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**Assignment 3**

**Exercise 3.1**

36.

*On­time Rate*

*You have been given the task of estimating the percentage of Southwest flights that arrive on time, which is no later than 15 minutes*

*after the scheduled arrival time. How many flights must you survey in order to be 80% confident that your estimate is within three percentage points of*

*the true population percentage?*

*b. Assume that for a recent year, 84% of Southwest flights were on time (based on data from the Bureau of Transportation Statistics).*

*Exercise 36b from Section 6.2 (On-time rate), use a confidence level of 95% (in-*

*stead of 80%).*

E = 1.96\*(Sn/n^0.5)

n>=(1.96/2\*Emax)²

Emax = 0.03 = 3%

n>=(1.96/0.06)²

n>=1067,111111111

We need to survey at least 1068 flights to be 95% confident of an estimate within 3 percentage points of the true population.

**Exercise 3.2**

*12. Brain Volumes of Twins Listed below are brain volumes ( cm 3 ) of twins listed in Data Set 6 of Appendix B. Construct a 99% confidence interval*

*estimate of the mean of the differences between volumes for the first­born and the second ­born twins. What does the confidence interval suggest?*

*First Born*

*1005 1035 1281 1051 1034 1079 1104 1439 1029 1160*

*Second Born 963 1027 1272 1079 1070 1173 1067 1347 1100 1204*

*picture:*

**

*Exercise 12 from Section 8.4 (Brain Volumes of Twins). Instead of constructing a*

*confidence interval, use a significance level of α = 0.1 to test the claim that first- and second-born*

*twins have the same mean brain volume (in cm 3 ). Some characteristics of the data that you may*

*or may not use are:* *x̄ 1 = 1121.7, x̄ 2 = 1130.2, s 1 = 138.274, s 2 = 117.448, s d = 56.679.*

*(Follow the detailed instructions about testing presented above).*

Significance level = 0.1

Population parameter of interest: *x̄1, x̄2*

*????*

**Exercise 3.3**

a.

b.

c.

d.

**Exercise 3.4**

a.

b.

**Exercise 3.5**

a.

b.

c.

d.

e.