

**Student Name:** \_\_\_\_\_**Class:** \_\_\_\_\_**Student ID:** \_\_\_\_\_**Date:** \_\_\_\_\_**Assessment Details****Duration:** 30 minutes**Total Marks:** 50**Topics Covered:**

- Number Patterns
- Sequence and Series
- Pattern Rules

**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 A: Multiple Choice [20 marks]

Question 1

[2 marks]

What comes next in the pattern: 2, 5, 8, 11, 14, \_\_\_?

A) 15

B) 17

C) 18

D) 20

Question 2

[2 marks]

Which of the following sequences is an example of a linear pattern: A) 2, 4, 6, 8, 10 B) 2, 4, 8, 16, 32 C) 2, 5, 8, 11, 14

A) 2, 4, 6, 8, 10

B) 2, 4, 8, 16, 32

C) 2, 5, 8, 11, 14

Question 3

[2 marks]

Identify the next number in the pattern: 1, 2, 4, 8, 16, \_\_\_

A) 32

B) 36

C) 40

D) 48

Question 4

[2 marks]

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What is the pattern rule for the sequence: 3, 6, 9, 12, 15?

A) Add 2

B) Add 3

C) Multiply by 2

D) Divide by 2

Question 5

[2 marks]

Which sequence is an example of a pattern that increases by 2 each time: A) 2, 4, 6, 8, 10 B) 2, 4, 8, 16, 32  
C) 2, 5, 8, 11, 14

A) 2, 4, 6, 8, 10

B) 2, 4, 8, 16, 32

C) 2, 5, 8, 11, 14

Section B: Short Answer Questions [20 marks]

Question 6

[4 marks]

A bakery is having a sale on bread. The price of a loaf of bread is decreasing by \$0.50 each day. If the price of a loaf of bread is \$2.50 today, what will it be in 5 days?

Question 7

[4 marks]

A population of bacteria is growing at a rate of 20% per hour. If there are 100 bacteria present initially, how many will there be after 3 hours?

Question 8

[4 marks]

Identify the pattern rule for the sequence: 3, 6, 9, 12, 15. Use this rule to find the next number in the sequence.

Question 9

[4 marks]

A car is traveling at a speed of 60 km/h. If the car travels for 2 hours, how far will it have traveled? If the car continues to travel at the same speed, how far will it have traveled after 5 hours?

**Question 10**

**[4 marks]**

A company is producing a new product. The production cost of the product is increasing by \$5 each day. If the production cost is \$100 today, what will it be in 10 days?

**Question 11**

**[10 marks]**

Create a number pattern that represents the number of seats in each row of a movie theater. The first row has 10 seats, the second row has 12 seats, and the third row has 14 seats. If this pattern continues, how many seats will be in the 10th row? Show your work and explain your reasoning.

### Section A: Multiple Choice Questions

- 1 point for each correct answer
- 0 points for each incorrect answer

### Section B: Short Answer Questions

- 2 points for each correct answer
- 1 point for each partially correct answer
- 0 points for each incorrect answer

### Section C: Project-Based Question

- 5 points for a correct and complete solution
- 3 points for a partially correct solution
- 0 points for an incorrect solution