

1. In a complete sentence, explain the difference between an inequality and an equation

equation has "=", have 1 solution inequality has <, > and many solutions

Match the sign to its descriptor [reading left to right]

2. D < A. less than or equal to

3. B > B. greater than

4. A ≤ C. greater than or equal

5. C ≥ D. less than

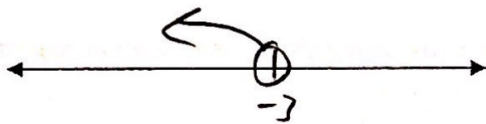
6. Explain what needs to happen when dividing or multiplying by a negative number within an inequality.

change the direction of the inequality symbol

Solve the inequality and graph the solution. Please box your answer.

7.  $-10x > 30$

$$\begin{array}{r} \underline{-10 \quad -10} \\ x < -3 \end{array}$$



8.  $y + 3 \geq -8$

$$\begin{array}{r} \underline{-3 \quad -3} \\ y \geq -11 \end{array}$$



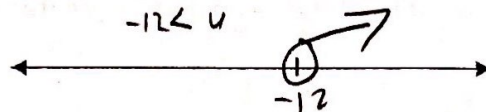
9.  $5l + 5 \geq -15$

$$\begin{array}{r} \underline{-5 \quad -5} \\ 5l \geq -20 \\ \underline{\quad \quad \quad 5} \\ l \geq -4 \end{array}$$



10.  $42 > -3u + 6$

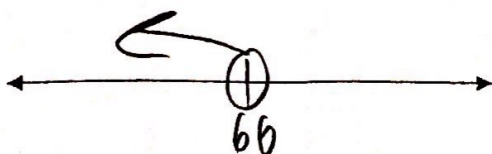
$$\begin{array}{r} \underline{-6 \quad -6} \\ 36 > -3u \\ \underline{\quad \quad \quad 3} \\ -12 < u \end{array}$$



11.  $\frac{k}{11} - 4 < 2$

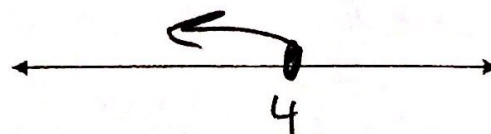
$$\begin{array}{r} \underline{+4 \quad +4} \\ \frac{k}{11} < 6, 11 \end{array}$$

~~11.~~  $\frac{k}{11} < 6, 11$   
 $k < 66$



12.  $4(4 + e) \leq 32$

$$\begin{array}{r} 16 + 4e \leq 32 \\ \underline{-16 \quad -16} \\ 4e \leq 16 \\ \underline{\quad \quad \quad 4} \\ e \leq 4 \end{array}$$



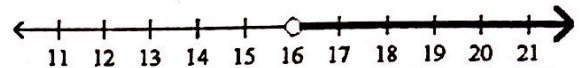
Write an inequality to represent the graph.

13.



$$x \leq -16$$

14.



$$x > 16$$

15. The tennis booster club has \$835 right now. But they have to spend 42.45 each week on tennis balls. They have to keep at least \$100 in the bank at all times. What is the maximum number of weeks they can buy the balls?

$x = \# \text{ weeks}$

$$\begin{array}{r} 835 - 42.45x \geq 100 \\ -835 \quad -835 \\ \hline -42.45x \geq -735 \\ -42.45 \quad -42.45 \\ \hline x \leq 17.3 \end{array}$$

They have at least \$100 as long as they buy for 17 weeks or less

16. Soren is working to save for a car. He started out with \$750. He works at Blue Fin and saves \$140 per week. He wants to buy a car that costs at least \$6500. How many weeks does he need to save to have at least \$6500?

$x = \# \text{ weeks}$

$$\begin{array}{r} 750 + 140x \geq 6500 \\ -750 \quad -750 \\ \hline 140x \geq 5750 \\ x \geq 41.07 \end{array}$$

Saves for at least 41.07 weeks

17. Ralph weighs 258 pounds and is losing 4.5 pounds per month. After how many months will he weigh under 180?

$x = \# \text{ months}$

$$\begin{array}{r} 258 - 4.5x < 180 \\ -258 \quad -258 \\ \hline -4.5x < -72 \\ -4.5 \quad -4.5 \\ \hline x > 17.3 \end{array}$$

after 17.3 months he'll weigh under 180

18. Eight less than three times a number is greater than fifteen

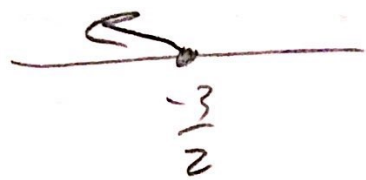
$$\begin{array}{r} 3x - 8 > 15 \\ +8 \quad +8 \\ \hline 3x > 23 \end{array}$$

The # is greater than  $\frac{23}{3}$

$$\begin{array}{r} 3x > \frac{23}{3} \\ \frac{3x}{3} > \frac{23}{3} \\ x > \frac{23}{3} \end{array}$$
  

$$\begin{array}{r} 2x < 24x + 12 \\ -24x \quad -24x \\ \hline -22x < +12 \\ -22 \quad -22 \\ \hline x > \frac{12}{-22} \\ x > \frac{6}{-11} \end{array}$$

20. 
$$\begin{array}{r} 3 - 6x \geq 12 \\ -3 \quad -3 \\ \hline -6x \geq 9 \\ \frac{-6x}{-6} \geq \frac{9}{-6} \end{array}$$

$$x \leq -\frac{9}{6} \quad x \leq -\frac{3}{2}$$


21. Convert 60 miles per hour to feet per minute.

$$\frac{60 \text{ miles}}{\text{hr}} \cdot \frac{5280 \text{ feet}}{1 \text{ mile}} \cdot \frac{1 \text{ hr}}{60 \text{ min}} = \frac{316800 \text{ feet}}{60 \text{ min}} = \frac{5280 \text{ ft.}}{\text{min}}$$

1 mile = 5280 feet  
1 hour = 60 minutes

22.  $ax + by = c$  solve for  $y$

$$\begin{array}{r} ax + by = c \\ -ax \quad -ax \\ \hline by = c - ax \\ \frac{by}{b} = \frac{c - ax}{b} \end{array} \quad \text{so } y = \frac{c - ax}{b}$$

23. Dakota is saving to purchase a new pair of bowling shoes that will cost at least \$49. He has already saved \$29. What is the least amount of money he needs to save for the shoes?  $x = \text{amount needed to save}$

$$\begin{array}{r} 29 + x \geq 49 \\ -29 \quad -29 \\ \hline x \geq 20 \end{array}$$

He needs to save at least \$20

24. The frog pond began in 1958 with 4 frogs. Since then, the number of frogs grew by 3 per month.  $x = \# \text{ months}$   
 $y = \# \text{ frogs}$

a. Write the function:  $y = 4 + 3x$

b. How many frogs were there after 475 months?

$$\begin{aligned} y &= 4 + 3(475) \\ y &= 4 + 1425 \\ y &= 1429 \end{aligned}$$

There were 1429 frogs after 475 months

c. How many months had passed if there were 2371 frogs?

$$\begin{array}{r} 2371 = 4 + 3y \\ -4 \quad -4 \\ \hline 2367 = 3y \\ \frac{2367}{3} = \frac{3y}{3} \end{array}$$

$789 = x$   
after 789 weeks there were 2371 frogs

25. The population of tiger mosquitos was first measured in Gainesville at 578,438. They found that the population was reducing due to pest control measures by  $\frac{1}{2}$  each year.

a. Write the function:  $y = 578438 \left(\frac{1}{2}\right)^x$   $x = \# \text{ yrs}$   
 $y = \# \text{ mosquitos}$

b. How many mosquitos after 5 years?

$$\begin{aligned} y &= 578438 \left(\frac{1}{2}\right)^5 \\ y &= 18076 \end{aligned}$$

there were 18076 mosquitos after 5 years

c. How many years until the population is below 10,000?

Just guess #s  $\therefore$

$$10000 > 578438 \left(\frac{1}{2}\right)^x$$

6 after 6 yrs, there are less than 10,000 mosquitos



26. Alexis is saving to buy a laptop that costs \$1,100. So far she has saved \$400. She makes \$12 an hour baby-sitting. What's the least number of hours she needs to work in order to reach her goal?

$$400 + 12x = 1100$$

$$-400 \quad -400$$

$$12x = 700$$

$$\frac{12x}{12} = \frac{700}{12}$$

$$x = 58.\bar{3}$$

She needs to work 58.3 hrs to reach her goal

X: # hrs worked

27. Write a word problem for:  $y = 7(2)^x$

Victor started with 7 pennies and the number of pennies doubles every month

28. Write a word problem for:  $6x + 20$

Hannah already has \$20 saved and is saving \$6 per week

29. Write a function for the table shown:

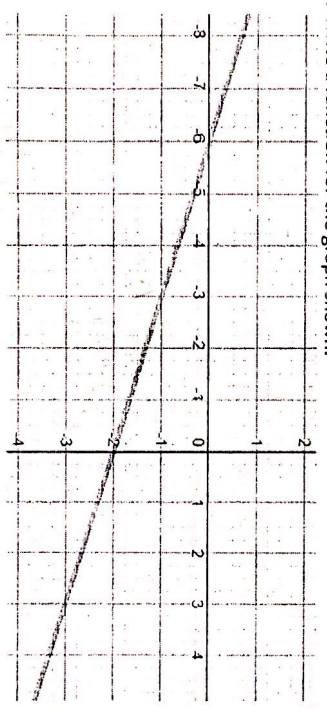
x	y
1	-115
3	1
4	59
5	117

ROC = -58 using  $\frac{y_2 - y_1}{x_2 - x_1}$

Initial value is -173 (use ROC to go back one from -115)

$$y = -58x - 173$$

30. Write a function for the graph shown:



ROC  $\frac{2}{3}$  initial value  $\frac{-2}{3}$

$y = -\frac{2}{3}x - 2$

or

$y = -\frac{1}{3}x - 2$

31. Complete column Y-1 to be linear. Complete column Y-2 to be exponential.

x	Y-1	Y-2
0	1	1
1	4	4
2	7	16
3	10	64
4	13	256