Multiple choice questions - Conditional probability and the Normal distribution

Year: Year 13 · 10

Question 1 $P(A \mid B) =$

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

Question 2 If A and B are independent then $P(A \cap B) =$

- ○ **A.** $P(A) + P(B)$
- ○ **B.** $P(A)P(B)$
- ○ **C.** 0
- ○ **D.** $P(A \mid B)$

Question 3 For $X \sim N(10, 2^2)$, the standardised value for $X = 14$ is

- ○ **A.** 4
- ○ **B.** 7
- ○ **C.** 2
- ○ **D.** 0.5

Question 4 The Normal curve is

- ○ **A.** skewed to the right
- ○ **B.** flat
- ○ **C.** symmetrical about zero always
- ○ **D.** symmetrical about the mean

Question 5 About what percentage lies within 2 standard deviations of the mean?

- ○ **A.** 95%
- ○ **B.** 68%
- ○ **C.** 99.7%
- ○ **D.** 50%

Question 6 For $B(100, 0.5)$ the Normal approximation has variance

- **A.** 50
- **B.** 25
- **C.** 100
- **D.** 5

Question 7 A continuity correction converts $P(X \geq 45)$ to

- **A.** $P(Y > 45.5)$
- **B.** $P(Y > 45)$
- **C.** $P(Y > 44.5)$
- **D.** $P(Y > 44)$

Question 8 For continuous X, $P(X = a)$ is

- **A.** 1
- **B.** 0.5
- **C.** depends on a
- **D.** 0

Question 9 In a tree diagram, probabilities along a path are

- **A.** multiplied
- **B.** added
- **C.** subtracted
- **D.** divided

Question 10 $Z \sim N(0, 1)$. $P(Z$

- **A.** 0
- **B.** 0.5
- **C.** 1
- **D.** 0.25

Answer grid - Conditional probability and the Normal distribution

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Question	Answer	Explanation
1	**A**	Definition.
2	**B**	Independence.
3	**C**	(14-10)/2.
4	**D**	Bell-shaped.
5	**A**	Empirical rule.
6	**B**	np(1-p).
7	**C**	Discrete to continuous.
8	**D**	Area of a line.
9	**A**	Multiplication rule.
10	**B**	Symmetry.