EQ:

Recall:

Create a probability distribution where the random variable of interest is number of heads occurring when tossing 4 coins.

X					
P(X)					

❖ Find the expected value for this task.

Now calculate $(n)(p)$ = _____

Formula: Mean of a Binomial Distribution

❖ Find the variance for this task.

Now calculate $(n)(p)(q)$ = _____

Formula: Variance of a Binomial Distribution

❖ Find the standard deviation for this task.

Now calculate $\sqrt{(n)(p)(q)}$=_____

Formula: Standard Deviation of a Binomial Distribution

Ex 1. A die is rolled 480 times. Find the mean, variance, and standard deviation of the number of 2's that will be rolled.

Ex 2. The *Statistical Bulletin* published by Metropolitan Life Insurance Co. reported that 2% of all American births result in twins. If a random sample of 8000 births is taken, find the mean, variance, and standard deviation of the number of births that would result in twins.

Ex 3.   **Unsanitary Restaurants**

Health officials routinely check sanitary conditions of restaurants. Assume you visit a popular tourist spot and read in the newspaper that in 3 out of every 7 restaurants checked, there were unsatisfactory health conditions found. Assuming you are planning to eat out 10 times while you are there on vacation, answer the following questions.

1. How likely is it that you will eat at three restaurants with unsanitary conditions?
2. How likely is it that you will eat at four or five restaurants with unsanitary conditions?
3. Explain how you would compute the probability of eating in at least one restaurant with unsanitary conditions. Could you use the complement to solve this problem?
4. What is the most likely number to occur in this experiment?
5. How variable will the data be around the most likely number?
6. Is this a binomial distribution?
7. If it is a binomial distribution, does that mean that the likelihood of a success is always 50% since there are only two possible outcomes?

Assignment:
 Practice Worksheet: Calculating Mean, Variance, and Standard Deviation of Binomial Distributions