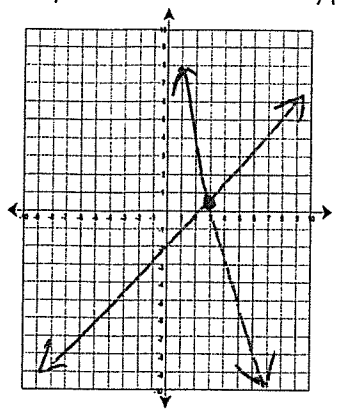
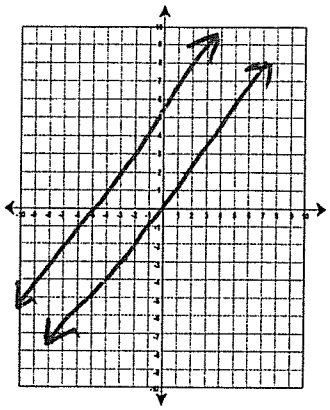
Final Exam Review - Wednesday PART 1/5

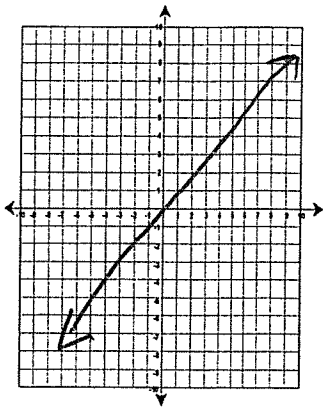
Sketch a picture of each type of graph



ONE SOLUTION



NO SOLUTION



INFINITE SOLUTIONS

I can solve systems of equations

$y = 2x + 4$

$-6x + 3y = 12$

$-6x + 3(2x+4) = 12$

$-6x + 6x + 12 = 12$

$12 = 12$

Infinite Solutions

$y = -4x - 16$

$4x + 2y = -8$

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

$4x - 8x - 32 = -8$

$-4x - 32 = -8$

$+32 \quad +32$

$\frac{-4x}{-4} = \frac{40}{-4}$

$x = -10$

$y = -4(-10) - 16$

$y = 40 - 16$

$y = 24$

$(-10, 24)$

$6x + 2y = -4$

$3x - 3y = 2$

$6x + 2y = -4$

$-6x \quad -6x$

$\frac{2y}{2} = \frac{-4 - 6x}{2}$

$y = -2 - 3x$

$3x - 3y = 2$

$-3x \quad -3x$

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

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

$\left(-\frac{1}{3}, -1\right)$

$y = 3x - 4$

$y = -2x + 6$

$(2, 2)$

$2x + 3y = -2$
$6x + 9y = -6$

$2x+3y=-2$ $\quad -2x \quad -2x$

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

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

$6x+9y=-6$ $\quad -6x \quad -6x$

$\frac{9y}{9} = \frac{-6-6x}{9}$

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

Infinite Solutions

$3x + y = 1$
$3x + y = 6$

$3x+y=1$ $\quad -3x \quad -3x$

$y = 1 - 3x$

$3x+y=6$ $\quad -3x \quad -3x$

$y = 6 - 3x$

NO Solutions

$3x - 4y = 10$
$2x + y = 3$

$3x-4y=10$ $\quad -3x \quad -3x$

$\frac{-4y}{-4} = \frac{10-3x}{-4}$

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

$2x+y=3$ $\quad -2x \quad -2x$

$y = 3 - 2x$

$(2, -1)$

$y = 3(x - 4)$
$y = 3x - 12$

Infinite Solutions

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

$y = \frac{1}{3}x + 3$

NO Solution

$2x + 3y = -9$
$x - y = -2$

$2x-3y=-9$ $\quad -2x \quad -2x$

$\frac{-3y}{-3} = \frac{-9-2x}{-3}$

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

$x-y=-2$ $\quad -x \quad -x$

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

$y = 2 + x$

$(-3, -1)$

I can solve system word problems

The school that Stefan goes to is selling tickets to a choral performance. On the first day of ticket sales the school sold 4 senior citizen tickets and 3 child tickets for a total of $83. The school took in $124 on the second day by selling 5 senior citizen tickets and 6 child tickets. Find the price of a senior citizen ticket and the price of a child ticket.

X = Senior
Y = Child

Senior tickets cost $14
Child tickets cost $9

$4x + 3y = 83$
$-4x \quad -4x$

$\frac{3y}{3} = \frac{83-4x}{3}$

$y = \frac{83}{3} - \frac{4}{3}x$

$5x + 6y = 124$
$-5x \quad -5x$

$\frac{6y}{6} = \frac{124-5x}{6}$

$y = \frac{62}{3} - \frac{5}{6}x$

On Monday Joe bought 10 cups of coffee and 5 doughnuts for his office at the cost of $16.50. It turns out that the doughnuts were more popular than the coffee. On Tuesday he bought 5 cups of coffee and 10 doughnuts for a total of $14.25. Use the system below to answer the question.

$10x + 5y = 16.50$
$5x + 10y = 14.25$

How much does a doughnut cost?

(1.25, .80)

Doughnuts cost $.80

X = coffee
Y = doughnuts

$10x + 5y = 16.50$
$-10x \quad -10x$

$\frac{5y}{5} = \frac{16.50-10x}{5}$

$y = 3.30 - 2x$

$5x + 10y = 14.25$
$-5x \quad -5x$

$\frac{10y}{10} = \frac{14.25-5x}{10}$

$y = 1.425 - \frac{1}{2}x$

A TV station executive is planning the new lineup for next season's shows. On Monday nights, there will be 4 sitcoms and 4 dramas, for a total of 320 minutes of programming, not counting commercials. On Tuesday nights, he has scheduled 6 sitcoms and 2 dramas, for a total of 268 minutes of non-commercial programming. All sitcoms have the same length and all dramas have the same length. How long is each type of show?

X = sitcom
Y = drama

Sitcom 27 min
Drama 53 min

$4x + 4y = 320$
$-4x \quad -4x$

$\frac{4y}{4} = \frac{320-4x}{4}$

$y = 80 - 1x$

$6x + 2y = 268$
$-6x \quad -6x$

$\frac{2y}{2} = \frac{268-6x}{2}$

$y = 134 - 3x$

Several students decide to start a t-shirt company. After initial expenses for $280, they purchase each t-shirt wholesale for $3.99. They sell each shirt for $10.99. How many must they sell to break even?

X = # of T-shirt
Y = cost

$y = 10.99x$

$y = 3.99x + 280$

They must sell 40 t-shirts to breakeven

FINAL EXAM Review - Thursday PART 2/5

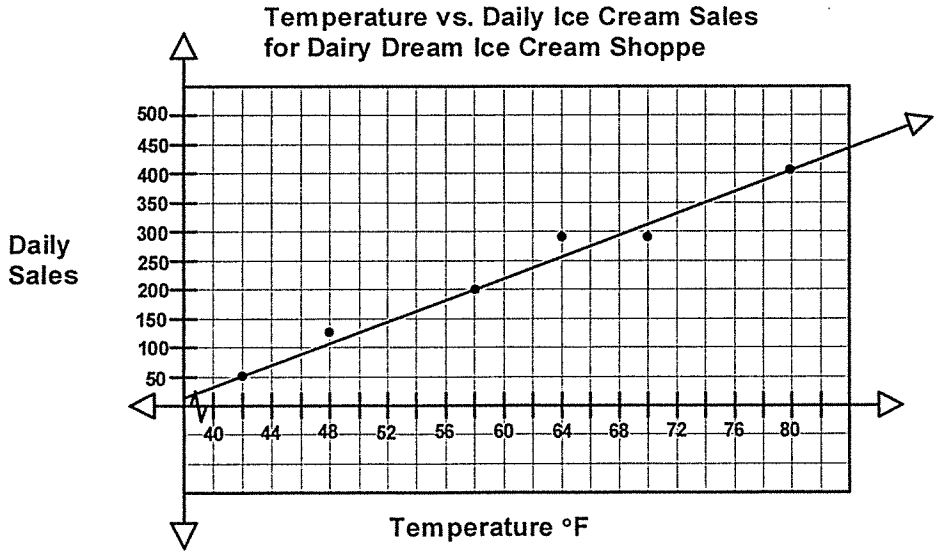
I can find the correlation coefficient and explain what it means

Describe the correlation coefficient

r=.25 NO correlation
r=.90 Strong Positive
r=-.8 Weak Negative
r=-.4 NO correlation

I can use the line of best fit to determine future values

Use the line of best fit to answer the following questions



1. **Based on the line of best fit, predict the daily sales if the temperature was 64 degrees.**

$251 in Sales

2. **Based on the line of best fit, predict the temperature if the daily sales was $300.**

69°

Use the table below to answer the following questions.

Speed (mi/h)	Stopping Distances (ft)
10	26
15	45
20	64
25	83
30	110
35	135
40	163
45	198

1. What is the slope 4.84

2. What is the y-intercept -30.18

3. What is the line of best fit? $y = 4.84x - 30.18$

4. What is the correlation coefficient and what does this mean about the data?

.99

Strong positive

5. Using your best fit line for this data, predict what the stopping distance is after 60 miles per hour.

$X = 60$

$Y = 4.84(60) - 30.18$

$Y = \boxed{260.22 \text{ ft}}$

6. Using your best fit line for this data, predict the speed in miles per hour it would take for the stopping distances to be 230 feet.

$Y = 230$

$230 = 4.84x - 30.18$

$+30.18 \quad +30.18$

$\frac{260.18}{4.84} = \frac{4.84x}{4.84}$

$\boxed{x = 53.76 \text{ mi/h}}$

The correlation of SAT scores and grade point average (GPAs) for a random sample of high school students is represented by the line of best fit

$Y = 40X + 1000$

$X =$ GPA

$Y =$ SAT score

a) Based on this trend, what will be the score of someone who has a 3.0 GPA?

$Y = 40(3) + 1000$

$Y = 1120$ SAT score

b) Based on this trend, what will be the GPA of someone who earned a score of 1500?

$1500 = 40x + 1000$

$-1000 \quad -1000$

$\frac{500}{40} = \frac{40x}{40}$

$x = 12.5$ GPA

I know... it doesn't make sense

Year	1991	1992	1993	1994	1995	1996	1997	1998	1999
Attendance (Millions)	250	261	278	261	275	293	298	298	310
Revenue (Billions of Dollars)	6.2	6.4	6.9	7.1	7.3	7.8	8.3	8.6	9.2

Use the data above to answer the following questions.

1. What is the slope .047
2. What is the y-intercept -5.69
3. What is the line of best fit? $y = .047x - 5.69$
4. What is the correlation coefficient and what does this mean about the data?

   .95 Strong Positive
5. Use your line of best fit to determine how many people must go to the parks before they make 13 billion dollars.

$$13 = .047x - 5.69$$
$$+5.69 \qquad +5.69$$
$$\frac{18.69}{.047} = \frac{.047x}{.047}$$

$x = 397.66$ million in Attendance

6. Use your line of best fit to determine how much money the parks made when there were 150 million people in attendance.

$$y = .047(150) - 5.69$$
$$y = 1.36 \text{ billion dollars}$$

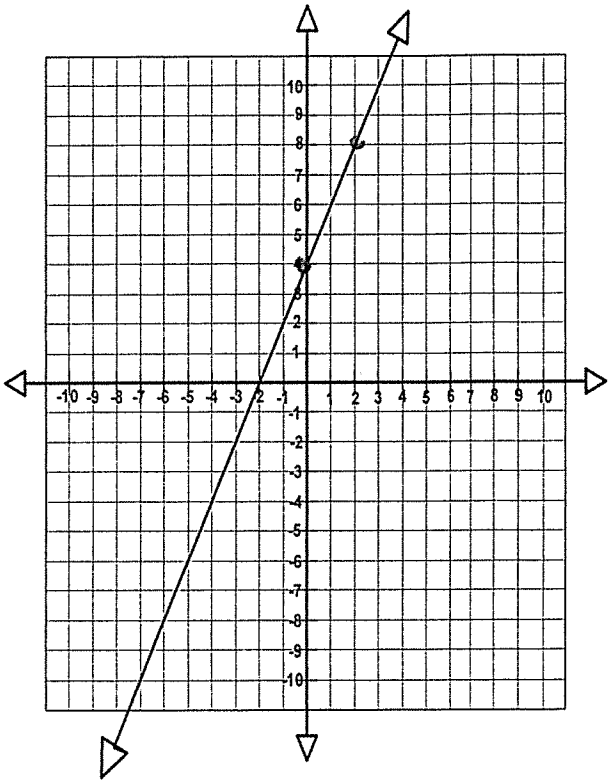
I can find the slope

FINAL EXAM REVIEW - FRIDAY

Part 3/5

Which answers are solutions of the graph?

a) (2,0)
b) (0,4)
c) (2,8)
d) (-2,0)
e) (4,1)



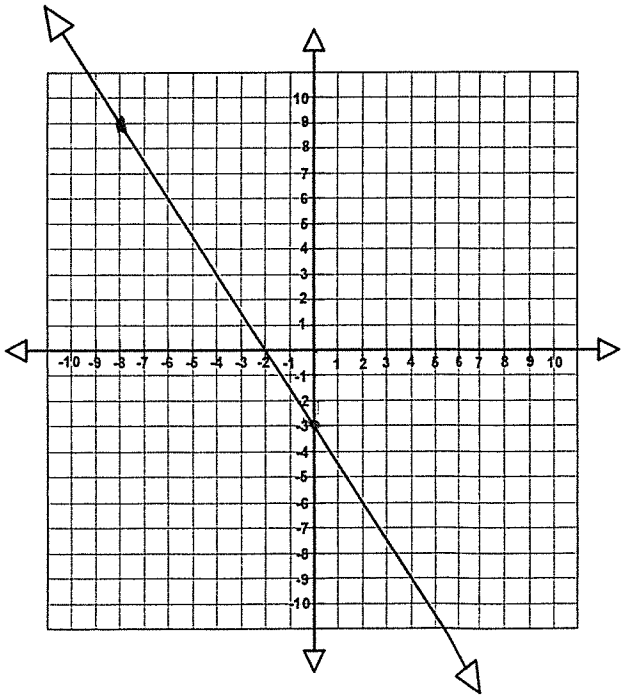
Slope: $\frac{4}{2} = 2$

Y-intercept:

(0,4)

Which answers are solutions of the graph?

a) (0,-3)
b) (-4,1)
c) (2,8)
d) (3,1)
e) (-8,9)



Slope: 3/2

Y- intercept : (0,-3)

.Two linear functions are described below. Based on the information below, which of the following statements are true?

Function 1 has the equation $y = -3x + 5$ $m = -3$ $b = 5$

Function 2 is a line passing through the points (0, 5) and (5, -10)

$x_1, y_1 \quad x_2 y_2$

$$\frac{-10-5}{5-0} = \frac{-15}{5} = -3$$

$$y = -3x + 5$$

a. Function 1 and 2 have the same slope.
b. Function 1 and 2 have the same x-intercept
c. Function 1 and 2 have the same y-intercept
d. Function 1 and 2 represent the same lines.

1. Determine the rate of change and explain what it means.

42 miles per hour

Time (Hours)	Distance (Miles)
4	168
6	252
8	336
10	420

2 ( ) 84

$\frac{84}{2} = 42$

x	y	
0	0	↑ 84
2	84	↑ 84
4	168	

2. Write an equation in slope-intercept Form

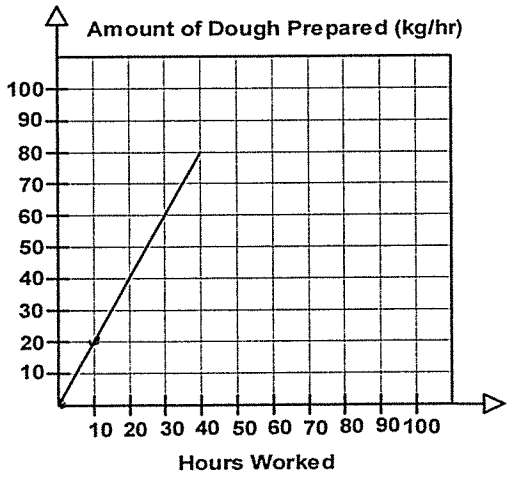
$y = 42x + 0$

3. What does the y-intercept represent?

At 0 hours, they were at 0 miles

1. Determine the rate of change and explain What it means

$\frac{20}{10} = 2$ kg of dough Prepared per hour



2. Write an equation in Slope-intercept form.

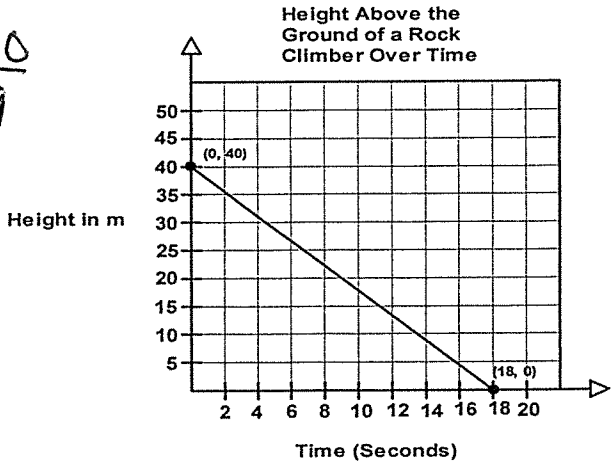
$y = 2x + 0$

3. What does the y-intercept represent?

At 0 hours there was 0 kg of dough prepared

1. **Determine the rate of change.**

$$\frac{40-0}{0-18} = \frac{40}{-18} = -\frac{20}{9}$$



2. **Write an equation in Slope-intercept form.**

$$y = -\frac{20}{9}x + 40$$

3. **What does the y-intercept represent?**

The rock climber started 40 m above the ground

Which table represents a linear function with the same slope as y = - 4x + 5

a.

x	0	1	2	3	4
y	3	6	9	12	15

+1, +3 $\quad \frac{3}{1} = 3$

b.

x	-2	-1	0	1	2
y	1	3	5	7	9

+1, -2 $\quad \frac{-2}{1} = -2$

c.

x	0	-1	-2	-3	-4
y	-8	-4	0	4	8

-1, +4 $\quad -\frac{4}{1} = 4$

d.

x	-2	-1	0	1	2
y	10	15	20	25	30

+1, +5 $\quad \frac{5}{1} = 5$

Calculate the slope and explain what it means

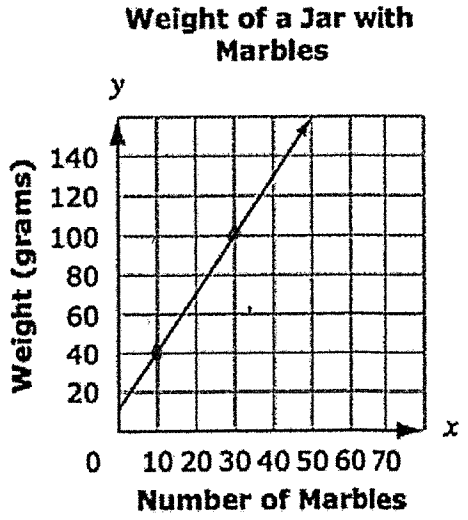
a. 3 ; every time a marble is put in the jar, it adds 3 grams.

b. 1/3; every time 3 marbles are put in the jar, it adds 1 gram

c. 3/2; every time 3 marbles are put in the jar, it adds 2 grams.

d. 2/3; every time 2 marbles are put in the jar, it adds 3 grams.

$$\frac{60}{20} = 3$$



I can evaluate a function **Final Exam Review - Monday Part 4/5**

If f(x) = -2x + 2 then find f(-2) $-2(-2)+2$ $-4+2 = \boxed{-2}$	If g(x) = $-x^2$ + 5x, then find g(-12) $-(-12)^2+5(-12)$ $\boxed{-204}$
If f(x) = -4x + 7 then find f (3) $-4(3)+7 = \boxed{-5}$	If f(x) = -x+4, then find f(-3) $-(-3)+4$ $3+4 = \boxed{7}$

A company makes cell phones where f(x) = 32x + 40 represents the cost to make the phones and x represents the number of cell phones made. Which statement is correct?

↙ plug in # of cellphones to find cost

a. It costs $8 to make two cell phones
b. It costs $200 to make five cell phones
c. It costs $320 to make ten cell phones
d. It costs $72 to make two cell phones

$32(5)+40=200$ ✓

I can determine if an ordered pair is a solution

Which of the following is a solution to the function f(x) = $-\frac{1}{2}x - 6$

a) (-2, -5) $-\frac{1}{2}(-2)-6=-5$ yes

b) (0, -6) $-\frac{1}{2}(0)-6=-6$ yes

c) (5, 19) $-\frac{1}{2}(5)-6=-8.5$ NO

d) (-3, -4) $-\frac{1}{2}(-3)-6=-4.5$ NO

Which of the following is a solution to the function f(x) = 3x + 4

a) (-2, -11) $3(-2)+4 = -2$ NO

b) (0, 6) $3(0)+4 = 4$ NO

c) (6, -9) $3(6)+4 = 22$ NO

d) (10, 34) $3(10)+4 = 34$ Yes

Which of the following is a solution to the function f(x) = -2x +1 ? Circle all that apply

a. (4,0) $-2(4)+1$ $-8+1$ -7

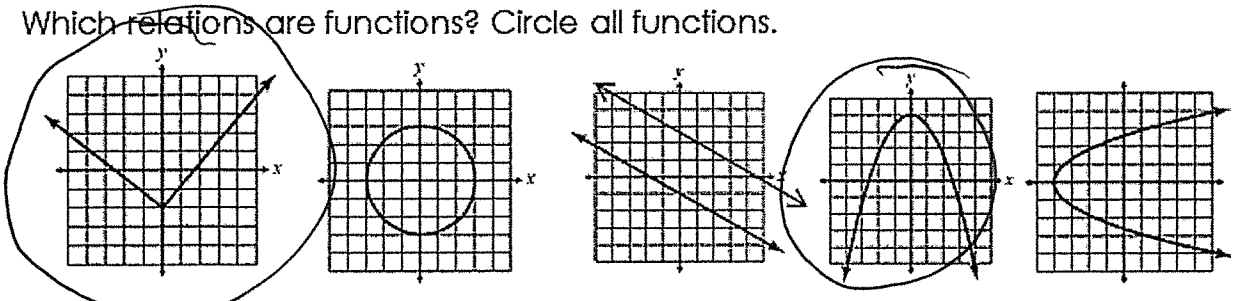
b. (3,7) $-2(3)+1$ $-6+1$ -5

c. (0,1) $-2(0)+1$ $0+1$ 1 ✓

d. (8, -15) $-2(8)+1$ $-16+1$ -15

I can determine if a relation is a function or not and I can find domain and range.

Which relations are functions? Circle all functions.



Determine the domain and range.

{ (-3, -6), (-1, -6), (5, -6), (8, -6) }

Domain: $\{-3, -1, 5, 8\}$

Range: $\{-6\}$

Is this relation a function? Explain your reasoning.

Yes, each input has exactly one output

Determine the domain and range.

{ (-2, 4), (-2, 0), (6, 5), (0, -2) }

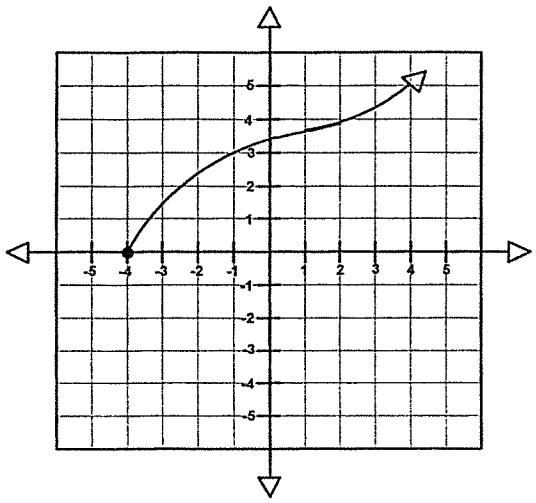
Domain: $\{-2, 0, 6\}$

Range: $\{-2, 0, 4, 5\}$

Is this relation a function? Explain your reasoning.

NO, -2 has more than one output

Determine the domain and range.



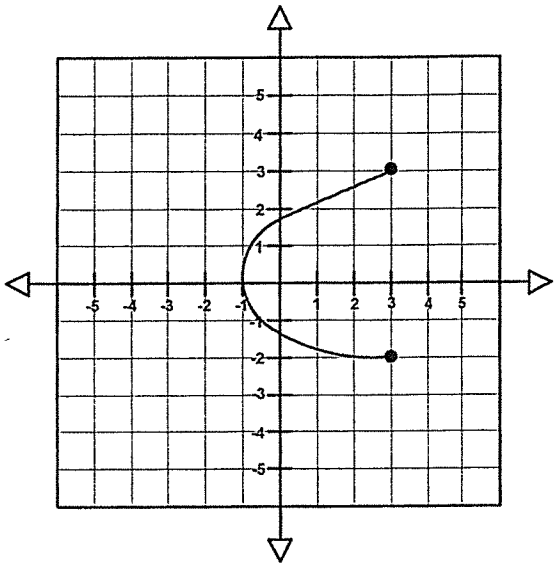
Domain: $x \geq -4$

Range: $y \geq 0$

Is this relation a function? Explain your reasoning.

Yes, passes VLT

Determine the domain and range.



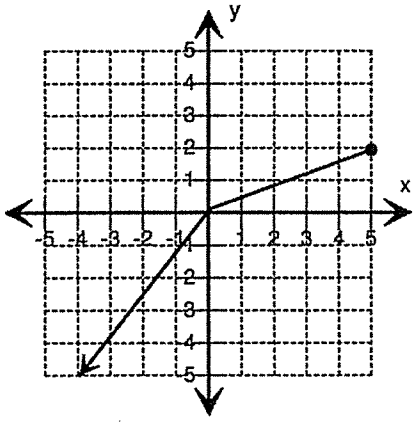
Domain: $-1 \leq x \leq 3$

Range: $-2 \leq y \leq 3$

Is this relation a function? Explain your reasoning.

NO, Fails VLT

Determine the domain and range.



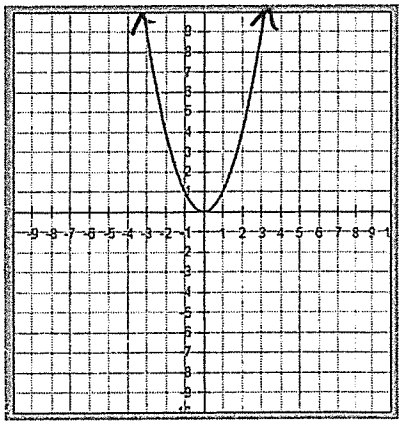
Domain: $x \leq 5$

Range: $y \leq 2$

Is this relation a function? Explain your reasoning.

Yes, passes VLT

Determine the domain and range.



Domain: All #s

Range: $y \geq 0$

Is this relation a function? Explain your reasoning.

Yes, passes VLT

Determine the domain and range.

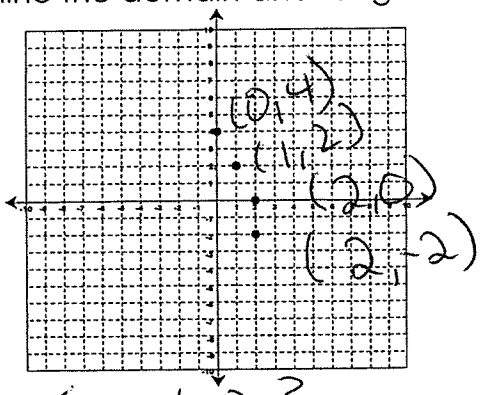
Number of Identical Notebooks	Regular Cost of Notebooks (No Discounts)
7	5.53
2	1.58
5	3.95
3	2.37

Domain: {2, 3, 5, 7}
Range: {1.58, 2.37, 3.95, 5.53}

Is this relation a function? Explain your reasoning.

Yes, each input has one output

Determine the domain and range.

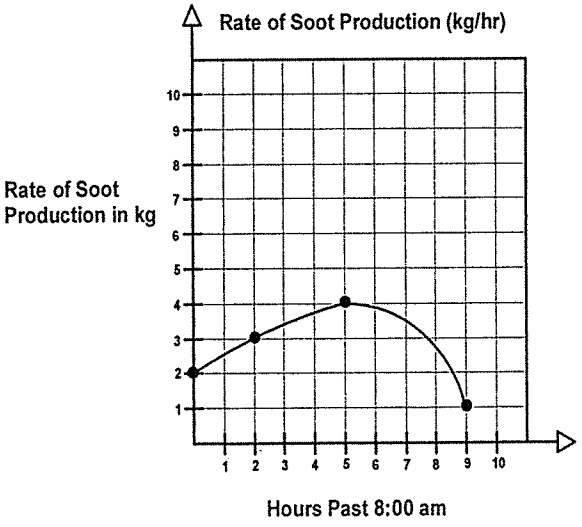


Domain: {0, 1, 2}
Range: {-2, 0, 2, 4}

Is this relation a function? Explain your reasoning.

NO, 2 has two outputs

Answer the following questions about the graph below



1. What is the domain and range?

Domain: $0 \leq x \leq 9$

Range: $1 \leq y \leq 4$

2. How much soot is the factory producing at 12?

~~x~~ lead X-axis

3.8 kg

3. What is a reasonable domain?

Any # between 0 & 9

Name_____

Part 5/6 - Tuesday

Hour_____

Semester 1 Final Exam Study Guide

I can solve equations

Solve for x.

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

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

$-x - 5 = 5x - 8$

$+x \quad +x$

$-5 = 6x - 8$

$+8 \quad +8$

$\frac{3}{6} = \frac{6x}{6}$

$x = \frac{1}{2}$

Solve for x.

$-3x - 6x + x - 7 = -15x$

$-8x - 7 = -15x$

$+8x \quad +8x$

$\frac{-7}{-7} = \frac{-7x}{-7}$

$1 = x$

Solve for x.

$-2x - (8 - 4x) = -18 + 2x$

$-2x - 8 + 4x = -18 + 2x$

$2x - 8 = -18 + 2x$

$-2x \quad -2x$

$-8 = -18$

NO Solution

Solve for x.

$75 = 3(-6x - 5)$

$75 = -18x - 15$

$+15 \quad +15$

$\frac{90}{-18} = \frac{-18x}{-18}$

$-5 = x$

Describe the steps in both math and writing for solving the following problem: $3x - \frac{1}{2}(2 + 5x) = 12$

Math

$3x - 2 - 5x = 12$

$-2x - 2 = 12$

$+2 \quad +2$

$\frac{-2x}{-2} = \frac{14}{-2}$

$x = -7$

Written

1. Distribute - Sign
2. Combine like terms
3. Add 2
4. Divide by -2

$-4k+6=1-4k-1$

$+4k \quad +4k$

$6=0$

No Solution

$4(b-4)+8b=-88$

$4b-16+8b=-88$

$12b-16=-88$

$+16 \quad +16$

$\frac{12b}{12}=\frac{-72}{12}$

$b=-6$

$-18-8n=2(-6n+5)$

$-18-8n=-12n+10$

$+12n \quad +12n$

$-18+4n=10$

$+18 \quad +18$

$\frac{4n}{4}=\frac{28}{4}$

$n=7$

$7p+4-4=-12+7p+5+7$

$7p=7p$

$0=0$

Infinite Solutions

$1+6n+6n=-6+4n+7n$

$1+12n=-6+11n$

$-11n \quad -11n$

$1+1n=-6$

$-1 \quad -1$

$n=-7$

$-198=-3(-6+7n)-6n$

$-198=18-21n-6n$

$-198=18-27n$

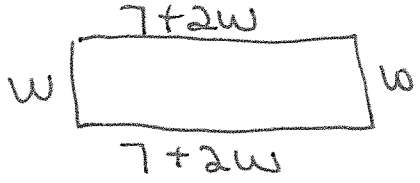
$-18 \quad -18$

$\frac{-216}{-27}=\frac{-27n}{-27}$

$8=n$

I can represent real world problems

The length of a rectangle is 7 cm more than twice its width. The perimeter of the rectangle is 32 cm. What are the dimensions of the rectangle?



$14+6w=32$

$-14 \quad -14$

$\frac{6w}{6}=\frac{18}{6}$

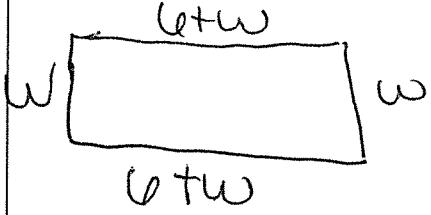
$w=3$

width = 3cm

length = 7+2(3)

13cm

The length of the rectangle is 6 in. more than its width. The perimeter of the rectangle is 44 in. What are the dimensions of the rectangle?



$12+4w=44$

$-12 \quad -12$

$\frac{4w}{4}=\frac{32}{4}$

$w=8$

width = 8 in

length = 6+8

14in

I can write equations in slope-intercept form and graph

x	y
-10	3
-5	6
0	9
5	12
10	15

+5 +5 +3

Which linear equation models this table?

a. $y = 5/3x + 9$

b. $y = 3/5\,x + 9$

c. $y = 9$

d. $y = 9x + 3/5$

$m = \frac{3}{5}$

$b = 9$

Saif is sitting on top of a building and tosses a ball down to his friend who is on the ground. The height, y, in feet, of the ball is a function of time, x in seconds as shown in the table:

x	y
0	11
0.5	12
1	11
1.5	5
2	0

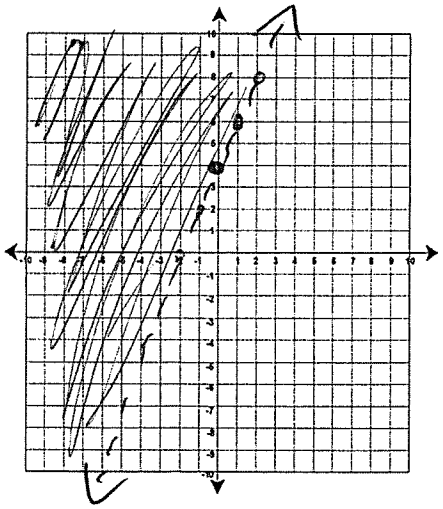
Which statement **best** describes the meaning of the y-intercept of this function?

a. The ball is originally 11 feet above the ground.
b. The ball reaches a maximum height of 11 feet.
c. The ball takes 12 seconds to reach the ground.
d. The ball reaches a maximum height after 12 seconds.

I can graph inequalities

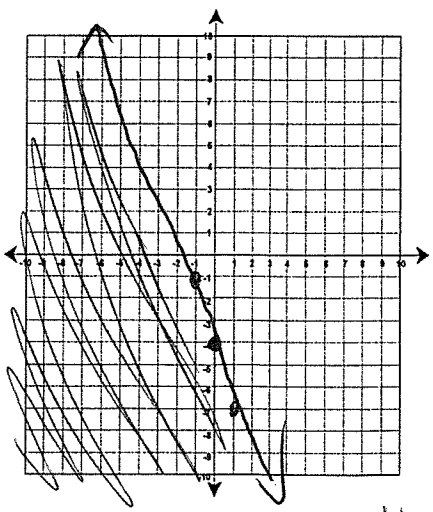
Graph the inequality

$Y > 2x+4$



Graph the inequality

$Y \leq -3x -4$



I can solve inequalities

Solve then graph

$5x + 2 < 2x - 4$

$-2 \quad -2$

$5x < 2x - 6$

$-2x \quad -2x$

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

$x < -2$

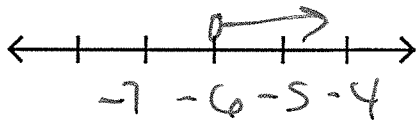
$-4 > 2(-x - 8)$

$-4 > -2x - 16$

$+16 \quad +16$

$\frac{12}{-2} > \frac{-2x}{-2}$

$-6 < x \quad$ or $\quad x > -6$



$9n - 8 \leq 12n + 4$

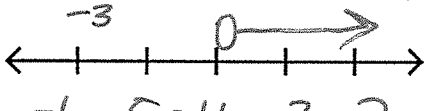
$-12n \quad -12n$

$-3n - 8 \leq 4$

$+8 \quad +8$

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

$n > -4$



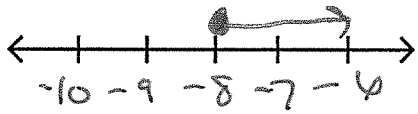
$3 \leq -3(-x - 9)$

$3 \leq 3x + 27$

$-27 \quad -27$

$\frac{-24}{3} \leq \frac{3x}{3}$

$-8 \leq x$ or $x \geq -8$



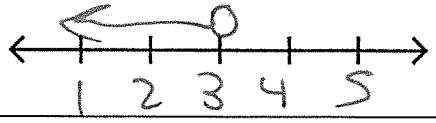
$76 > 4(1 + 6k)$

$76 > 4 + 24k$

$-4 \quad -4$

$\frac{72}{24} > \frac{24k}{24}$

$3 > k$ or $k < 3$



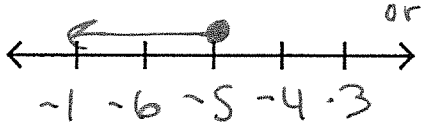
$80 \geq -4(-5 + 3x)$

$80 \geq 20 - 12x$

$-20 \quad -20$

$\frac{60}{-12} \geq \frac{-12x}{-12}$

$-5 \geq x$ or $x \leq -5$



$-4(-6 - 3a) + 4 > 6a + 16$

$24 + 12a + 4 > 6a + 16$

$12a + 28 > 6a + 16$

$-6a \quad -6a$

$6a + 28 > 16$

$-28 \quad -28$

$\frac{6a}{6} > \frac{-12}{6}$

$a > -2$