

Answers must be clearly **legible, simplified** and **boxed or circled**. Unless otherwise stated write answer as an **exact** integer, fraction or use **two** decimal accuracy. **Units** required where appropriate.

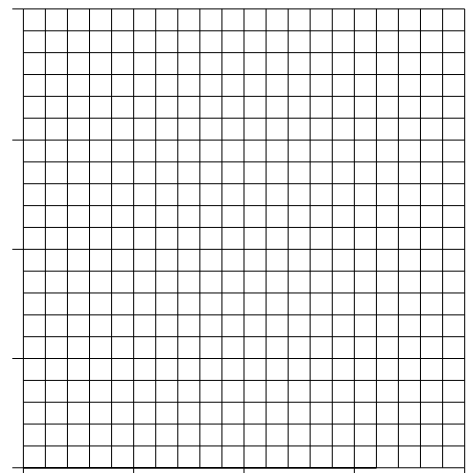
- 1) Find the equation (in **slope-intercept** form) for the line through (3.2, 1.6) & (2.5, -6.1). Show your work.
- 2) Now find the line's equation by using the TI's **Linear Regression** feature. (a) Are they equal?
- (b) If they were not equal, what would that indicate?

- 3a) When plotting snow depth vs. elevation, which should be the independent and which should be the dependent variable?
 Horizontal: _____ Vertical: _____
- 3b) When plotting blood pressure vs. age, which should be the independent and which should be the dependent variable?
 Horizontal: _____ Vertical: _____

Problems 4 - 10 refer to the data in the T-table which represents average tree diameter for similar aged trees at various elevations.

- 4a) Which variable is the independent, which is the dependent? That is, which should associate with x and which with y? Explain.

<u>Elev. (ft)</u>	<u>Diam. (in)</u>
2,600	33
2,800	31
3,000	25
3,200	22
3,400	19
3,600	18



- 4b) Graph the data. Label the axes and be sure to include the scales.
- 5) Draw your "best fit" line for this data and find that equation. Write it here.

- 6) Use the TI to find the "best fit" regression line and write it here and save it to Y_1 . It should be similar to the one you came up with. Why?

- 7) Use the TI's equation to predict timberline elevation.
- 8) Use the TI's equation to predict the diameter of the trees at 2000 ft elevation.
- 9) Use the TI's equation to predict maximum tree diameter.
- 10) Use the TI's equation to predict the elevation at which tree diameter will be 10".

11-14 Suppose 'y' denotes water contaminant (ppm of oil) and 'x' denotes distance from a fueling station.

- 11) (a) What does a slope of zero represent? (b) What does a negative slope represent?

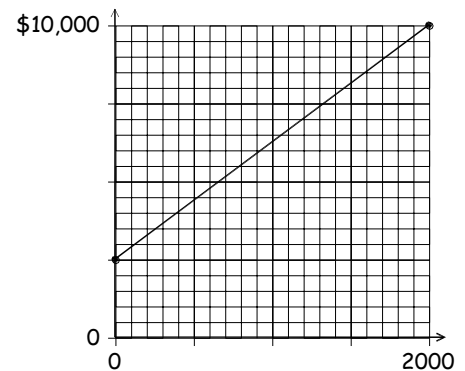
Use this data and the TI's Linreg to answer 12-14.

Distance	25'	50'	75'
PPM	890 ppm	620 ppm	380 ppm

- 12) What linear equation models the contamination? Save it in Y_2 .
- 13) Using the TI's eqn, what contamination would you expect right at the fueling station?
- 14) Using the TI's eqn, at what distance would you expect the contamination to finally hit zero?

Questions 15 - 20 refer to the following graph and data.

A company buys a machine to produce souvenirs. The plot shows their *production cost*. $x = \text{qty}$, $y = \text{dollars}$.



- 15) (a) What is the cost of the machine (fixed cost)?
- (b) Once the machine is paid for, what does it cost to produce each item (variable cost)?
- (c) Write the equation for the total production cost.

Use this data and the TI's linear regression feature to answer the following questions.

- 16a) Considering Selling Price vs. # Sold, which should be the *dependent variable*?

Selling Price	\$20	\$22.50	\$25
# Sold	1524	1248	1010

- 16b) Find an equation that represents # Sold as a function of Selling Price. Save it in Y_3 .
- 17) Using the TI's eqn, what selling price will generate 2000 souvenirs sold?
- 18) Using the TI's eqn, what selling price will generate zero souvenirs sold?
- 19) Using the TI's eqn, if the selling price is set to \$15 how many will be sold?
- 20) If the selling price is set to \$15, using #19 result what will be the company's net profit?