Math 7 Test **Name:** _____
SOL 7.2—Arithmetic and Geometric Sequences

Determine the *common difference* or *common ratio* in each of the following sequences and write a variable expression that can be used to determine the next term in the sequence. Use "*n*" as the variable. Then write the next three terms in the sequence.

1. 3, -12, 48, -192, _____, _____, _____…

_____

2. -1, $-\frac{1}{2}$, 0, $\frac{1}{2}$, _____, _____, _____…

_____

3. – 9, -18, -36, -72, _____, _____, _____ …

_____

4. 1.9, 1.2, 0.5, -0.2, _____, _____, _____ …

_____

5. $\frac{3}{2}$, $\frac{3}{4}$, $\frac{3}{8}$, $\frac{3}{16}$, _____, _____, _____, …

_____

6. 2000, 200, 20, 2, _____, _____, _____…

_____

7. Complete the table and write a variable expression to describe the relationship using "h" as the variable.

Number of Hamburgers Purchased	2	3	4	5	6	7
Cost ($)	6	9	12			

_____

8. A ball reaches a height of 144 inches on its first bounce. Each consecutive bounce is 4 inches less than the previous bounce. Write a variable expression to represent the situation and continue the sequence to name the next four terms. Use *b* as the variable.

_____ 144, _____, _____, _____, _____

9. Apples are selling for $1.29 per pound. Write a variable expression that can be used to determine the cost of "n" pounds of apples. Write a geometric sequence to represent the cost of 1, 2, 3, 4, and 5 pounds of apples.

_____ 1.29, _____, _____, _____, _____

10. A pattern constructed of peace signs is shown. Sketch the next figure in the pattern. Name the c common difference.

1st 2nd 3rd 4th

_____

Common difference _____

Identify the following sequences as arithmetic, geometric, or neither.

11. 2, 4, 6, 8, 10, … _____

12. 3, 12, 48, 192, 768, … _____

13. 1, 2, 2, 3, 3, 3, . . . _____

14. 4½, 5, 5½, 6, 6½, … _____

15. -2, 3, -4, 5, -6, 7, … _____

16. 10, 5, 2.5, 1.25, … _____

Give the next three terms for each of the following sequences:

17. 5, 9, 13, 17, 21, _____, _____, _____

18. 6, 18, 54, _____, _____, _____

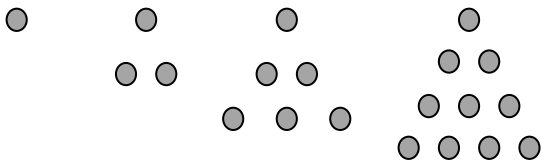
19. -6, -1, 4, _____, _____, _____

20. 1, -3, 9, -27, _____, _____, _____

Bonus: How many dots should there be in the next pattern in the sequence below? Sketch the next three patterns.

dots for next pattern _____

1st 2nd 3rd 4th 5th 6th 7th



_____ _____ _____

Math SOL 7.2—Arithmetic and Geometric Sequences
Answer Key

1. 768; -3072; 12,288; $-4n$
2. 1; $\frac{1}{2}$; $1\frac{1}{2}$; $n + \frac{1}{2}$
3. -144, -288, -576 ; 2**n**
4. -0.9, -1.6, -2.3 ; n + (-7.0)
5. $\frac{3}{32}, \frac{3}{64}, \frac{3}{128}$; $\frac{1}{2}n$
6. 0.2, 0.02, 0.002 ; $\frac{1}{10}n$
7. 15, 18, 21 ; 3h
8. b + (-4) ; 140, 136, 132, 128
9. 1.29 n ; 2.58, 3.87, 5.16, 6.4
10.  Common difference +3
11. Arithmetic
12. Geometric
13. Neither
14. Arithmetic
15. Neither
16. Geometric
17. 25, 29, 33
18. 162, 486, 729
19. 9, 14, 19
20. 81, -243, 729