

Unit 11 Test

Arithmetic/Geometric Sequences, Series, Binomial Theorem & Probability

Name: _____ Date: _____ Score: ____ / 10

INSTRUCTIONS

For multiple-choice questions, circle the letter of the correct answer. For short-answer and problem-solving questions, show your complete work in the space provided. No calculator unless your teacher says otherwise.

1

Find the 10th term of the arithmetic sequence 5, 9, 13, 17, ...

Multiple Choice

A 41**B** 45**C** 37**D** 40**2**

Find the common ratio of the geometric sequence 3, 6, 12, 24, ...

Multiple Choice

A 2**B** 3**C** $1/2$ **D** 6**3**

Short Answer — Find the sum of the arithmetic series $2 + 5 + 8 + \dots + 29$.

Short Answer

4

Find the sum of the infinite geometric series $8 + 4 + 2 + 1 + \dots$

Multiple Choice

A 16**B** 12**C** 24**D** The series diverges**5**

Use the Binomial Theorem to find the coefficient of the x^2 term in the expansion of $(x + 3)^4$.

Multiple Choice

A 54**B** 12**C** 81**D** 108**6**

Short Answer — Evaluate ${}_5C_2$ (the number of combinations of 5 items taken 2 at a time).

Short Answer

Unit 11 Test

Arithmetic/Geometric Sequences, Series, Binomial Theorem & Probability

7

Find the number of permutations of 5 items taken 3 at a time (${}_5P_3$).

Multiple Choice

A 60**B** 10**C** 20**D** 125**8**

A standard deck has 52 cards, 13 of which are hearts. What is the probability of drawing a heart?

Multiple Choice

A $1/4$ **B** $1/13$ **C** $1/52$ **D** $13/52 \cdot 2$ **9**

Problem Solving — Find the sum of the first 6 terms of the geometric sequence with first term 3 and common ratio 2.

Problem Solving

10

Problem Solving — A bag contains 5 red, 3 blue, and 2 green marbles (10 total). Find the probability of drawing 2 red marbles in a row without replacement.

Problem Solving