

Name: _____

Arithmetic vs. Geometric Number Sequences

Today, we're going to work with sequences of numbers, specifically arithmetic and geometric sequences. An **arithmetic sequence** is a set of numbers wherein each number in the sequence is created by **adding or subtracting** a common value to the number that came before. A **geometric sequence**, on the other hand, is a set of numbers wherein each number is created by **multiplying or dividing** a common ratio to the number that came before.

Examples	
<p>5, 8, 11, 14, 17, ...</p> <p><i>Each number + 3 = the next number, so it's arithmetic.</i> The common difference is 3. The next two terms are: $17 + 3 = \boxed{20}$ & $20 + 3 = \boxed{23}$</p>	<p>-2, -6, -18, -54, -162, ...</p> <p><i>(Each number)(3) = the next number, so it's geometric.</i> The common ratio is 3. The next two terms are: $(-162)(3) = \boxed{-486}$ & $(-486)(3) = \boxed{-1458}$</p>
<p>625, 125, 25, 5, 1, ...</p> <p><i>Each number $\div 5$ = the next number, so it's geometric.</i> The common ratio is $\frac{1}{5}$ (because that's the same as "divide by 5"). The next two terms are: $(1)\left(\frac{1}{5}\right) = \boxed{\frac{1}{5}}$ & $\left(\frac{1}{5}\right)\left(\frac{1}{5}\right) = \boxed{\frac{1}{25}}$</p>	<p>11, 6, 1, -4, -9, -14...</p> <p><i>Each number - 5 = the next number, so it's arithmetic.</i> The common difference is -5. The next two terms are: $-14 - 5 = \boxed{-19}$ & $-19 - 5 = \boxed{-24}$</p>

Determine if the series is **arithmetic** or **geometric**; determine the **common difference (arithmetic)** or **common ratio (geometric)**; and determine the next two terms.

1. 27, 21, 15, 9, 3, ...	2. 55, 59, 63, 67, ...	3. 8192, 2048, 512, 128, 32, ...
4. -6, -4, -2, ...	5. 8, -8, 8, -8, 8, -8, ...	6. 17, 34, 68, 136, ...
7. 3, -9, -21, -33, -45, ...	8. 216, 36, 6, ...	9. 5, 19, 33, 47, ...
10. 18, 9, 4.5, 2.25, ...	11. 10, 20, 30, 40, ...	12. $\frac{1}{8}, \frac{1}{16}, \frac{1}{32}, \frac{1}{64}, \dots$
13. 768, 192, 48, 12, ...	14. 3, 33, 363, ...	15. 80, 40, 0, -40, -80, ...