Learning Targets

➢ I can use my calculator to find a curve of best fit from a table or scatter plot.

➢ I can make predictions from lines and curves of best fit.

Vocabulary

line/curve of best fit	linear regression	quadratic regression

What if the data does not look like a straight line?

Make a scatter plot of the following data:

x	Y
5	68
12	12
7	80
11	55
2	2

Enter your data. What do you notice about your scatter plot?

Choose **5: QuadReg** this time to find the *quadratic* regression.

This gives you a, b, and c for $ax^2 + bx + c$.

What is your equation?_____

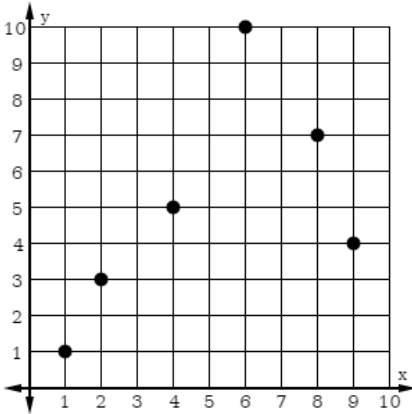Graph it on [Y=]. Does it look correct?

Your turn:

Find the equation for line or curve of best fit for the following data.

x	y
1	1
3	4
4	8
2	3
6	5
7	2
5	7

Is this data linear or quadratic?

What is your equation?

Find the equation for line or curve of best fit for the following data.
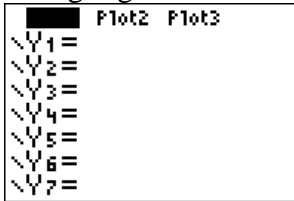
a. What is your equation?

_____

b. Estimate the value of y when x is 4.

$f(5) =$

More Calculator Tips

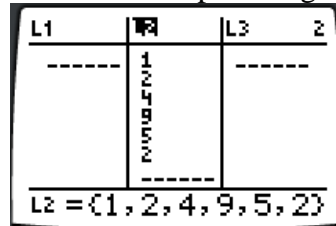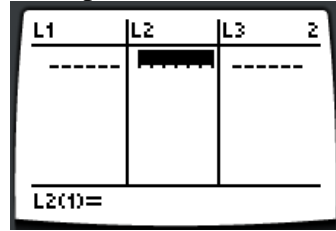| To see scatter plot:	To clear your lists:
1. Highlight Plot1 and press enter to turn it off and on. Plot2 Plot3 $\backslash Y_1=$ $\backslash Y_2=$ $\backslash Y_3=$ $\backslash Y_4=$ $\backslash Y_5=$ $\backslash Y_6=$ $\backslash Y_7=$ 2. Then, press [Y=]. 3. Make sure Plot1 is turned off when you are done using it or you will receive an error.	1. Press up and highlight the list name. L1 ▣ L3 2 ------ 1 2 ------ 4 9 5 2 ------ L2 ={1,2,4,9,5,2} Then press [CLEAR] [▼]. L1 L2 L3 2 ------ ▬▬▬▬ ------ L2(1)=
To see all of your points on your scatter plot, use: [ZOOM] [9].	**To clear the calculator memory and reset all settings:** [2nd] [+] [7] [1] [2]

Line of Best Fit - Predictions

1. A student who waits tables at a restaurant recorded the cost of meals and the tip left by single diners.

Meal Cost (x)	$4.75	$6.84	$12.52	$20.42	$8.97
Tip (y)	$0.50	$0.90	$1.50	$3.00	$1.00

Line of Best Fit Equation_____

If the next diner orders a **meal costing $10.50**, how much **tip** should the waiter expect to receive?

What variable are you given?

What variable are you looking for?

Plug in your information to line of best fit:

Solve for the missing variable:

2. The table below gives the number of hours spent studying for a science exam (x) and the final exam grade (y).

x	2	5	1	0	4	2	3
y	77	92	70	63	90	75	84

Line of Best Fit Equation_____

Predict the exam grade of a student who **studied for 6 hours**.

What variable are you given?

What variable are you looking for?

Plug in your information to line of best fit:

Solve for the missing variable:

3. The table below gives the height and shoe sizes of six randomly selected men.

Height	67	70	73.5	75	78	66
Shoe size	8.5	9.5	11	12	13	8

Line of Best Fit Equation_____

If a man has a **shoe size of 10.5**, what would be his predicted **height**?
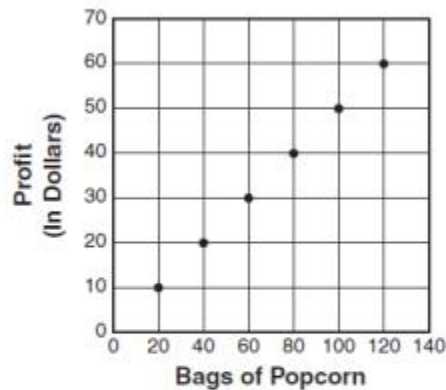
What variable are you given?

What variable are you looking for?

Plug in your information to line of best fit:

Solve:

4.

The graph represents the relationship between the bags of popcorn sold and the amount of profit made during the Newton Honor Society's popcorn sale.

Bags of Popcorn

Which is closest to the minimum number of bags that must be sold to make a $200 profit?

F   250
G   300
H   350
J   400

1. Given the data in the table below, using a curve of best fit, when x is 5, what is y?

x	y
0	0
1	66
2	100
3	102
4	72

What is the curve of best fit?

What variable are you given?

What variable are you looking for?

Plug in your information to curve of best fit:

Solve for the missing variable:

2. (-8, 80.4) (-7, 57.8) (-6, 38.6) (-5, 22.8) (3, 18.8) (5, 51.8) (7, 98.4)

Use the data above and a curve of best fit to find y when x is -10.

3. When people slam their brakes on motorcycles, skid marks occur. A scientist clocked the speeds of the motorcycles and the length of the skid marks. The data is the table below. Using the equation of best fit, which is the best prediction of the length of a skid mark if the speed is 55 miles per hour?

Motorcycle Speed (mph)	25	30	35	40	45	50
Length of Skid (inches)	100	105	110	115	110	105

Is this a line of best fit or curve of best fit?

What is the equation of line/curve of best fit?

What variable are you given?

What variable are you looking for?

Plug in your information to curve of best fit:

Solve for the missing variable:

4. A baseball player threw a ball up in the air. The height of the ball was recorded in .1-second intervals. The data is shown below. Based on a quadratic model, which best approximates the height at .8 seconds?

Time (seconds)	Height (feet)
0.0	5
0.1	7
0.2	9
0.3	11
0.4	18
0.5	23
0.6	16
0.7	13

Is this a line of best fit or curve of best fit?

What is the equation of line/curve of best fit?

What variable are you given?

What variable are you looking for?

Plug in your information to curve of best fit:

Solve for the missing variable: