# 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)

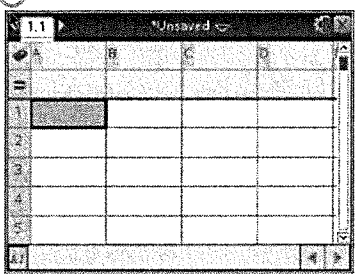
$(-16, -12)$

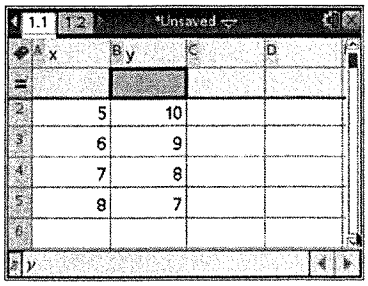
# Systems Word Problems

* 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

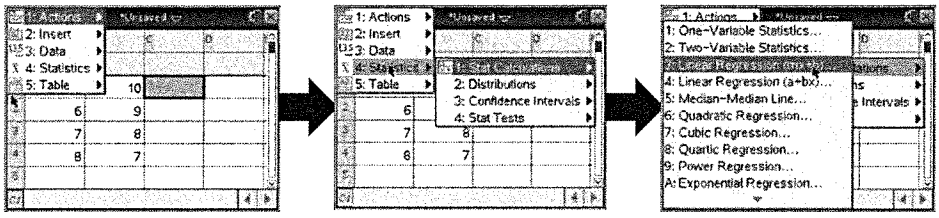




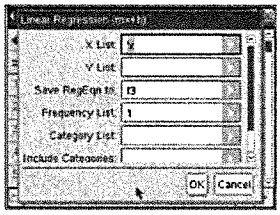
1. Home→New Document→Lists & Spreadsheets
2. Type the name of the x-axis data in Box A
3. Type the name of y-axis data in Box B
4. Enter the data in the appropriate column

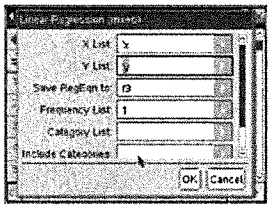
**Line of Best Fit and Correlation Coefficient**

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

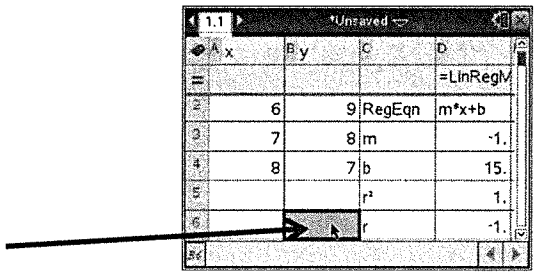



6.) When you get to the Linear Regression "pop-up", you need to:

set the x list: 

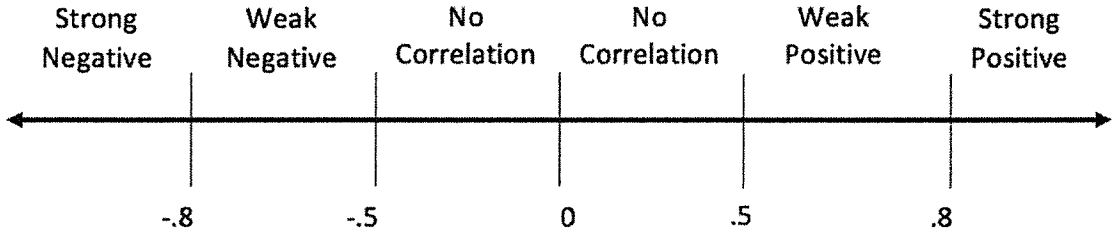
and y list: 

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



| | A x | B y | C | D |
|---|---|---|---|---|
| = | | | | =LinRegM |
| 2 | 6 | 9 | RegEqn | m*x+b |
| 3 | 7 | 8 | m | -1. |
| 4 | 8 | 7 | b | 15. |
| 5 | | | r² | 1. |
| 6 | | | r | -1. |

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

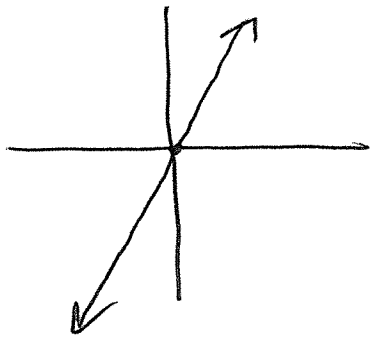



6.) Identify the 'm' and 'b' to write your equation for the line of best fit y=mx+b

# Part 3 Review

Is a coordinate a solution?

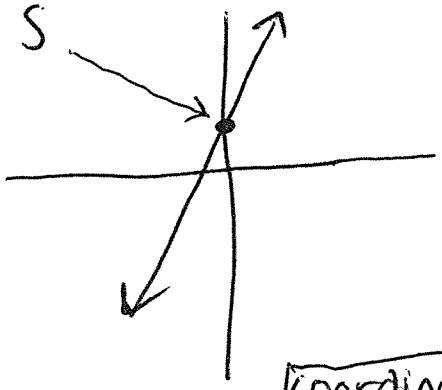
→ If the coordinate falls on the line, it is a solution



EX: (0,0) is a solution

(-3,4) is NOT a solution

Y-intercept - where the line crosses the y axis



Slope (rate): $\frac{\text{rise}}{\text{run}}$ Graph

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 |
|---|---|
| 1 | 2 |
| 2 | 4 |
| 3 | 6 |
| 4 | 8 |

+1 (1 → 2) +2

$$\frac{\text{change in } y}{\text{change in } x}$$

rate or slope:

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

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 $f(-2)$

$3(-2) + 4$

$-6 + 4 = \boxed{-2}$

## 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 $= y$ (2)

$3(4) + 4 = 16$

Not a solution!

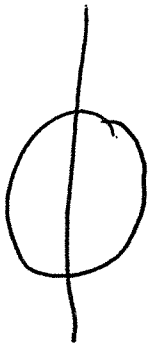
Is $(3, 13)$ a solution?

$3(3) + 4 = 13$ Yes!

# Is it a function?

## Graph

Must pass vertical line Test



NO

Yes

## Ordered Pairs

Each input can only have <u>one</u> output

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

Yes, NO x values repeat

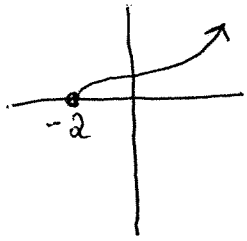
(2,1) (4,7) (2,8)

NO, 2 has more than one output

Domain: x values

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

D: {3,4,5}



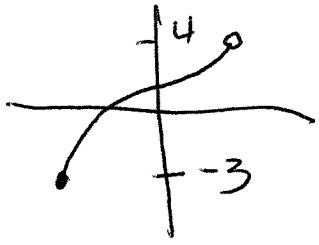

D: $x \geq -2$

Range: y values

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

R: {1,2,7}

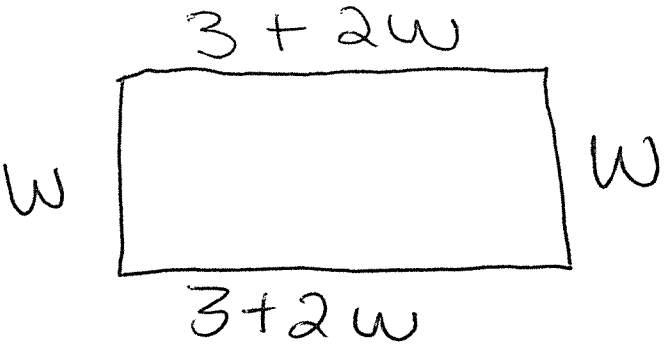
R: $-3 \leq y < 4$



# 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

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

$6w+6=36$

$-6 \quad -6$

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

$w=5$

② Plug in to find length

$3+2w$

$3+2(5)$

$13$

Width is 5cm

Length is 13cm

# Inequalities

$>$ or $<$ — Open dot or dashed line

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

Greater
$>$ or $\geq$ — shade above

Less
$<$ or $\leq$ — shade below

$$-2x + 8 < 14$$
$$-8 \quad -8$$

$$\frac{-2x}{-2} < \frac{6}{-2}$$

$$x > -3$$

* If you divide by a negative, Flip sign!!