

Problem Set 6-Solutions

Chapter 7

11. a. $\bar{x} = \Sigma x_i / n = \frac{54}{6} = 9$

b. $s = \sqrt{\frac{\Sigma(x_i - \bar{x})^2}{n-1}}$

$$\Sigma(x_i - \bar{x})^2 = (-4)^2 + (-1)^2 + 1^2 + (-2)^2 + 1^2 + 5^2 = 48$$

$$s = \sqrt{\frac{48}{6-1}} = 3.1$$

13. a. $\bar{x} = \Sigma x_i / n = \frac{465}{5} = 93$

b.

	x_i	$(x_i - \bar{x})$	$(x_i - \bar{x})^2$
	94	+1	1
	100	+7	49
	85	-8	64
	94	+1	1
	<u>92</u>	<u>-1</u>	<u>1</u>
Totals	465	0	116

$$s = \sqrt{\frac{\Sigma(x_i - \bar{x})^2}{n-1}} = \sqrt{\frac{116}{4}} = 5.39$$

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20. $\sigma_{\bar{x}} = \sigma / \sqrt{n}$

$$\sigma_{\bar{x}} = 25/\sqrt{50} = 3.54$$

$$\sigma_{\bar{x}} = 25/\sqrt{100} = 2.50$$

$$\sigma_{\bar{x}} = 25/\sqrt{150} = 2.04$$

$$\sigma_{\bar{x}} = 25/\sqrt{200} = 1.77$$

The standard error of the mean decreases as the sample size increases.