**Arithmetic Sequences Worksheet #1 Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_**

Write the equation for the arithmetic series below.

|  |  |  |
| --- | --- | --- |
| 1.  | 2. 10, 100, 190, 280… | 3.  |
| 4. 4, 1, -2, -5… | 5.  | 6. 10, 8, 6, 4, …. |
| 7.  | 8.  | 9.  |
| 10.  | 11.  | 12.  |
| 13.  | 14.  | 15.  |

16. Find  in # 1 17. Find  in # 2 18. Find  in #11.

19. Given . Find: d= \_\_\_\_\_\_\_.  

20. Write the first 5 terms of the sequence 

**Geometric Sequences Worksheet #1 Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Write the equation for the Geometric series below.**

|  |  |  |
| --- | --- | --- |
| **1. 4, 12, 36, 108, 324,…** | **2. 2, -6, 18,-54, 162,…** | **3. 2, 8, 32, 128,…** |
| **4.** $\frac{1}{2}$ **,** $\frac{1}{4}$ **,** $\frac{1}{8}$ **,** $\frac{1}{16} , $**…** | **5. 375, -75, 15, -3, …** | **6. -28, 14, -7,** $\frac{7}{2}$ **, -** $\frac{7}{4}$ **, …** |
| **7.** r = 3, a1 = 2 | **8.** r = -2, a1 = 6 | **9.** r = -3, a1 = 12 |
| **10.** a1 = $\frac{1}{4}$ , a3 = 6 | **11.**  a2 = 5, a4 = $\frac{1}{5}$  | **12.** a2 = 28, a5 = -1792 |

**Investigating Sums of Arithmetic Sequences**

STEP 1: **Add** the given terms of the sequence to find the sum for those terms.

STEP 2: **Calculate** the *average* of the first and last terms of the sequence.

STEP 3: **Multiply** the *average* found in step 2 by the number of terms in the sequence.

STEP 4: **Record** your answers in a table.

|  |  |  |  |
| --- | --- | --- | --- |
| Sequences | Sum | Average of 1st and last term | Multiply Avg. by number of terms |
| 2, 5, 8, 11, 14 |  |  |  |
| 1, 8, 15, 22 |  |  |  |
| -1, 1, 3 |  |  |  |
| 2, 11, 20, 29, 38, 47, 56 |  |  |  |
| -25, -29, -33, -37, -41 |  |  |  |
| 20, 16, 12, 8, 4, 0 |  |  |  |

**Draw Conclusions:**

1. Compare your answers from Steps 1 and 3. What do you notice?

1. Write a sentence that explains how to calculate the sum of the first n terms of a sequence

 without adding all of the terms.

1. Write a formula for the explanations you gave in Exercise 3. Use **a1** to represent the first term,

 **an** to represent the last term, and **n** to represent the number of terms.

5. Use your formula to find the sum of the terms in each of the following sequence:

 a. 3, 9, 15, 21 b. 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13

**Arithmetic Series: Worksheet #2 Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period:\_\_\_\_\_\_**

Use the series formula and show your work.

Given the series 5, 8, 11, 14….

1. Find the sum of the first 4 terms. 2. Find .

Given the series 8, 7, 6, 5, 4, 3, 2….

3. Find the sum of the first 7 terms. 4. Find .

Given 

5. Find the sum of the first 12 terms. 6. Find the sum of the first 20 terms.

Given 

7. Find the sum of the first 9 terms. 8. Find the sum of the first 11 terms.

Given 

9. Find the sum of the first 99 terms. 10. Find the sum of the first 200 terms.

 **Geometric Series: Worksheet #2 Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period:\_\_\_\_\_\_**

Use the series formula and show your work.

Given the series 1, 4, 16, 64, …

1. Find the sum of the first 14 terms. 2. Find *Sn* = 341

Given the series 7, -21, 63, -189, ….

3. Find the sum of the first 18 terms. 4. Find .

Given the series -90, 30, -10, 10/3, …

5. Find the sum of the first 16 terms. 6. Find *Sn* = -66.67

Given the series 1, 9, 81, 729

7. Find the sum of the first 10 terms. 8. Find the sum of the first 11 terms.

Given *an* = $8(3)^{n-1}$

9. Find the sum of the first 99 terms. 10. Find the sum of the first 200 terms.