Part 1 Review - System of Equations

NUMBER OF SOLUTIONS

	one solution	NO solution	Infinite Solutions
Graph:	Two lines that intersect once	Two parallel lines	Two lines that overlap
Algebra:	$x = 8$	$8 \neq 4$	$3 = 3$

Solving Systems

Graphing

$2x + 8y = 6$

$x + y = 7$

1) Put equations in slope-int form ($y = mx + b$)

$2x + 8y = 6$ $\quad -2x \quad -2x$

$\frac{8y}{8} = \frac{6 - 2x}{8}$

$y = \frac{3}{4} - \frac{1}{4}x$

$x + y = 7$ $\quad -x \quad -x$

$y = 7 - x$

2) Graph in calculator

3) Zoom if necessary

Menu → Analyze → Intersection

Substitution

$y = x + 4$

$2x - 3y = 4$

① Substitute y in other equation

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

$2x - 3x - 12 = 4$

$-1x - 12 = 4$

$+12 \quad +12$

$\frac{-1x}{-1} = \frac{16}{-1}$ $\quad \boxed{x = -16}$

② Plug x value into either equation

$y = x + 4$ $\quad y = -16 + 4$

$\boxed{y = -12}$

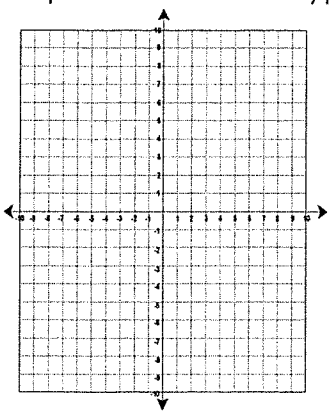
③ Write answer as (x, y)

Systems Word Problems

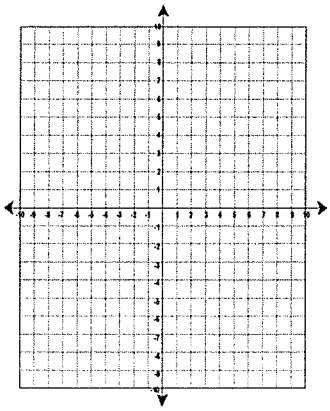
* If you're trying to find when two things will be the same...
  1. Write equations in $y=mx+b$
  2. Graph & find intersection
  3. Explain what solution represents

* If you're trying to find the cost/amount of two different things...
  1. Write equations in standard form $ax+by=c$
  2. convert to slope-int form
  3. Graph & Find Intersection
  4. Explain what the solution represents

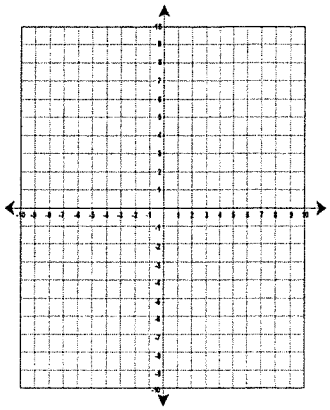
Sketch a picture of each type of graph



ONE SOLUTION



NO SOLUTION



INFINITE SOLUTIONS

I can solve systems of equations

$y = 2x + 4$ $-6x + 3y = 12$	$y = -4x - 16$ $4x + 2y = -8$
$6x + 2y = -4$ $3x - 3y = 2$	$y = 3x - 4$ $y = -2x + 6$

$2x + 3y = -2$ $6x + 9y = -6$	$3x + y = 1$ $3x + y = 6$
$3x - 4y = 10$ $2x + y = 3$	$y = 3(x - 4)$ $y = 3x - 12$
$y = \frac{1}{3}x - 3$ $y = \frac{1}{3}x + 3$	$2x + 3y = -9$ $x - y = -2$

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.

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?

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?

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?

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.

b. It costs $553 to produce thirty tables.

c. It costs $115 to produce three tables.

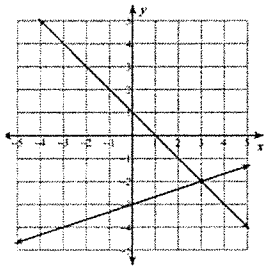
d. It costs $120 to produce five tables.

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

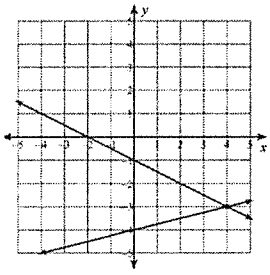
$$y = -\frac{1}{2}x - 2$$

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

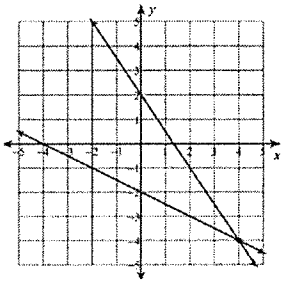
a.



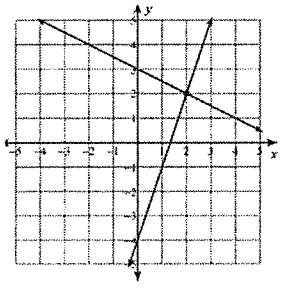
b.



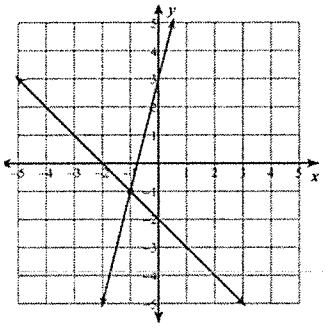
c.

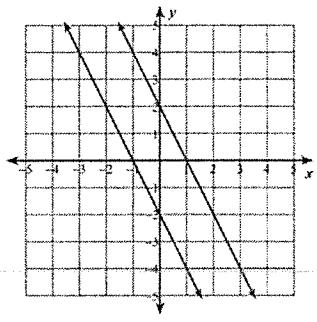


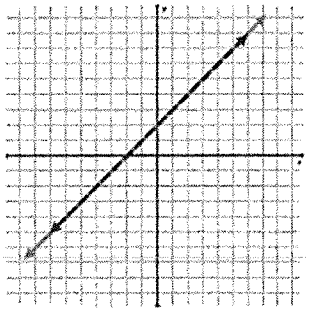
d.



Identify the following as: one solution, no solution or 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)?

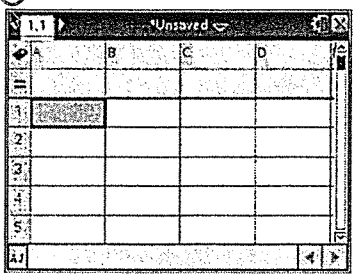
a. $30t + 25p = 105.25$
$12t + 27p = 90.75$

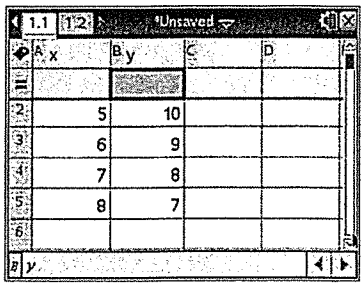
b. $30t + 25p = 90.75$
$12t + 27p = 105.25$

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

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

Input Data: Part 2 Review

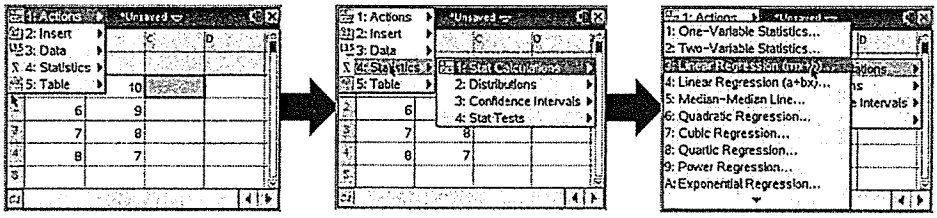




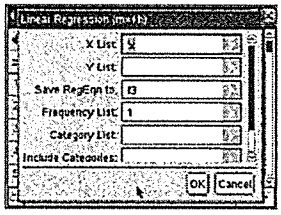
1. Home→New Document→Lists & Spreadsheets
2. Type the name of the x-axis data in Box A
3. Type the name of y-axis data in Box B
4. Enter the data in the appropriate column

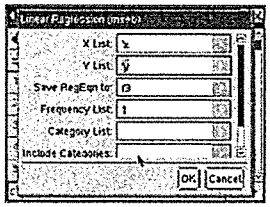
Line of Best Fit and Correlation Coefficient

5.) On the data table: **Menu → Statistics → Stat Calculations → Linear Regression (mx + b)**

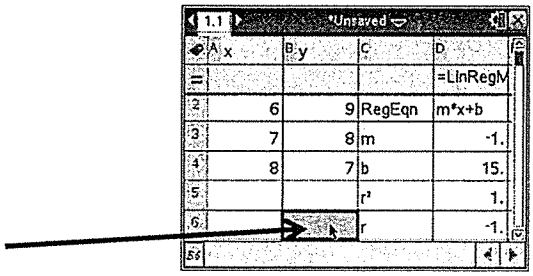


6.) When you get to the Linear Regression "pop-up", you need to:

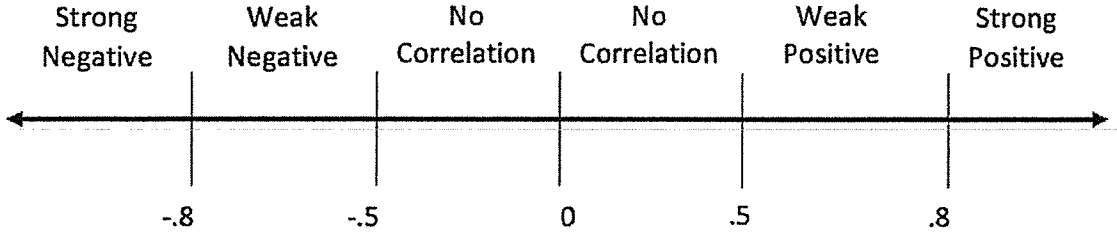
set the x list: 

and y list: 

7.) After you click ok, you should see the regression information fill in the table.



5.) Identify the '**r**' value which represents the correlation coefficient. Use this to identify the type of correlation



6.) Identify the 'm' and 'b' to write your equation for the line of best fit y=mx+b

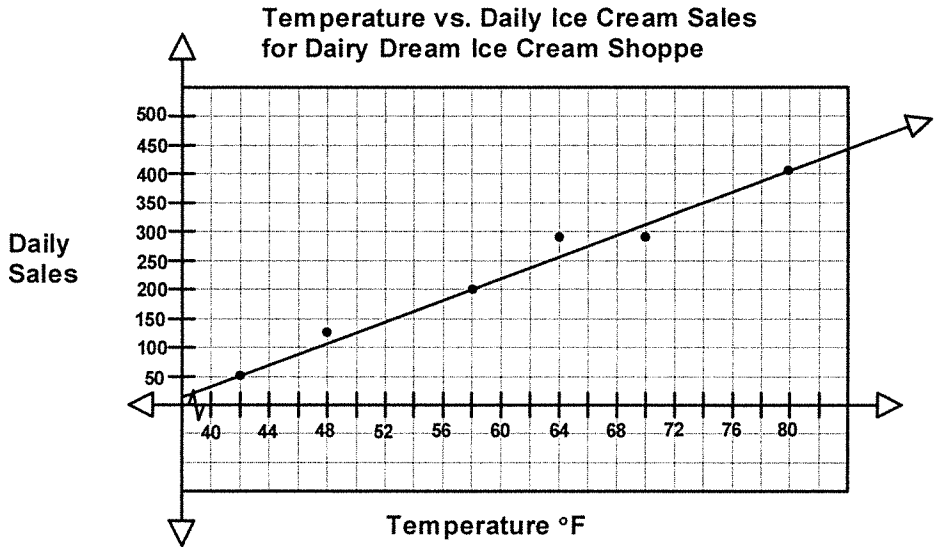
I can find the correlation coefficient and explain what it means

Describe the correlation coefficient

r=.25
r=.90
r=-.8
r=-.4

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.**

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

Use the table below to answer the following questions.

1. What is the slope_____

2. What is the y-intercept_____

3. What is the line of best fit? _____

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

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

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

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.

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-1800 .

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

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

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_____

2. What is the y-intercept_____

3. What is the line of best fit? _____

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

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

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