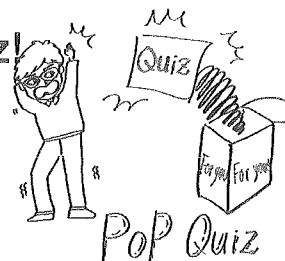


Name: Homework #5 Period: _____ Date: _____

A B C D
 1 ○ ○ ○ ○
 2 ○ ○ ○ ○
 3 ○ ○ ○ ○
 4 ○ ○ ○ ○
 5 ○ ○ ○ ○

6.3 Binomial Distribution : Pop Quiz!



It's time for a pop quiz! I hope you are ready. The quiz consists of 5 multiple-choice questions. Each question has four answer choices, labeled A through D. Now for the bad news: you will not get to see the questions. You just have to guess the answer for each one.

1. Bubble in an answer for each question for the pop quiz. Number correct = _____

2. Let X = number of correct guesses. Is this a binomial setting? Explain.

B: Success = correct
 Failure = wrong

N: $n = 5$

I: Indep, each answer does not affect next

S: $p = 0.25$

3. Calculate the probability of getting exactly 2 correct. Show your work.

$$P(X=2) = {}_5C_2 \cdot (.25)^2 \cdot (.75)^3 = .264$$

4. Fill in the table below showing the probability of getting exactly X correct.

binomial PDF(5, .25, 0) =

# correct (X)	0	1	2	3	4	5
Probability	.237	.396	.264	.088	.015	.001

5. Find and interpret the mean of the distribution. Show your work.

$$\mu = n \cdot p = 5(.25) = 1.25$$

9.7×10^{-4}
 $.0009$

6. Find and interpret the standard deviation of the distribution.

$$\sigma = \sqrt{n \cdot p \cdot (1-p)} = \sqrt{5(.25)(.75)}$$

7. What is the probability of getting at most 3 correct?

$$P(X \leq 3) = 0.984$$

$$= \text{BINOCDF}(5, .25, 3) = .984$$

8. What is the probability of getting 3 or more correct?

$$P(X \geq 3) = .104 \quad 1 - \text{BINOCDF}(5, .25, 2) = .104$$

Lesson 6.3 Day 2 – Describing Binomial Distributions

Important ideas:

LT#1: Describing Binomial Distributions

- Shape: make histogram
- Center: $\mu = n \times p$
- Variability: $\sigma = \sqrt{n \times p \times (1-p)}$

Interpretations:
make sure to say out of how many trials.

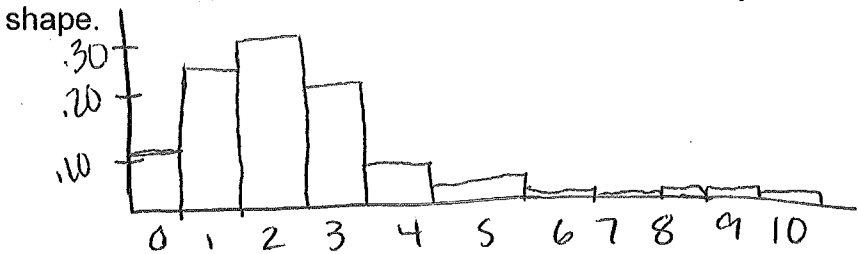
Check Your Understanding

Mr. Miller's class is very difficult. It's so hard that when he gave a pop quiz recently, the students just guessed on every question! Each student in the class guesses an answer from A through E on each of the 10 multiple-choice questions. Hannah is one of the students in this class. Let Y = the number of questions that Hannah answers correctly.

1. Does this setting represent a binomial distribution? Explain.

Yes, it is binomial.
 B: Binary ✓
 Success → correct
 Failure → incorrect
 N: set number of trials ✓ $n=10$
 I: Independent ✓
 S: same probability ✓ $p=0.2$

2. Use technology to make a histogram of the probability distribution of Y . Describe its shape.



Skewed right with a single peak at 2

3. Calculate and interpret the mean of Y .

$\mu = n \times p = 10 \times 0.2 = 2$
 After many quizzes, we expect the average number correct out of 10 is 2 questions.

4. Calculate and interpret the standard deviation of Y .

$\sigma = \sqrt{n \times p \times (1-p)} = \sqrt{10 \times 0.2 \times (0.80)} = 1.26$
 The number correct on a quiz of 10 questions typically varies by 1.26 from the mean of 2.