# Group Assignment #3

*Name(s):* _____

**Q1**

Let $A = \{a, b, c\}$, $B = \{d, e, f, g, h\}$, $C = \{i, j, k, l\}$, $D = \{m, n, o, p\}$. Assume the $\delta$ = The entire alphabet.

- What is $(A^c \cap C)$?

**Q2**

When a production machine is properly operating, only 10% of the product produced are considered defects. In order to provide quality control of all output, randomly selected lots of 5 units are selected and evaluated. The result of such inspection is either pass or fail (defect).

- What is the probability that at least 3 defects are found during an inspection?

**Q3**

John Wayne is known to be a famous Cowboy Western star in the movies playing in such roles as "Rio Bravo" and "True Grit". He is also a pretty good shot with a six-shooter! Suppose John Wayne enjoys target practice at old beer cans on a fence rail. It has been estimated that he is succesful in hitting the can 74% of the time. John Wayne's trusty pair of Colt six-shooters holds 6 rounds each (total bullets = 12). Assume his success is *binomially* distributed.

- What is the probability that John Wayne hits less than 6 cans during one round of shooting and emptying both this six shooters?

**Q4**

During the holiday season, some shoppers prefer shopping online and some prefer shopping at a physical store. A recent survey of size 100 showed that 60% of shoppers prefered shopping online. A random sample of 15 shoppers from the 100 survey participants was selected.

- What is the probability that *exactly* 4 shoppers in the sample prefered shopping at a physical store?