## Introduction to Number Patterns

*Read the following introduction to number patterns and answer the questions that follow:*

This assessment is designed to evaluate students' understanding of number patterns, specifically their ability to identify and extend simple number patterns, recognize relationships between terms in a sequence, apply pattern rules to generate new terms, and solve problems involving number patterns in real-world contexts.

## Section 1: Multiple Choice Questions

*Choose the correct answer for each question:*

1. What comes next in the pattern: 2, 5, 8, 11, 14, ___?
   A) 15
   B) 17
   C) 18
   D) 20

2. 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

3. Identify the next number in the pattern: 1, 3, 5, 7, 9, ___
   A) 10
   B) 11
   C) 12
   D) 13

4. What is the next number in the sequence: 2, 6, 10, 14, 18, ___?
   A) 20
   B) 22

C) 24
D) 26

5. Which of the following is an example of a pattern that increases by 3 each time:
A) 2, 5, 8, 11, 14
B) 1, 4, 7, 10, 13
C) 3, 6, 9, 12, 15

## Section 2: Short Answer Questions

*Answer the following questions in complete sentences:*

1. 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?

2. 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?

3. Create a sequence of numbers that starts with 5 and increases by 2 each time. What is the 10th term in the sequence?

## Section 3: Project-Based Question

*Complete the following project:*

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.

## Additional Activities

*Complete the following activities:*

1. Identify the pattern in the sequence: 1, 2, 4, 8, 16, ___

2. Create a sequence of numbers that starts with 3 and decreases by 1 each time. What is the 5th term in the sequence?

## Conclusion

*Read the following conclusion and answer the questions that follow:*

This assessment is designed to evaluate students' understanding of number patterns and their ability to apply pattern rules to generate new terms and solve problems involving number patterns in real-world contexts.

## Answer Key

*Check your answers with the following answer key:*

Section 1: Multiple Choice Questions

1. B) 17
2. A) 2, 4, 6, 8, 10
3. B) 11
4. A) 22
5. B) 1, 4, 7, 10, 13

Section 2: Short Answer Questions

1. $1.50
2. 172.8
3. 23

Section 3: Project-Based Question

Answer will vary, but should show a clear understanding of the pattern and how it applies to the real-world context.