Worksheet: Binomial Distribution

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Identify the letter of the choice that best completes the statement or answers the question.

- 1. Which of the following is not a property of a Binomial Experiment?
 - a. All trials are identical.
 - b. Each trial has only two possible outcomes.x
 - The probability of success may change from trial to trial.
 - d. The purpose of the experiment is to determine the number of successes that occurs during the *n* trials.

$$\int_{2}^{\infty} \int_{0.2}^{\infty} (0.2)^3 (0.8)^5$$

- 2. In the expression (3), which value represents the number of trials?
 - a. 2 b. 3

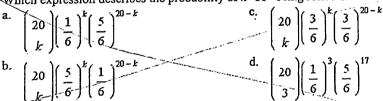
c. 5 (d.) 8

- 3. In the expression (2), which value represents the probability of failure?
 - (a) 0.6 b. 0.4

c. (0.4)² d. (0.6)⁵ N

- 4. In the expression (3), which value represents the number of successes?
 - 6 3 b. 10

- c. 5 d. 7
- 5. Which expression describes the probability of k "3s" being rolled on 20 successive rolls of a six-sided die?



- 6. The probability of a computer memory chip being defective is 0.02. Which of the following statements is true?
 - a. In a shipment of 100 chips, two will be defective.
 - b. The expected number of defective chips in a shipment of 500 is ten.
 - c. In a shipment of 1000 chips, it is certain that at least one will be defective.
 - d. All statements above are false.
 - 7. A young couple plans to have a family with four children. Assuming that the behaviour of their first child does not cause them to alter their plans, what is the expected number of girls for their family?
 - a. 2.5
 - b. 2.25

 $\binom{0}{0} \frac{2}{1.5}$

Short Answer

Binomial Distribution Practice Worksheet

Part A: Probability Problems

For each of the following, identify the distribution as binomial, then compute the requested probabilities.

1. A die is rolled 6 times. The probability of rolling a "4" on a single roll is $\frac{1}{6}$. Let X = the number of times a "4" is rolled. 2. (a) Find $P(X = 2) = \binom{6}{2} \binom{6}{6} \binom{6}{6} = 0.3000$

3. (b) Find $P(X \ge 3) := p(x=3) + p(x=4) + p(x=5) + p(x=6)$

4. A multiple-choice quiz has 10 questions, each with 4 answer choices, and a student guesses on each

question. Let X = the number of correct answers. V = 10 V = 14 V = 3/4 5. (a) Find $P(X = 5) = \begin{pmatrix} 10 \\ 5 \end{pmatrix} \begin{pmatrix} 1/4 \\ 5 \end{pmatrix}^5 \cdot \begin{pmatrix} 3/4 \\ 5 \end{pmatrix} = 0 \cdot 0557$

6. (b) Find $P(X \le 2)$. p(X=0) + p(X=1) + p(X=3)

7. A lightbulb manufacturer knows that 90% of bulbs work without defects. A sample of 8 bulbs is tested. Let X = the number of bulbs that work. $N = 8 \cdot 0.9 \cdot$

9. (b) Find $P(X \ge 6)$. p(X = 0) + p(X = 1) + p(X = 0)

10. In a survey, 70% of people prefer chocolate ice cream over vanilla. If 12 people are asked independently, let X = the number who prefer chocolate.

- 11. (a) Find P(X = 9).
- 12. (b) Find $P(X \ge 10)$.

13. A factory machine produces items with a 95% chance of being non-defective. If 15 items are inspected, let X = the number of non-defective items.

- 14. (a) Find P(X = 14).
- 15. (b) Find $P(X \le 13)$.