement

Set builder: $\{x \mid 1 < x \leq 4\}$
 $1 < x \leq 4$ in interval notation would be $(1, 4]$



22. Solve and graph the following inequality:

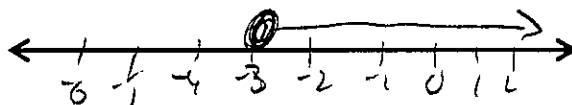
$$\frac{-3x + 6 \leq 15}{-6 \quad -6}$$

$$\frac{-3x \leq 9}{-3 \quad -3}$$

$$x \geq -3$$

Be careful: you must switch the direction of the inequality symbol when you divide (or multiply) by a negative!

SB: $\{x \mid x \geq -3\}$
 IN: $[-3, \infty)$



23. Solve the following literal equation for x:

You must get rid of the fraction

by multiplying by the reciprocal

$$3c = \frac{xy}{y}$$

$$\frac{3c}{3} = \frac{xy}{y}$$

$$x = \frac{3c}{y} \quad y \neq 0$$

24. Solve the following literal equation for x:

Must get rid of the denominator first

$$2\left(\frac{x-c}{2}\right) \geq (d)2$$

$$\frac{x-c}{1} \geq \frac{2d}{1}$$

$$x \geq 2d + c$$

25. Given: $-\frac{1}{3}x - \frac{2}{3} \geq 7x + 3$, which property is used below?

Shows multiplying by 3

$$3\left(-\frac{1}{3}x - \frac{2}{3}\right) \geq 3(7x + 3)$$

- A) Distributive Property
- C) Subtraction Property of Inequality

- B) Multiplication Property of Inequality
- D) Associative Property of Multiplication

26. Write 0.003 in scientific notation.

$$3 \times 10^{-3}$$

Calc: 0.003 [mode] [=] [5] [2] [enter] + then go back to the home screen + press [enter] [mode] < normal [enter] to get back to normal mode