

APPLIED MATHEMATICS 22/01/2016

1) You ask your neighbor to water a sickly plant while you are on vacation. Without water it will die with probability 0.8; with water it will die with probability 0.15. You are 90 percent certain that your neighbor will remember to water the plant.

- (a) What is the probability that the plant will be alive when you return?
- (b) If it is dead, what is the probability your neighbor forgot to water it?

2) The following are scores on IQ tests of a random sample of 18 students at a large eastern university.

130, 122, 119, 142, 136, 127, 120, 152, 141, 132, 127, 118, 150, 141, 133, 137, 129, 142

- (a) Construct a 95 percent confidence interval estimate of the average IQ score of all students at the university.
- (b) Construct a 95 percent lower confidence interval estimate.
- (c) Construct a 95 percent upper confidence interval estimate.

3) The weights of salmon grown at a commercial hatchery are normally distributed with a standard deviation of 1.2 pounds. The hatchery claims that the mean weight of this year's crop is at least 7.6 pounds. Suppose a random sample of 16 fish yielded an average weight of 7.2 pounds. Is this strong enough evidence to reject the hatchery's claims at the

- (a) 5 percent level of significance;
- (b) 1 percent level of significance?

Compute the p value.