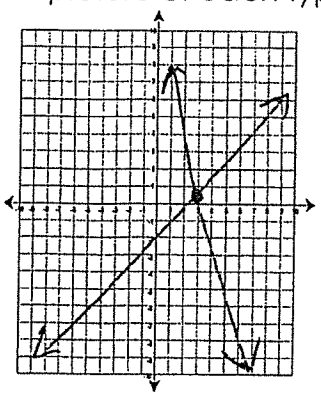
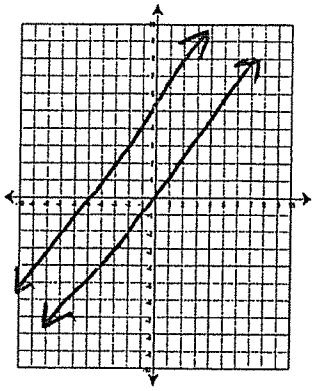
Final Exam Review - Wednesday PART 1/5

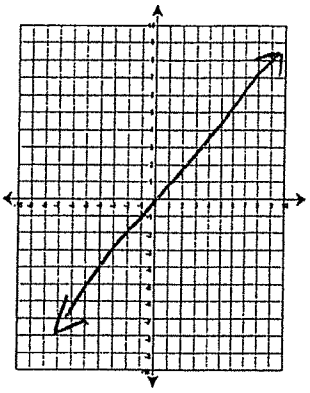
Sketch a picture of each type of graph



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

$y = -4x - 16$
$4x + 2y = -8$

$4x + 2(-4x - 16)$
$4x - 8x - 32 = -8$
$-4x - 32 = -8$
$+32 \quad +32$
$\frac{-4x}{-4} = \frac{24}{-4}$
$x = -6$

$y = -4(-6) - 16$
$y = 24 - 16$
$y = 8$

$(-6, 8)$

$6x + 2y = -4$
$3x - 3y = 2$

$6x + 2y = -4$
$-6x \quad -6x$
$\frac{2y}{2} = \frac{-4 - 6x}{2}$
$y = -2 - 3x$

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

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

$y = 3x - 4$
$y = -2x + 6$

$(2, 2)$

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

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

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

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

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

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

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

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?

# of $y = 10.99x$
X = T-shirt
Y = cost

$y = 3.99x + 280$

They must sell 40 t-shirts to breakeven

Johnson's company produces handmade table that they sell. The company models these cost with the equation f(x)= 3x+105, where x represents the amount of tables. Which of the followings statements is correct?

a. It costs $150 to produce twelve tables.
$150 = 3(12)+105$
$150 \neq 141$

b. It costs $553 to produce thirty tables.
$553 = 3(30)+105$
$553 \neq 195$

c. It costs $115 to produce three tables.
$115 = 3(3)+105$
$115 = 114$

(d.) It costs $120 to produce five tables.
$120 = 3(5)+105$
$120 = 120$

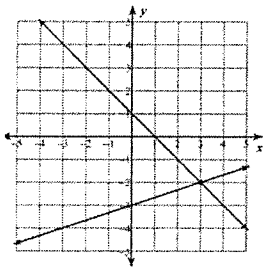
Given the system of equation, which graph matches the system?

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

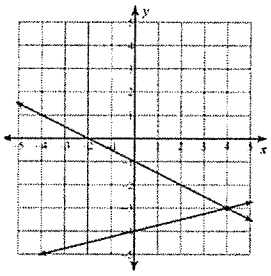
$\frac{2y}{2} = \frac{-3x}{2} + \frac{4}{2}$ $\quad Y = \frac{-3}{2}X + 2$

(plug in calculator and check intersection)

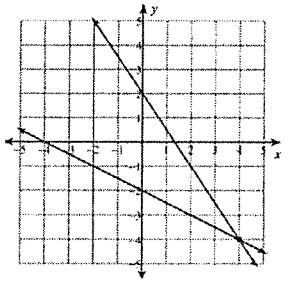
a.



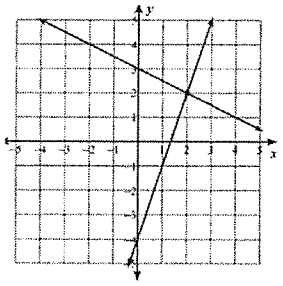
b.



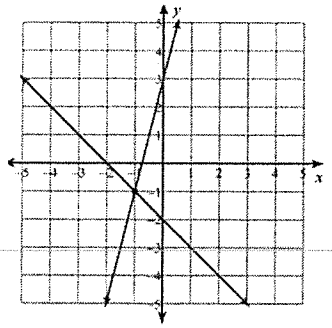
(c.)



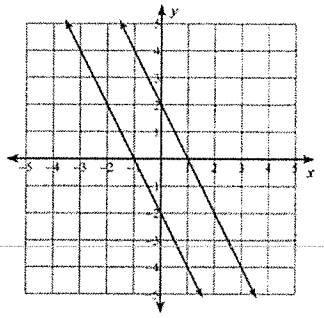
d.



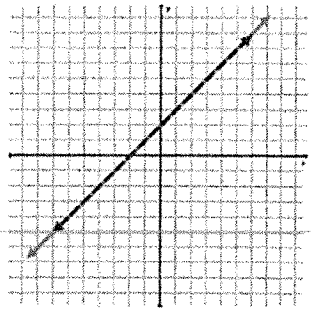
Identify the following as: one solution, no solution or infinite solutions.



One solution



No solution



Infinite solutions

On Monday, the DHS club sold t-shirts and pants. They sold 30 t-shirts and 25 pants for $105.25. The following Monday, the DHS club sold 12 t-shirts and 27 pants for $90.75. Which system of equation can be used to determine the cost of one t-shirt (t) and one pair of pants (p)?

a. $30t + 25p = 105.25$
$12t + 27p = 90.75$

b. $30t + 25p = 90.75$
$12t + 27p = 105.25$

c. $30t \times 25p = 105.25$
$12t \times 27p = 90.75$

d. $30t \times 25p = 90.75$
$12t \times 27p = 105.25$

FINAL EXAM Review - Thursday PART 2/5

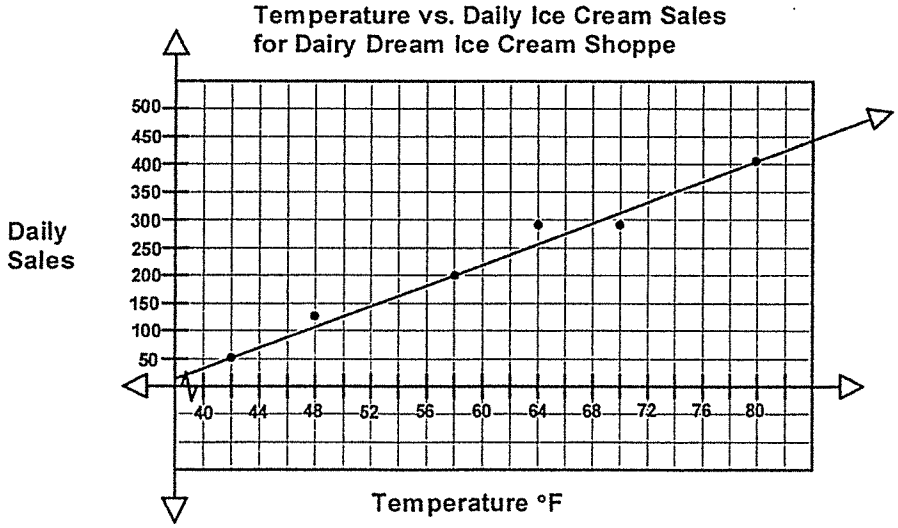
I can find the correlation coefficient and explain what it means

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.

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