Diagnostic Assessment: Arithmetic Progressions

Student Name: ______________________	**Class:** ______________________
Student ID: ______________________	**Date:** ______________________

Assessment Details

Duration: 45 minutes	**Total Marks:** 100
Topics Covered:	• Arithmetic Progressions • Identifying and Calculating Terms • Applying Arithmetic Progressions to Solve Problems

Instructions to Students:

1. Read all questions carefully before attempting.
2. Show all working out - marks are awarded for method.
3. Calculator use is permitted except where stated otherwise.
4. Write your answers in the spaces provided.
5. If you need more space, use the additional pages at the end.
6. Time management is crucial - allocate approximately 1 minute per mark.

Section 1: Multiple Choice [20 marks]

Question 1 **[4 marks]**

What is the common difference in the arithmetic progression 2, 5, 8, 11, ...?

A) 2

B) 3

C) 4

D) 5

Question 2 **[4 marks]**

Which of the following sequences is an arithmetic progression?

A) 1, 2, 4, 8, ...

B) 2, 4, 6, 8, ...

C) 3, 6, 9, 12, ...

D) 4, 7, 10, 13, ...

Question 3 **[4 marks]**

If the first term of an arithmetic progression is 5 and the common difference is 2, what is the 10th term?

A) 21

B) 23

C) 25

D) 27

Section 2: Short Answer [30 marks]

Question 4

[15 marks]

Find the sum of the first 10 terms of the arithmetic progression 3, 6, 9, 12, ...

Question 5

[15 marks]

A sequence of numbers has a common difference of 4. If the first term is 2, find the 5th term.

Section 3: Project-Based [50 marks]

Question 6 [50 marks]

A bookshelf has 5 shelves, and the number of books on each shelf forms an arithmetic progression. If the first shelf has 10 books and the common difference is 3, how many books are on the 5th shelf? Create a diagram to illustrate your solution and explain your reasoning.

Additional Space for Student Use

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