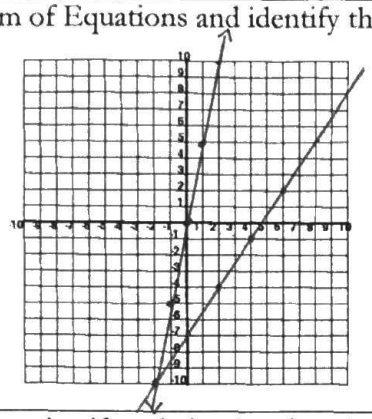
Name _____ Date _____ Score _____

MOY Skills

1) Graph the system of Equations and identify the solution.

$$\begin{cases} y = \frac{3}{2}x - 7 \\ y = 5x \end{cases}$$



(-2, -10)

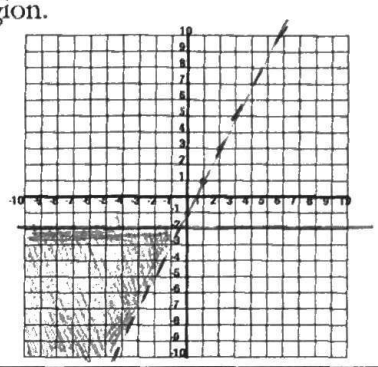
2) Graph the System of Inequalities (Remember to show double shaded region.

$$\begin{cases} y \le -2 \\ 2x - y < 1 \end{cases}$$

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

$y > -1 + 2x$

$y > 2x - 1$



3) How do you determine if a relation is a function from…

a) a set of ordered pair?

x-values cannot repeat with different y-values

b) a graph? passes vertical line test

4) Give an example of a situation that represents a positive correlation but NO causation.

As ice cream sales increase, the rate of drowning deaths increases

While there is a correlation, ice cream sales is not the cause of drowning deaths.

Find the Domain and Range for each situation.

5) A family is throwing Grandma a party and has a budget of $750. The company charges $200 for equipment rental and $25 per person.

$f(x) = 200 + 25x$

D: {1, 2, 3 … 22}

R: {225, 250, 275 … 750}

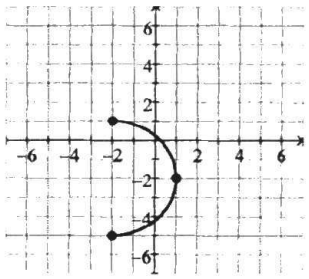
6) The maximum speed and maximum height were recorded at 6 rollercoasters across the US.

Maximum Speed in mph, x	Maximum Height in feet, y
45	63
50	80
54	105
60	118
65	141
70	107

What is the domain?

{45, 50, 54, 60, 65, 70}

7)

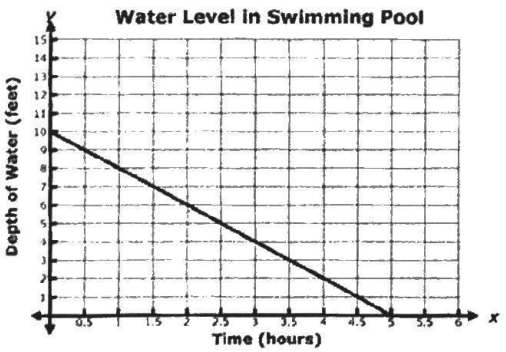


D: $\{x \mid -2 \le x \le 1\}$

R: $\{y \mid -5 \le y \le 1\}$

Given the following situations, identify and interpret the meaning of the slope and y – intercept

8)



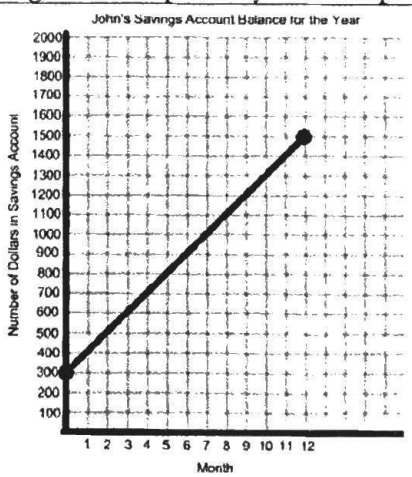
y-intercept: (0, 10)

Initial water level

slope: -2ft/hour

every hour, the water level decreases by 2 ft.

9)



y-intercept: (0, 300)

John's initial account balance

slope: $100 per month

the amount increases $100 every month

Write the equation of the line in slope intercept form AND standard form.

11) A line that passes through the point $(-10, 8)$ and has a slope of $-\frac{5}{2}$.

(x_1, y_1)

$y - 8 = -\frac{5}{2}(x + 10)$

$2y - 16 = -5(x + 10)$

$2y - 16 = -5x - 50$

$5x + 2y = -34$ | $y = -\frac{5}{2}x - 17$

12) Perpendicular to $y = 2x - 3$ and contains the point $(-4, 8)$.

$m_\perp = -\frac{1}{2}$

$y - 8 = -\frac{1}{2}(x + 4)$

$2y - 16 = -(x + 4)$

$2y - 16 = -x - 4$

$x + 2y = 12$ | $y = -\frac{1}{2}x + 6$

13) A line that contains the points $(5, -4)$ and $(10, -2)$.

$m = \frac{2}{5}$

$y + 4 = \frac{2}{5}(x - 5)$

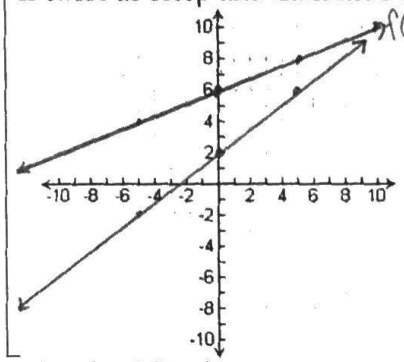
$5y + 20 = 2(x - 5)$

$5y + 20 = 2x - 10$

$2x - 5y = 30$ | $y = \frac{2}{5}x + 6$

Transformations

14) Given the graph of $f(x)$, graph the line if the slope is twice as steep and translated down 4 units.



$f(x) = \frac{2}{5}x + 6$

$\frac{2}{5} \cdot 2 = \frac{4}{5}$

$g(x) = \frac{4}{5}x + 2$

15) Given $f(x) = \frac{5}{4}x - 4$, write the equation of a line that is half as steep and translated up 5 units.

$y = \frac{5}{8}x + 1$

Solve the following.

15) $5(2x+6) = -4(-5-2x) + 3x$

$10x + 30 = 20 + 8x + 3x$

$10x + 30 = 20 + 11x$

$10 = x$

Check:

$5(2(10)+6) = -4(-5-2(10)) + 3(10)$

$130 = 130$ ✓

16) $-5(7n + 4) \geq -90$

$-35n - 20 \geq -90$

$\frac{-35n}{-35} \geq \frac{-70}{-35}$

$n \leq 2$

17) Solve for h:

$A = 2\pi r^2 + 2\pi rh$

$\frac{A - 2\pi r^2}{2\pi r} = \frac{2\pi rh}{2\pi r}$

$h = \frac{A - 2\pi r^2}{2\pi r}$

Arithmetic Sequences

18) An arithmetic sequence is represented by the function $f(n) = -2 + 20n$. What are the first three terms of the sequence?

18, 38, 58

19) What is the arithmetic sequence represented by the table below?

x	-2	1	4	7
y	-12	-3	6	15

$f(x) = 3x - 6$

Direct Variation

20) The value of y varies directly with x. and $y = -14$ when $x = \frac{1}{2}$. Write the equation that represents this situation and find y when $x = -1$

$y = kx$

$-14 = k \cdot \frac{1}{2}$

$k = -28$

$y = -28x$

$y = 28$ when $x = -1$

21) Charles' Law states that at constant pressure, the volume of a fixed amount of gas varies directly with its temperature(measured in Kelvin). A gas has a volume of 250mL at $300°K$. Write an equation for the relationship between volume and temperature and find the volume if the temperature in increased to $420°K$.

$y = kx$

$V = kT$

$250 = k(300)$

$k = \frac{5}{6}$

$V = \frac{5}{6}T$

$V = \frac{5}{6}(420)$

$V = 350\text{mL}$