Professor Notes About "Probability Introduction" Homework

- Probabilities are never expressed as percentages; they are always expressed as proportions.
- Statisticians do not use "chance" as a synonym for "probability." Please say "probability" rather than "chance." Also note that "odds" and "probability" are not synonyms.
- To save space, I did not show graphics for the probability calculations.
- Note, in the "Deer" question, the explicit description for why a question cannot be answered. Especially, note the explicit statement of which distribution is not normal and the providing of a reason or reasons for why the distribution is known not to be normal. It is not adequate to say "IT is not normal" – you must explicitly state what "it" is (either the population or sampling distribution). Further note for questions that cannot be answered but would use the sampling distibution that you must explicitly state that the sampling distribution is not normal and then state how you know that (see question 2 below for an example).
- Note, in the "Deer" question, the use of the SE in `sd=` of `distrib()` when using the sampling distribution. R does not know when you are using a sampling or a population distribution, so you must provide the correct measure of variability.

Food Choice by Chipmunks

1. The probability that a chipmunk eats an acorn is 0.47 ($= \frac{8}{17}$).
2. The probability that a chipmunk eats a kernel of corns is 0.53. ($= \frac{9}{17}$)
3. The probability that a chipmunk eats a kernel of corn assuming that it has already eaten six kernels of corn and no acorns is 0.27 ($= \frac{3}{11}$).

Reproductive Habits of Roe Deer

1. This question cannot be answered because the population distribution is not known to be normal (background says that it is right-skewed).
2. This question cannot be answered because the sampling distribution is not known to be normal because the sample size is not greater than 30, nor greater than 15, nor is the population normally distributed.
3. The probability that a sample of 35 roe deer will have an average of more than 2 fawns is 0.99.
4. The probability that a sample of 35 roe deer will have an average of between 2 and 2.3 fawns is 0.90.
5. The most common 90% of sample means in samples of n=35 are between 2.07 and 2.33.
6. The lowest 20% of sample means in samples of n=35 are below 2.13.

R Appendix.

```
library(NCStats)
( distrib(2,mean=2.2,sd=0.46/sqrt(35),lower.tail=FALSE) )
ab <- distrib(2.3,mean=2.2,sd=0.46/sqrt(35))
a <- distrib(2,mean=2.2,sd=0.46/sqrt(35))
ab-a
( distrib(0.05,mean=2.2,sd=0.46/sqrt(35),type="q") )
( distrib(0.05,mean=2.2,sd=0.46/sqrt(35),type="q",lower.tail=FALSE) )
( distrib(0.20,mean=2.2,sd=0.46/sqrt(35),type="q") )
```