|  |  |
| --- | --- |
| **Main Ideas/Questions** | **Notes** |
| **Geometric Sequences** | A sequence in which the pattern of the sequence is being multiplied |
| **Common Ratio (fraction)** | $\frac{2nd term}{1st term}, \frac{3rd term}{2nd term},\frac{4th term}{3rd term}$ = common ratio (must all equal the same #) |
| **Identifying a Geometric Sequence** | **Determine whether the following represent geometric sequences. If yes, identify the common ratio.** |
| **1.** 2, 10, 50, 250, … | **2.** 135, 45, 15, 5, … |
| **3.** 6, 18, 24, 30, … | **4.** 7, -14, 28, -56, … |
| **5.** 80, -40, 20, -10, … | **6.** -9, -36, -144, -576, … |
| **Continuing Geometric Sequences** | **Given the geometric sequence, find the next three terms.** |
| **7.** 7, -21, 63, \_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_ |
| **8.** 3072, 768, 192, \_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_ |
| **9.** 8, 4, 2, \_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_ |
| **10.** -5, -25, -125, \_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_ |
| **Geometric Sequence Formula** | **The** $n^{th}$ **term of a geometric sequence can be found using the following formula:**$$a\_{n}=a\_{1}\left(r\right)^{n-1}$$where $a\_{1}$= 1st term on the list and **r** = common ratio |
| **Examples** | **Write the rule for the** $n^{th}$ **term, then find** $a\_{7}$**.** |
| **11.** 3, 9, 27, … | **12.** -4, 20, -100, … |
| **13.** 400, 200, 100, … | **14.** 1, 5, 25, … |
| **15.** -1, -4, -16, … | **16.** 729, -243, 81, … |
| **17.** 6, -12, 24, … | **18.** 8, 12, 18, … |
| **Application**

|  |  |
| --- | --- |
| **Year** | **Value ($)** |
| **1** | **10,000** |
| **2** | **8,000** |
| **3** | **6,400** |

 | The table to the left shows a car’s value for 3 years after it is purchased.**19.** Write a rule to represent the car’s depreciation.**20.** What will be the value of the car after 10 years? |