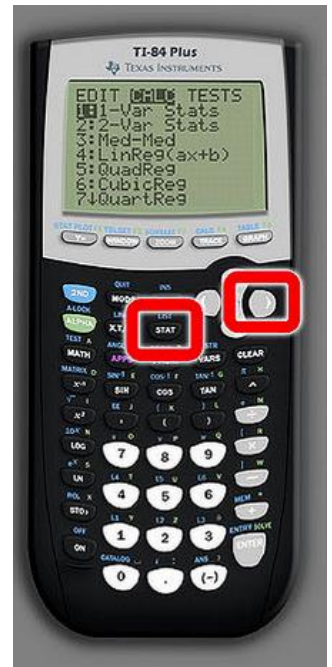
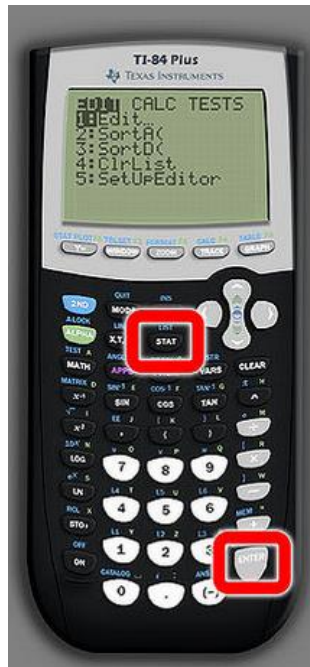


18.4b Line of Best Fit

Use your calculator to find the line of best fit for the following data. Recall the steps:

- Clear the calculator (Press 2nd + 7 1 2)
- Turn on Diagnostics by pressing 2nd then 0. Scroll down to DiagnosticsOn and hit enter twice.
- Press "STAT"
- Press "Enter"
- Enter your data into L₁ for the x-values and L₂ for the y-values.
- Press "STAT"
- Press the right arrow
- Enter either 4 (for a linear) or 0 (for an exponential)

(The photos to the right display steps c&d as well as f&g correspondingly.)



Answer the following questions. Problems #1-4 are linear:

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

Meal Cost	\$4.75	\$6.84	\$12.52	\$20.42	\$8.97
Tip	\$0.50	\$0.90	\$1.50	\$3.00	\$1.00

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

Equation _____ Tip expected _____

Correlation (r) _____ Type of correlation _____

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

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

Equation _____ Grade expected _____

Correlation (r) _____ Type of correlation _____

3. The table below shows the lengths and corresponding ideal weights of sand sharks.

Length	60	62	64	66	68	70	72
Weight	105	114	124	131	139	149	158

Predict the weight of a sand shark whose length is 75 inches.

Equation _____ Weight expected _____

Correlation (r) _____ Type of correlation _____

4. 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

If a man has a shoe size of 10.5, what would be his predicted height?

Equation _____ Height expected _____

Correlation (r) _____ Type of correlation _____

Determine if the exponential or linear correlation best fits the following data. You can determine it by deciding, which correlation coefficient is closer to -1 or 1.

5. The accompanying table shows the number of bacteria present in a certain culture over a 5-hour period, where x is the time, in hours, and y is the number of bacteria.

x	y
0	1,000
1	1,049
2	1,100
3	1,157
4	1,212
5	1,271

Correlation Coefficient (r) of linear: _____

Correlation Coefficient (r) of exponential: _____

Which number is closer to -1 or 1? Linear or Exponential

Write the equation: _____

6. The accompanying table shows the enrollment of a preschool from 1980 through 2000.

Year (x)	Enrollment (y)
1980	14
1985	20
1990	22
1995	28
2000	37

Correlation Coefficient (r) of linear: _____

Correlation Coefficient (r) of exponential: _____

Which number is closer to -1 or 1? Linear or Exponential

Write the equation: _____

7. Jean invested \$380 in stocks. Over the next 5 years, the value of her investment grew, as shown in the accompanying table.

Years Since Investment (x)	Value of Stock, in Dollars (y)
0	380
1	395
2	411
3	427
4	445
5	462

Correlation Coefficient (r) of linear: _____

Correlation Coefficient (r) of exponential: _____

Which number is closer to -1 or 1? Linear or Exponential

Write the equation: _____

8. The breaking strength, y , in tons, of steel cable with diameter d , in inches, is given in the table below.

d (in)	0.50	0.75	1.00	1.25	1.50	1.75
y (tons)	9.85	21.80	38.30	59.20	84.40	114.00

Correlation Coefficient (r) of linear: _____

Correlation Coefficient (r) of exponential: _____

Which number is closer to -1 or 1? Linear or Exponential

Write the equation: _____

Minutes (x)	0	10	20	30	40	50	60
Calories Burned (y)	0	74	120	175	200	242	280

9.

The equation of the line of best fit:

The correlation:

Type of correlation:

What does the slope mean in the context of this situation?

Identify the y-intercept:

10.

Year (x)	0	5	10	15	20	25	30
Number of Dentists (y)	154	152	149	147	144	136	121

The equation of the line of best fit:

The correlation:

Type of correlation:

What does the slope mean in the context of this situation?

Identify the y-intercept:

11.

Total Fat (x)	0	9	13	21	30	36	42
Total Calories (y)	0	260	320	425	452	463	550

The equation of the line of best fit:

The correlation:

Type of correlation:

What does the slope mean in the context of this situation?

Identify the y-intercept: