Multiple choice questions - Probability and the binomial distribution

Year: Year 12 · 10

Question 1 $P(A') =$

- ◯ **A.** $P(A)$
- ◯ **B.** $1 - P(A)$
- ◯ **C.** $P(A) - 1$
- ◯ **D.** 0

Question 2 For independent events $P(A \cap B) =$

- ◯ **A.** $P(A) + P(B)$
- ◯ **B.** $P(A)P(B)$
- ◯ **C.** 0
- ◯ **D.** $P(A) - P(B)$

Question 3 For mutually exclusive events $P(A \cap B) =$

- ◯ **A.** 0
- ◯ **B.** 1
- ◯ **C.** $P(A)P(B)$
- ◯ **D.** $P(A)$

Question 4 $P(A \mid B) =$

- ◯ **A.** $\dfrac{P(A \cap B)}{P(B)}$
- ◯ **B.** $\dfrac{P(A \cap B)}{P(A)}$
- ◯ **C.** $P(A)P(B)$
- ◯ **D.** $P(A \cup B)$

Question 5 For $X \sim B(20, 0.4)$ the mean is

- ◯ **A.** 4
- ◯ **B.** 8
- ◯ **C.** 12
- ◯ **D.** 20

Question 6 For $X \sim B(20, 0.4)$ the variance is

- ◯ **A.** 4.8

- **B.** 8
- **C.** 3.2
- **D.** 2.2

Question 7 $P(X \geq 1) =$

- **A.** $1 - P(X = 0)$
- **B.** $P(X = 1)$
- **C.** $1 - P(X = 1)$
- **D.** $P(X \leq 1)$

Question 8 Which is NOT a requirement of a binomial model?

- **A.** fixed number of trials
- **B.** two outcomes
- **C.** constant probability
- **D.** outcomes that depend on previous trials

Question 9 $\binom{5}{2} =$

- **A.** 5
- **B.** 10
- **C.** 20
- **D.** 2

Question 10 In a Venn diagram, the overlap represents

- **A.** $A \cup B$
- **B.** $A \cap B$
- **C.** A'
- **D.** neither

Answer grid - Probability and the binomial distribution

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Question	Answer	Explanation
1	**B**	Complement.
2	**B**	Multiply.
3	**A**	Cannot both happen.
4	**A**	Definition.
5	**B**	np.
6	**A**	$20 \times 0.4 \times 0.6$.
7	**A**	Complement.
8	**D**	Trials must be independent.
9	**B**	$\frac{5 \times 4}{2}$.
10	**B**	Both.