Name:

Sequences and Functions: Check Your Readiness

You may use a scientific calculator.

1. Fill in the blanks to continue the patterns.

   a. 3, 6, 9, _____, _____

   b. 3, 6, 12, _____, _____

   c. 1, _____, 9, 13, _____

   d. 128, 64, _____, _____, 8

2. Use the function $f(x) = -3x + 7$ to answer the questions.

   a. What is $f(0)$?

   b. What is $f\left(\frac{1}{3}\right)$?

   c. What is $f(-5)$?

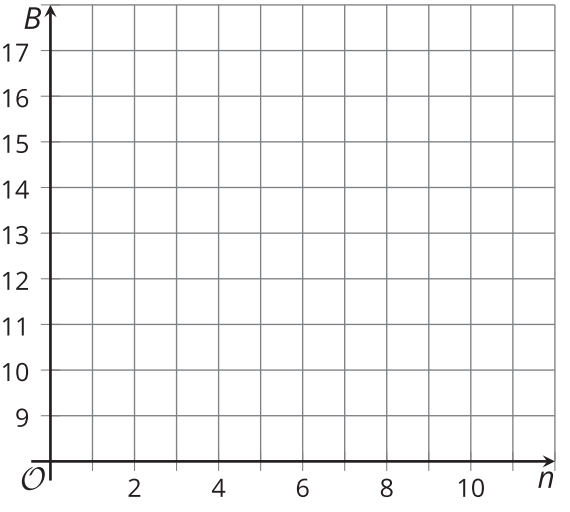
   d. What is x when $f(x) = -20$?

3. A city bus charges \$0.25 per ride if you first buy the \$10 discount card. Let B be the total cost, in dollars, of taking n rides on the bus.

a. Complete the table for function B for several inputs.

n	B
0	10
2	
4	
10	

b. Sketch a graph of the total cost B, in dollars, for the number of bus rides from 0 to 10.



c. Write an equation for B as a function of n.

4. Select **all** the expressions that are equivalent to $2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$.

   A. 2^6

   B. $2 \cdot 6$

   C. $(2^2)^3$

   D. $2^3 + 2^3$

   E. $2^2 + 2^2 + 2^2$

   F. 6^2

   G. $2^3 \cdot 2^3$

   H. $(2^3)^2$

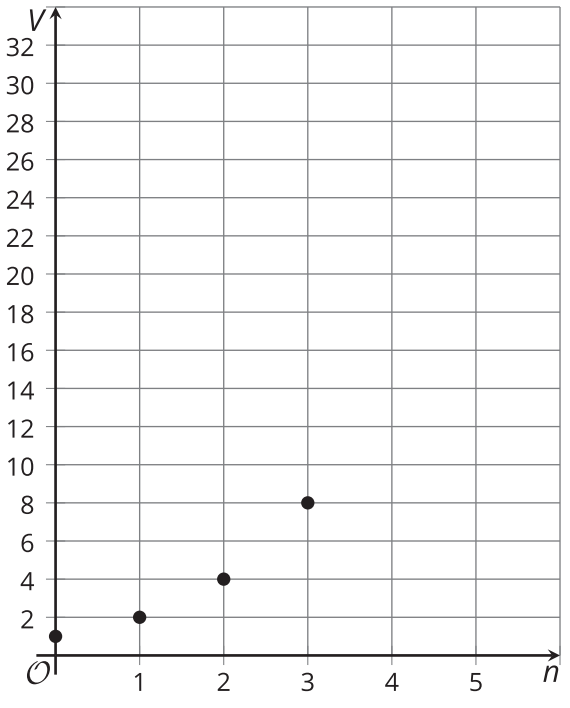
5. Here are three patterns with their first 5 terms listed. For each pattern, describe a way to produce each new term from the previous term.

   a. Pattern A: 5, 8, 11, 14, 17, . . .

   b. Pattern B: $\frac{1}{2}$, 1, 2, 4, 8, . . .

   c. Pattern C: 0, 1, 3, 6, 10, . . .

6. Here is a graph of a pattern of numbers where V is a function of n. The first point is $(0, 1)$.



a. Plot the next 2 points on the graph that follow the pattern.

b. Write an equation to describe the relationship between V and n.