

REVIEW FOR TEST:

- p.243 - 246 # 1 - 4, 6 - 15
- Three open-book assignments

p.243-246

1. a. 7 b. 20 c. 95 d. 63.2% e. 68.4%

f. No. We do not know the individual data values.

g. It does suggest a normal distribution because it is approximately bell-shaped.
- 2 a. This is a sample because Mr. Vats only examined a subset of the population.

b. mean = 7.67

c. median = 8

d. & e. standard deviation = 4.6

f. standard deviation would be larger if the data were less clustered around the mean

- 3 a. 68% b. 47.5% c. 34%
- d. 81.5% e. 99.7% f. 49.85%
- 4 a. systematic - potentially unbiased
- b. voluntary response - potentially biased
- c. cluster - potentially unbiased
- d. simple random - potentially unbiased
- e. voluntary response - potentially biased
- f. stratified - potentially unbiased
- g. convenience - potentially biased

6 a. bell-shaped

b. 245

c. 3.37

- 7 a. 34.999 mm
- b. point estimate
- c. 34.974 mm to 35.024 mm
- d. yes, this interval encloses the population mean
- e. We can be 95% confident that the interval 34.974 mm to 35.024 mm contains the actual mean length of this key aircraft component.
- f. 34.978 mm to 35.020 mm
- g. $\sigma_{\bar{x}} = 0.0128$

- 8 a. 95% confidence level
- b. 0.0071 g/L
- c. 0.0729 g/L to 0.0871 g/L
- d. There is a 95% probability that this interval encloses the true mean concentration of the active ingredient.
9. 22.7 to 24.7
- 10 a. 43.0 months to 45.2 months
- b. A company that manufactures heat pumps found that their heat pump would require maintenance after an average of 44.1 months and these results are considered accurate within 1.1 months, 19 times out of 20.
- c. If the sample size were increased, the confidence interval would be narrower.

11 a. finite

b. approximately binomial because:

- there are a fixed number of trials (120)
- each trial results in one of two possible outcomes
(a driver had an accident within the first five years of obtaining his/her licence, or he/she did not)
- trials are dependent, however, $N/n = 300\,000/120 = 2500$ (greater than 20), so the trials can be considered essentially independent

c. 0.225

d. 0.192

e. We are unable to determine which of these two sample proportions serves as the best estimate of the population proportion.

12. 0.059

13. (0.52, 0.66)

Doreen can be 90% confident that the interval from 0.52 to 0.66 encloses the population proportion.

14 a. 95% b. 3% c. 84% to 90%

d. The company can be 95% confident that the true proportion of its shipments that are mailed out within three working days is between 84% and 90%.

15 a. (0.115, 0.205)

b. A study shows that 16% of all adults jog at least twice a week. These results are considered accurate within 4.5%, 19 times out of 20.

c. C.I. would be wider

d. C.I. would be narrower