POW!

1. Solve for w. $z = x + \left(\frac{1}{3}\right)yw$ $(z-x) = \frac{1}{3}yw \cdot 3$

   $w = \frac{3(z-x)}{y}$

   $\frac{3(z-x)}{y} = \frac{yw}{y}$

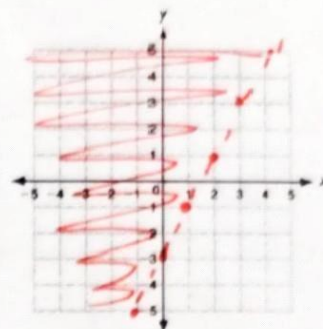2. Solve for w. $v = \frac{w-x}{y} \cdot y$

   $vy + x = w$ $vy = w - x$

3. Solve for w. $v = \frac{w}{xy} \cdot y$

   $vxy = w$

4. Graph the inequality $y > 2x - 3$

5. Name two solutions to the inequality graphed in number 4

   $(0,0)$ $(1,3)$

6. Write an inequality to represent each of the following scenarios:
   a. There are no more than 12 students. $x \leq 12$
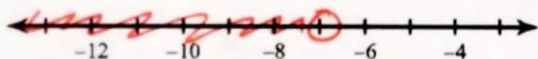   b. There is a minimum of 12 students. $x \geq 12$
   c. There are at least 12 students. $x \geq 12$
   d. There are at most 12 students. $x \leq 12$
   e. There is a maximum of 12 students. $x \leq 12$

7.

   $$3(8 + 7v) - 3v < -102$$

   [number line from -12 to -4, shaded left of -7, open circle]

   $24 + 21v - 3v < -102$
   $24 + 18v < -102$
   $18v < -126$
   $v < -7$

8.

   $$-43 > -(a + 1) + 8(1 - 3a)$$

   [number line from -3 to 7, shaded right of 2, open circle]

   $-43 > -a - 1 + 8 - 24a$
   $-43 > -25a + 7$
   $-50 > -25a$ → or
   $\frac{-50}{-25} > \frac{-25a}{-25}$ $2 < a$ $a > 2$

9. Identify the property of equality used to justify each step taken when solving the equation $2x - 6 = 18$

   a. Step 1: DISTRIBUTIVE
   b. Step 2: ASSOCIATIVE
   c. Step 3: ADDITION
   d. Step 4: DIVISION

$2(x - 3) - 4 = 14$
Step 1: $2x - 6 - 4 = 14$
Step 2: $2x - 10 = 14$
Step 3: $2x = 24$
Step 4: $x = 12$

10. The Sprayberry Football concession stand sold

    hamburgers for $1.50 and sodas for $1.00 at the last football game. If a total of 664 items

    were sold to give sales of $770, how many of each item was sold?

    $1.50x + 1y = 770$ $x = 212$ 212 HAMBURGERS
    $x + y = 664$ $y = 452$ 452 HOT DOGS

11. Which region should be shaded to show the solution set of the system of inequalities below?
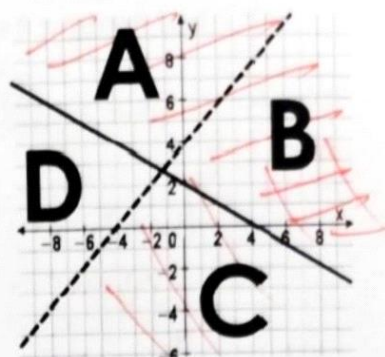
$$2y < 2x + 8$$
$$y \geq -\frac{1}{2}x + 2$$

A. Region A
B. Region B
C. Region C
D. Region D

$y < x + 4$

12. Ashley orders 3 shirts and 4 pairs of pants from Old Navy and spends $115.50. Brittany orders 2 shirts and 3 pairs of pants from Old Navy and spends $83.50. How much does one shirt cost?

13.

14. How many solutions would each of the following the following equations and inequalities have?

$0 = 0$

A. X + 2 = 4 + x − 2 $x + 2 = x + 2$ INFINITE

B. X + 2 = x + 4 $2 = 4$ NONE!

C. X + 2 > x + 4 $2 > 4$ NONE!

D. X + 2 < x + 4 $2 < 4$ INFINITE!

15. Rearrange the following equation into slope intercept form 3x + 9y = x − 18

$$y = -\frac{2}{9}x - 2$$

$$\frac{9y}{9} = \frac{-2x - 18}{9}$$

16. Solve by elimination $\begin{pmatrix} 6x - 3y = 21 \\ -2x - 2y = -22 \end{pmatrix} 3$

$6x - 3y = 21$
$-6x - 6y = -66$
———————
$-9y = -45$

$6x - 15 = 21$

$x = 6$

$(6, 5)$

$y = 5$

17. $4x - 3y > -6$
$x + 3y < -9$
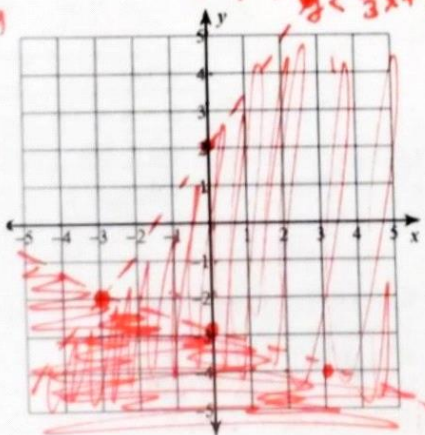
$\frac{-3y}{-3} > \frac{-4x - 6}{-3}$

$y < \frac{4}{3}x + 2$
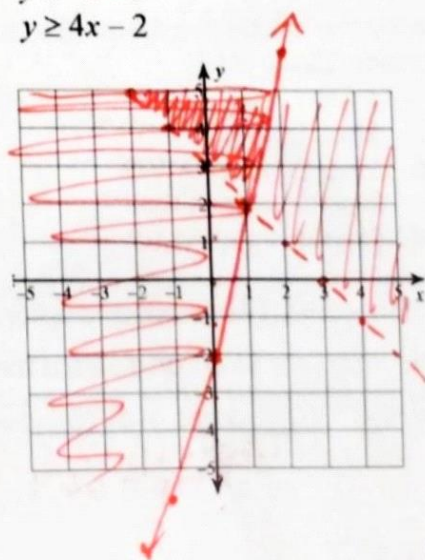
$\frac{3y}{3} < \frac{-x - 9}{3}$

$y < -\frac{1}{3}x - 3$

18. $y > -x + 3$
$y \geq 4x - 2$
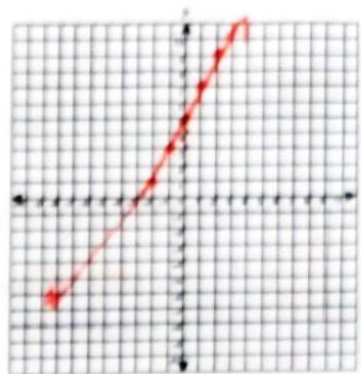
18. Solve the following system by **graphing and elimination**.

$2y - 4x = 10$

$y - 5 = 2x$

$y = x + 5$

$y = 2x + 5$

$\frac{2y}{2} = \frac{4x + 10}{2}$

SAME LINE!

19. If $d = \frac{1}{2}at^2$ where a is measured in meters per second squared and t is measured in seconds. Solve for a.

$d = \frac{1}{2}at^2$

$\frac{2d}{t^2} = \frac{at^2}{t^2}$

$\boxed{\frac{2d}{t^2} = a}$

20. Brittany received a $1500 tax return. Since then, she has saved an additional $200 per month. She has been saving for six months. She hopes to save enough to pay for her children's daycare for two months, so she needs $3000. Does she currently have enough money in savings?

$1500 + 200x \geq 3000$

$1500 + 200(6)$

$2700 \geq 3000$

NO, SHE ONLY HAS 2700 AND NEED 3,000. SHE IS $300 SHORT

21. What is the twentieth term of the sequence whose nth term is $a_n = 4n + 9$

$a_{20} = 4(20) + 9$

$\boxed{a_{20} = 89}$

22. Write a recursive rule, an explicit rule, and find the 40th term of the following sequence 6, 15, 24, 33,...

$a_1 = 15$

$a_n = a_{n-1} + 9$

$a_n = 15 + 9(n-1)$

$15 + 9n - 9$

$a_n = 6 + 9n$

$a_{40} = 6 + 9(40)$

$a_{40} = 366$

23. What is the difference between a function and a relation? Give an example of each

A FUNCTION IS A TYPE OF RELATION WHERE EVERY INPUT HAS EXACTLY ONE OUTPUT. A RELATION CAN HAVE AN INPUT GO TO DIFFERENT OUTPUTS

FUNCTION (1,2) (2,3) (4,3) (7,2) // RELATION (1,2) (2,3) (1,7)

24. Find the average rate of change between -1 and 4 from the following table of values

X	-6	-2	-1	0	3	4
Y	-28	-4	-0.5	2	3.5	2

$(-1, -0.5)$ $(4, 2)$ $\frac{2 - -0.5}{4 - -1} = \frac{2.5}{5} = \frac{1}{2}$

25. Ramona is ordering wings from a local restaurant called Wing Shack. They charge $0.79 per wing and a 4.99 delivery charge. Romana has $12.

a. Write an inequality that models Ramona's situation

$.79x + 4.99 \leq 12$

b. Can Ramona order a dozen wings? Explain.

$.79(12) + 4.99$

$14.47 \leq 12$

NO, SHE WOULD NEED $14.47 SHE CAN ORDER 9 WINGS MAXIMUM

26. Below represents the time and distance as Dr. Oldham ran her first marathon.

Find the rate of change for the following time frames

a. The first hour $(0,0)$ $(1,10)$

$\frac{10-0}{1-0} = 10$ ~~miles~~

b. The first hour to the second hour $(1,10)$ $(2,14)$

$\frac{14-10}{2-1} = 4$

c. The second hour to third hour $(2,14)$ $(3,20)$

$\frac{20-14}{3-2} = 6$

d. the third hour to the fourth hour $(3,20)$ $(4,24)$

$\frac{24-20}{4-3} = 4.2$

e. The last 30 minutes $(4,24)$ $(4.5,26)$

$\frac{26-24}{4.5-4} = 4.8$

Distance (in Miles)

Time (in hours)

27. During which time frame was she the fastest?

the first hour

28. During which time frame was she the slowest?

The third to fourth hour

29. What was her average pace for the entire marathon?

$(0,0)$ $(4.5,26)$ $\frac{26-0}{4.5-0} = 5.78$ miles per hour

or $\frac{5.78}{60} = 10.4$ minutes per mile

30. Miles and Riley are saving up to buy airpods. Right now they cost $160. Miles was given $25 for his birthday and he is saving $5 every week. Riley doesn't have a birthday until April so he doesn't have any money now but he is planning on saving $10 every week.

a. Write an equation for each boy (label which is which)

miles $m(x) = 25 + 5x$

Riley $R(x) = 10x$

b. Graph the equations (create your own scale)

c. Who is saving money faster? Explain how you know.

RILEY SAVES FASTER. SLOPE IS HIGHER (10 PER MONTH V. 5 PER MONTH)

d. Who will have the money saved first? Explain using mathematics

RILEY WILL HAVE IT IN 16 WEEKS AND MILES WILL HAVE IT IN 27 WEEKS

e. 4 weeks after they started saving, Apple came out with a super sale in which the airpods were only $45. Can Miles and Riley afford them? Explain

MILES CAN ~~BECAUSE~~ $5(4)+25 = 45$ B.T RILEY CANNOT $4(10) = 40$