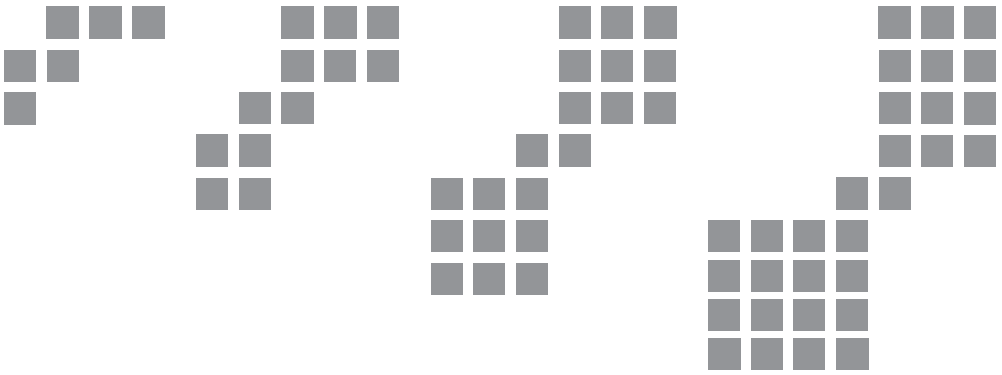
Enhanced Mid-Topic Assessment

Name _____ Date _____

Part A: Multiple-Choice Questions

1. Analyze the pattern shown.



Which answer choice describes the pattern?

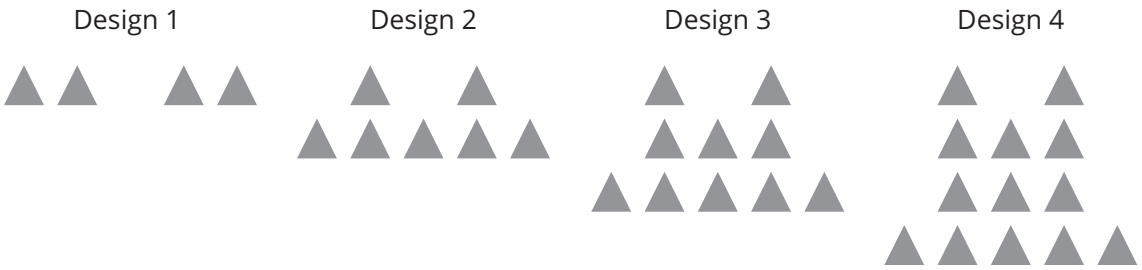
a. Linear

b. Quadratic

c. Exponential

d. None of the above

2. Analyze the pattern shown.



Which algebraic expression represents the pattern?

a. $2n + 2$

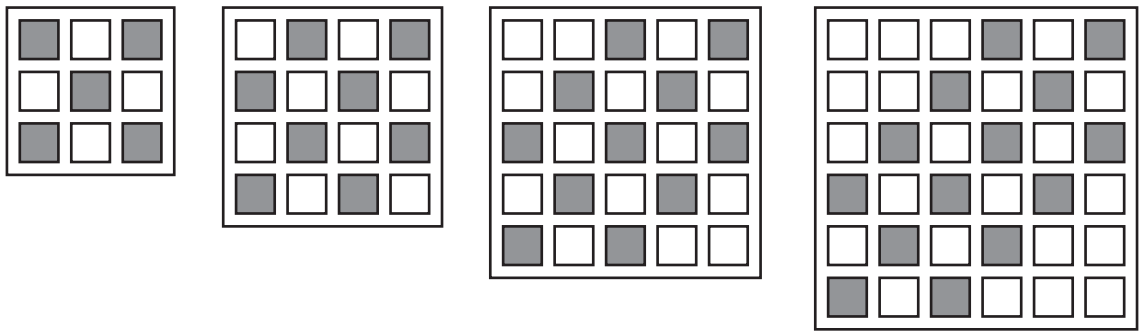
b. $2n^2 + 2$

c. $3n + 1$

d. $3n^2 + 1$

3. A quilter sews large squares made of small gray and white squares, as shown. The design depends on the size of the large square. The diagram shows the sequence of designs.

Design 1 Design 2 Design 3 Design 4



The quilter wants to make large squares that each have a total of 64 small squares. How many white small squares are needed for each large square the quilter makes?

a. 32

b. 36

c. 44

d. 50

4. A lab technician has 4 bacteria in a Petri dish. The number of bacteria doubles every hour. What function could be used to model the number of bacteria at any given hour?

a. $f(x) = 4(2^x)$

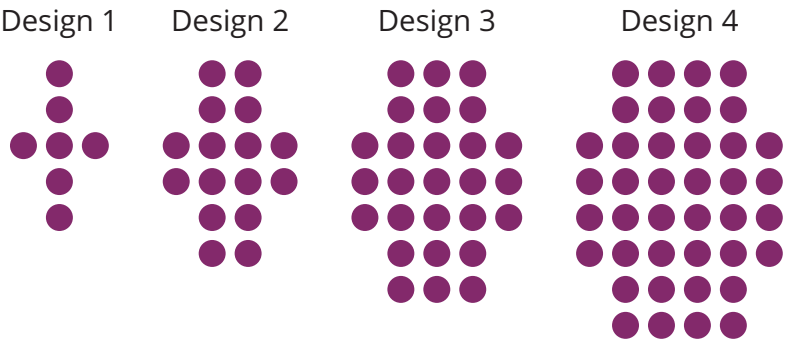
b. $f(x) = 4x + 2$

c. $f(x) = 2(4^x)$

d. $f(x) = 4(x^2)$

Part B: Open-Response Questions

5. Analyze the pattern shown.

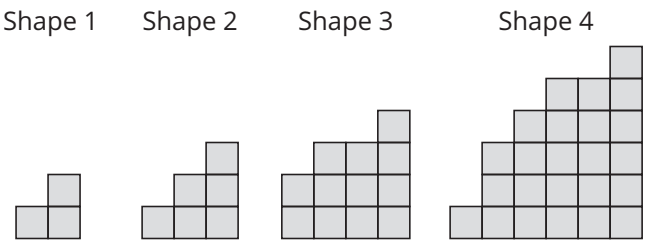


a. Identify an expression that represents this pattern.

b. Describe this pattern as linear, quadratic, exponential, or none of these. Explain your reasoning.

c. Predict the number of circles in Design 12.

6. Analyze the figures shown.



a. Write an equation to determine the number of blocks in each next shape.

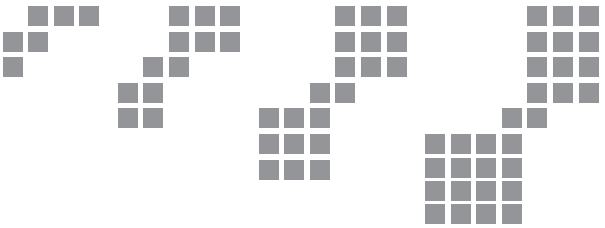
b. Describe the pattern as linear, quadratic, or exponential and explain your reasoning.

c. Predict the number of blocks in Shape 15.

Part C: Griddable Response Questions

Record your answers and fill in the bubbles.

7. Analyze the given pattern. Use an equation that models the pattern to predict how many squares will be in the 6th design.



+	0	0	0	0	0	0	0
−	1	1	1	1	1	1	1
	2	2	2	2	2	2	2
	3	3	3	3	3	3	3
	4	4	4	4	4	4	4
	5	5	5	5	5	5	5
	6	6	6	6	6	6	6
	7	7	7	7	7	7	7
	8	8	8	8	8	8	8
	9	9	9	9	9	9	9