Name: _____ Date: _____ Period: _____

Binomial Distribution Worksheet

$$P(x) = {}_nC_x (p)^x (q)^{n-x} \qquad \mu = np \qquad \sigma = \sqrt{npq}$$

1. If n = 10, p = .25, find the probability that
Use FORMULA for part "a". You may use TABLE for part "b".

    a. x = 8   b. x = 2

    c. x < 3   d. x ≤ 4

    e. x > 7   f. x ≥ 5

2. Dorothy leads wilderness expeditions. She has found that 15% of those who attend promotional meeting will sign up for an expedition at the meeting. If 20 people attend a meeting:

a. What is the probability that none of them will sign up? USE FORMULA.

b. What is the probability that exactly fourteen sign up? USE FORMULA.

c. What is the probability that five or more will sign up? USE TABLE.

d. What is the probability fewer than 4 will sign up? USE TABLE.

e. EXTRA CREDIT: What is the probability that more than 12 will NOT sign up? USE TABLE.

For the following problems you may use the formula or table.

3. In Summit County 70% of the vote population are Republicans. What is the probability that a random sample of 10 Summit County voters will contain:

a. What is the probability that all are Republicans?

b. What is the probability that more that half are Republicans?

c. What is the probability that exactly 4 are Republicans?

d. What is the expected number of Republicans? Remember: expected value = mean

e. What is the standard deviation of this distribution?

4. It is estimated that 26% of 12th graders in America have smoked cigarettes. In a random sample of 8 12th graders

a. What is the probability that none have smoked?

b. What is the probability that less that a fourth have smoked?

c. What is the probability that more than 6 have smoked?

d. What is the probability that more than half have NOT smoked?

e. How many would you expect to smoke?

f. What is the standard deviation of this distribution?

5. A fair quarter is flipped 5 times.

a. What is the probability that all are tails?

b. What is the probability that less than half are tails?

c. What is the probability that 4 are tails?

d. What is the probability that none are tails?

e. How many would you expect to be tails?

f. What is the standard deviation of this distribution?