

# Part I Review - System of Equations

## NUMBER OF SOLUTIONS

One Solution

Graph: Two lines that intersect once

Algebra:  $x = 8$

No Solution

Two parallel lines

$$8 \neq 4$$

Infinite Solutions

TWO lines  
That overlap  
 $3 = 3$

## Solving Systems

### Graphing

$$\begin{aligned} 2x + 8y &= 6 \\ x + y &= 7 \end{aligned}$$

① Put equations in Slope-Int form ( $y = mx + b$ )

$$\begin{array}{rcl} 2x + 8y &= 6 & x + y = 7 \\ -2x & -2x & -x \quad -x \\ \hline 8y & \frac{6 - 2x}{8} & y = 7 - x \end{array}$$

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

② Graph in calculator

③ Zoom if necessary

Menu  $\rightarrow$  Analyze  $\rightarrow$  Intersection

### Substitution

$$\begin{aligned} y &= x + 4 \\ 2x - 3y &= 4 \end{aligned}$$

① Substitute  $y$  in other equation

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

$$2x - 3x - 12 = 4$$

$$\begin{array}{rcl} -1x - 12 & = 4 \\ +12 & +12 \end{array}$$

$$\begin{array}{rcl} -1x & = 16 \\ -1 & -1 \end{array} \quad \boxed{x = -16}$$

② Plug  $x$  value into either equation

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

$$\boxed{y = -12}$$

③ Write answer as  $(x, y)$   
 $(-16, -12)$

# 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

Input Data:

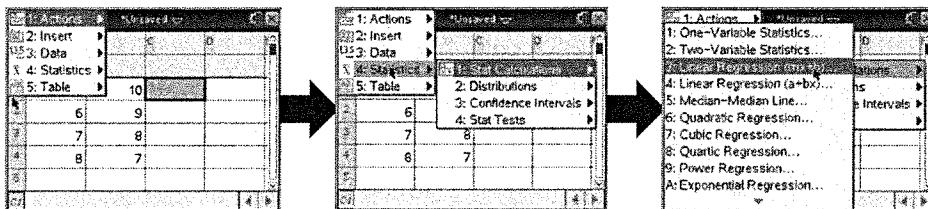
## Part 2 Review

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

The image shows two side-by-side screenshots of the TI-Nspire CX CAS software. Both screens are titled '1.1' and have an 'Unsaved' status bar. The left screen shows a table with columns labeled A, B, C, and D. Row 1 contains the formula '='. Rows 2 through 6 contain numerical data: (5, 10), (6, 9), (7, 8), (8, 7), and an empty row. The right screen shows a similar table with columns A, B, C, and D. Row 1 contains the formula '='. Rows 2 through 6 contain numerical data: (5, 10), (6, 9), (7, 8), (8, 7), and an empty row. The data in both tables corresponds to the input data provided in the instructions.

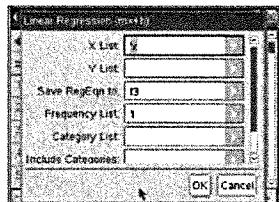
### Line of Best Fit and Correlation Coefficient

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

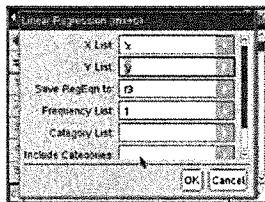


- 6.) When you get to the Linear Regression "pop-up", you need to:

set the x list:



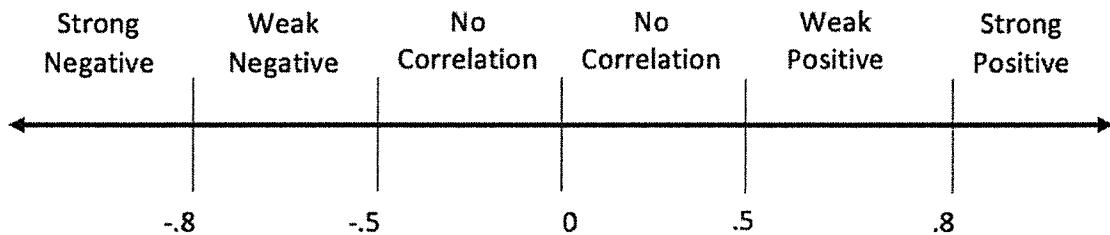
and y list:



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

A screenshot of the TI-Nspire CX CAS software showing the data table after performing the linear regression. The table includes the original data points and the calculated regression statistics. The last row shows the correlation coefficient 'r' with a value of '-1.' (likely a rounding error for -1.0). An arrow points to this 'r' value in the table.

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



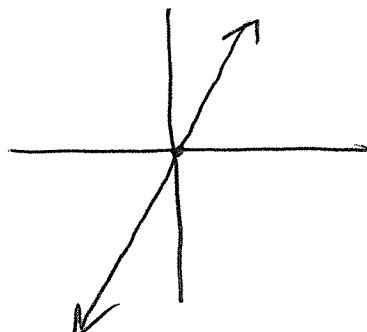
- 6.) Identify the 'm' and 'b' to write your equation for the line of best fit  $y=mx+b$



## Part 3 Review

IS a coordinate a solution?

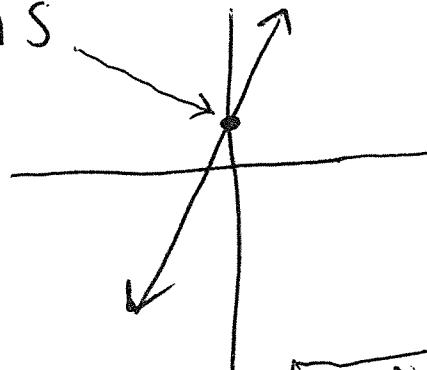
- If the coordinate falls on the line, it is a solution



EX: (0,0) IS  
a solution

(-3,4) is  
NOT a solution

Y-intercept - where the line  
crosses the Y axis



Graph

Slope :  $\frac{\text{rise}}{\text{run}}$

(rate)

or

$$\frac{y_2 - y_1}{x_2 - x_1}$$

Coordinates

EX

(1,0) (8,3)  
 $x_1, y_1$        $x_2, y_2$

$$\frac{3-0}{8-1} = \frac{3}{7}$$

## Rate of a table

X	Y	Change in Y Change in X
1	2	
2	4	
3	6	rate or SLOPE:
4	8	$\frac{2}{1} = 2$

Y-Intercept is where  $x=0$ ,  
go backwards in the table,  
following the pattern if  
 $0$  isn't on the table

## Slope-Intercept Form

$$y = mx + b$$

$m$  = Slope

$b$  =  $y$ -intercept

## Part 4 - Functions

### Evaluating Function

If  $f(x) = 3x + 4$  find  $f(-2)$

$$\begin{aligned} & 3(-2) + 4 \\ & -6 + 4 = \boxed{-2} \end{aligned}$$

### IS IT a Solution?

IS  $(\underset{x}{4}, \underset{y}{2})$  a solution to  
 $f(x) = 3x + 4$  ?

Plug 4 in as x and see  
if it = 4 (2)

$$3(4) + 4 = 16$$

Not a solution!

IS  $(3, 13)$  a solution?

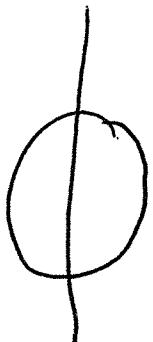
$$3(3) + 4 = 13 \quad \text{Yes!}$$

# IS IT A FUNCTION?

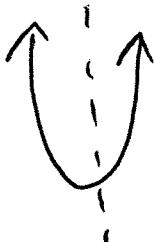
## Graph

MUST PASS  
vertical line

## Test



NO



Yes

## Ordered Pairs

EACH INPUT CAN  
ONLY HAVE ONE  
OUTPUT

(3,1) (4,1) (5,7)

Yes, NO X values  
repeat

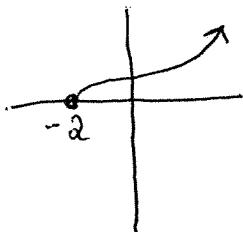
(2,1) (4,7) (2,8)

NO, 2 has more  
than one output

Domain: X values

(3,1) (4,2) (5,7)

D: {3,4,5}



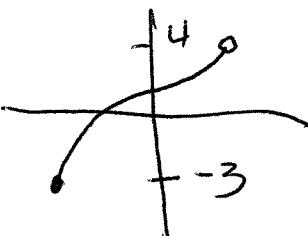
D:  $x \geq -2$

Range: Y values

(3,1) (4,2) (5,7)

R: {1,2,7}

R:  $-3 \leq y < 4$

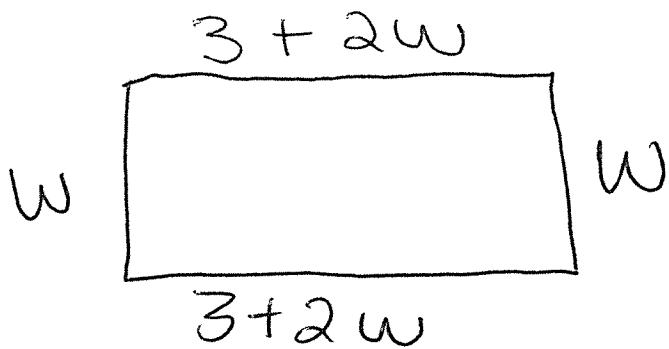


## Part 5 - Review

### Perimeter

Add all sides  
together

The Perimeter of a rectangle is 36cm  
The length is 3 more than twice the width. What are the dimensions?



① Add sides

$$3 + 2w + 3 + 2w + w + w = 36$$

$$\begin{array}{r} 6w + 6 \\ - 6 \quad - 6 \\ \hline \end{array}$$

$$\frac{4w}{6} = \frac{30}{6}$$

$$w = 5$$

② Plug in to  
find length

$$\begin{array}{r} 3 + 2w \\ 3 + 2(5) \\ 13 \end{array}$$

Width is 5cm  
Length is  
13cm

# Inequalities

$>$  or  $<$  open dot or dashed line

$\leq$  or  $\geq$  closed dot or solid line

Greater shade above

$>$  or  $\geq$

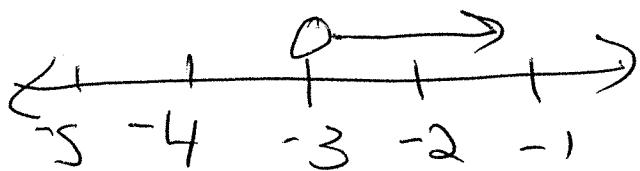
Less shade below

$<$  or  $\leq$

$$\frac{-2x + 8}{-8} < \frac{14}{-8}$$

$$\frac{-2x}{-2} < \frac{4}{-2}$$

$$x > -3$$



\* If you divide by a negative, flip sign!!