

## HOMEWORK

### ELEMENTARY STATISTICS & INFERENCE (STAT:1020; BOGNAR)

1. It is known that 20% of all credit applicants have poor credit ratings. Suppose 30 applicants are randomly selected (assume independence). Let the random variable  $X$  equal the number of applicants with poor credit ratings.

- (a) What is the distribution of  $X$ ? *Be sure to state all parameters.*
- (b) Find the probability that exactly 8 have poor credit.
- (c) Find  $P(8 \leq X < 11)$ .
- (d) On average, how many do we expect to have poor credit?
- (e) Find  $SD(X)$ .
- (f) Use the applet at

<http://www.stat.uiowa.edu/~mbognar/applets/bin.html>

to find the probability that 10 or fewer have poor credit.

- (g) Use the applet to find the probability that 7 or more have poor credit.

2. An egg manufacturer knows that 9.6% of its eggs are cracked. The eggs are packed in cartons containing 12 eggs. *Assume eggs are independent.*

- (a) If the random variable  $X$  counts the total number of cracked eggs in a carton, determine the distribution of  $X$ . *Be sure to state all parameters.*
- (b) Suppose a carton of eggs is randomly selected. Find the probability that exactly 3 eggs are cracked.
- (c) Suppose a carton of eggs is randomly selected. Find the probability that 11 or fewer eggs are cracked.
- (d) Suppose a carton of eggs is randomly selected. Find the probability that 2 or more eggs are cracked.
- (e) On average, how many cracked eggs do we expect in a carton?
- (f) Find  $SD(X)$ .