$r = a_2/a_1$ or a_n/a_{n-1}

4.2 Part 2 (Geometric Sequences) **Name** Answer Key **Period** _____

Determine the common ratio for each geometric sequence.

1) 5, 10, 20, 40, ...

$r = \frac{10}{5} = 2$ ✓ $\frac{20}{10} = 2$ ✓

2) 45, 15, 5, $\frac{5}{3}$, ...

$r = \frac{15}{45} = \frac{1}{3}$ ✓ $\frac{5}{15} = \frac{1}{3}$ ✓

3) 0.2, -1, 5, -25, ...

$r = \frac{-1}{0.2} = -5$ ✓ $\frac{5}{-1} = -5$ ✓

4) 64, -32, 16, -8, ...

$r = \frac{-32}{64} = \frac{-1}{2}$ ✓ $\frac{16}{-32} = \frac{1}{-2}$ ✓

Determine the common ratio and the next 3 terms for each geometric sequence.

5) 3, 9, 27, 81, 243, 729, 2187, ...

×3

$r = \frac{9}{3} = 3$

6) 5, -10, 20, -40, 80, -160, 320, ...

× (-2)

$r = \frac{-10}{5} = -2$

7) 156.25, 31.25, 6.25, 1.25, 0.25, 0.05, 0.01, ...

× 0.2

$r = \frac{31.25}{156.25} = 0.2$

8) 0.1, 0.4, 1.6, 6.4, 25.6, 102.4, 409.6, ...

×4

$r = \frac{0.4}{0.1} = 4$

Determine whether each given sequence is arithmetic, geometric, or neither. For arithmetic or geometric sequences, determine the next 3 terms.

9) 4, 8, 12, 16, ... 20, 24, 28

$d = 8 - 4 = 4$ $12 - 8 = 4$ (+4)

arithmetic

10) 1.1, 1.12, 1.123, 1.1234, ... neither

$d = 1.12 - 1.1 = 0.02$ $1.123 - 1.12 = 0.003$

not arithmetic

$r = \frac{1.12}{1.1} = 1.02$ $\frac{1.123}{1.12} = 0.935$

not geometric

11) 5, -20, 80, -320, 128, -5120, 20480

$d = -20 - 5 = -25$ $80 - (-20) = 100$

not arithmetic

$r = -20/5 = -4$ $80/-20 = -4$ (×(-4))

geometric

12) 2, 4, 7, 11, ...

$d = 4 - 2 = 2$ $7 - 4 = 3$

not arithmetic

$r = 4/2 = 2$ $7/4 = 1.75$

not geometric

neither