

**8.4.**

- a. If  $z > 1.88$  reject  $H_0$   
 If  $z \leq 1.88$  do not reject  $H_0$

If p-value  $< 0.03$  reject  $H_0$

- b.  $z = (24.85 - 24.78)/(9/\sqrt{50}) = 0.0550$ ; Since  $0.0550 < 1.88$  do not reject  $H_0$   
 p-value = 0.4781

**8.6.**

- a. 0.0735  
 b. 0.0099  
 c. 0.9693  
 d. 0.5  
 e. 1

**8.18.**

- b.  $H_0: \mu \geq \$80.00$  vs  $H_A: \mu < \$80.00$

- c.  $z = (78.6 - 80)/(25/\sqrt{64}) = -0.4480$

p-value =  $P(z < -.45) = .50 - .1736 = .3264$

Since  $.3264 > .05$ , we do not reject the null hypothesis. Thus, the manufacturer's claim is not supported by the data. That does not mean that they are wrong, just that these data are not sufficient to cover their burden of proof.

**8.26.**

$$z = \frac{\bar{p} - p}{\sqrt{\frac{p(1-p)}{n}}} = \frac{.49 - .45}{\sqrt{\frac{.45(1-.45)}{500}}} = 1.80$$

Decision Rule: If  $z > 1.645$ , reject the null hypothesis  
 Otherwise, do not reject the null hypothesis  
 Since  $z = 1.80 > 1.645$ , reject the null hypothesis.

**8.28.**

- a.  $z = (0.47 - 0.50)/\sqrt{(0.50)(1-0.50)/200} = -0.8485$

Decision Rule: If p-value  $< 0.10$ , reject the null hypothesis  
 Otherwise, do not reject the null hypothesis

p-value = 0.1977  $> 0.10$  do not reject  $H_0$

- b.  $\bar{p}_\alpha = 0.50 - 1.28 \sqrt{(0.5)(1-0.5)/200} = 0.4547$

Since  $p = 0.47 > 0.4547$  do not reject  $H_0$

**8.32.**

a.  $H_0: p \geq 0.40$  vs  $H_A: p < 0.40$

b.  $\bar{p} = 45/120 = .375$

$$z = \frac{\bar{p} - p}{\sqrt{\frac{p(1-p)}{n}}} = \frac{.375 - .40}{\sqrt{\frac{.40(1-.40)}{120}}} = -.559$$

Since  $z = -.559 > -1.645$ , do not reject the null hypothesis

**8.76.**

a.  $H_0: p \leq 0.70$  vs  $H_A: p > 0.70$

b.  $\bar{p} = 292/400 = 0.73$

$$z = (0.73 - 0.70) / \sqrt{(0.70)(1 - 0.70) / 400} = 1.3093$$

$$p\text{-value} = P(z > 1.31) = 0.5 - 0.4049 = 0.0951$$

Since  $p\text{-value} = 0.0951 > 0.05$ , do not reject  $H_0$  and conclude that the % of people who call in sick at least 1 per year when they are not actually sick is less than or equal to 70%