9-6 Solutions

85. If the true proportion of potatoes with blemishes in a given truckload is p=0.11, there is a 0.764 probability that the company will find convincing evidence for Ha: p>0.08.

87. Powerful potatoes
  (a) Increase; using a larger significance level makes it easier to reject H0 when Ha is true.
  (b) Decrease; a smaller sample size gives less information about the true proportion p
  (c) Decrease; it is harder to detect a smaller difference between the null and alternative parameter.

93. Error probabilities and power
  (a) Power =1- P(type II) = 1-Beta = 1-0.14= 0.86
  (b) P(Type I)= alpha = 0.01

95. Do you have ESP?
  (a) No; in a sample of size n=500, we expect to see about (500)(0.01)=5 people who do better than random guessing, with a significance level of 0.01. These four might have ESP or they may simply be among the "lucky" ones we expect to see just by chance.
  (b) The researcher should repeat the procedure on these four people to see if they again perform well

97. Improving SAT Scores
Although the hypothesis test shows that the results are statistically significant (we have convincing evidence that mu>128), this is not practically significant. A test with such a large sample size will often produce a significant result for a very small departure from the null value. THere is little practical significance to an increase in average SAT score of only 2 points.

102. b
103. a
104. d
105. c
106. a
107. a
108. b