

## New Microwave Activity

After 26 years your professor replaced his old microwave oven. The new one cooked much faster than the old, so he gathered this data to determine new cooking times for the new appliance. The time that it takes a glass of water to boil in a microwave is a near-linear function of the amount of water in the glass. The data shows 10 tests of various amounts of water. Use your calculator to find the linear function that predicts boiling time (Y) from amount of water (X).

	(X) <u>Ounces of water</u>	(Y) <u>Boiling time (sec.)</u>	
1	1	19	
2	2	32	
3	3	45	
4	4	59	Slope: _____
5	5	71	
6	6	83	
7	6	85	Intercept: _____
8	6.5	92	
9	7.5	110	
10	8	110	Equation of the Line: _____

Interpret the meaning of the slope (in English and in context\*): \_\_\_\_\_

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Interpret the meaning of the intercept (in English and in context). Why do you suppose it isn't zero?

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If you place seven ounces of water in this microwave, how long will it take to boil? \_\_\_\_\_

If a glass of water took 140 seconds to boil, how much water was in the glass? \_\_\_\_\_

If we don't have a statistical calculator we can use the following formulas for the slope (B) and the intercept (A):

$$B = \frac{\sum[(x - \bar{x})(y - \bar{y})]}{\sum(x - \bar{x})^2}, \quad A = \bar{y} - B \cdot \bar{x}$$

\* "In context" means you are to use the words "seconds" and "ounces" in your response, not math terms like "rise", "run" or "change in x".