Dear Parents,

Attached are the notes as well as the homework Students can fill in the blank copy of notes as Coach White goes through the problems or students can just follow along the filled out version of notes. ***If you do not have a printer available, just have your student label a blank sheet of paper with the title of the homework and write the answers to each problem on this blank sheet of paper. This homework is due Thursday, April 23 at midnight. Homework submitted on Friday will not be accepted. Please make sure you submit your homework to the right person.***

Here is the video link of the lesson:

[https://cobbk12org-my.sharepoint.com/:v:/g/personal/john\_white\_cobbk12\_org/EStrtomaSrxEkTRIoTL8M\_YBTzfYt-AcKQH6Ux3u9zD1DQ?e=PaBtVH](https://cobbk12org-my.sharepoint.com/%3Av%3A/g/personal/john_white_cobbk12_org/EStrtomaSrxEkTRIoTL8M_YBTzfYt-AcKQH6Ux3u9zD1DQ?e=PaBtVH)

***Arithmetic Sequence***

* An ***arithmetic sequence*** is a sequence in which the pattern of the sequence is being ***added or subtracted***. In other words, the numbers are close together and the difference (difference means subtract) of the consecutive terms is constant. This constant difference is called the common difference and is denoted by d. If the numbers in the list are increasing, then d will be positive. If the numbers in the list are decreasing, then d will be negative.

                    The nth term of an arithmetic sequence with first term                    and common difference d is given by:

**=****+ d( n – 1 )**

Only plug in numbers for d and the first term in the sequence. In this formula, ***d*** stands for the ***common difference***. To find ***d***, calculate the following: ***second term minus the first term***.

To find a specific term, just plug in the number of the term that is being asked. For example, to find the 20th then plug in 20 for n.

***Steps to writing a rule for the nth term of the arithmetic sequence and finding a specific term:***

1. First, find  and d and plug these into the appropriate place in the formula.
2. Then distribute and combine like terms
3. To find a specific term just plug in the number of the term you are looking for

***Example 1***:  7, 4, 1, - 2, - 5, …

D= second number – first number= 4 – 7 = - 3 (d is negative because counting backwards)

                                                                         1 – 4 = - 3

                                                                       -2 – 1 = - 3

                                                                        -5 - - 2= - 3

**= 7**

**= 7 + - 3(n – 1)**

**If distribute the – 3, then****= 7 + - 3n + 3. Now combine like terms of 7 and 3**

**= - 3n + 10**

**If finding the 11th term, then this means n = 11: So, make a substitution (everywhere there is an n, replace it with 11**

**So:****= 7 + - 3 (11 – 1)**

**= - 23**

***Recursive Rule:*** ***= 7***

***=******+ d so******=******+ - 3***

***Example 2:*** 4, 6, 8, 10, 12, …

D= second number – first number= 6 – 4 = 2 (d is positive because counting forwards)

                                                                 8 – 6 = 2

                                                                 10 – 8 = 2

                                                                 12 – 10 = 2

**= 4**

**= 4 + 2(n – 1)**

**If distribute the 2, then****= 4 + 2n - 2. Now combine like terms of 4 and -2**

**= 2n + 2**

**If finding the 15th term, then this means n = 15: So, make a substitution (everywhere there is an n, replace it with 11**

**So:****= 4 + 2 (15 – 1)**

**= 32**

***Recursive Rule:*** ***= 4***

***=******+ d so******=******+ 2***

Geometric Sequences:

* The second type of explicit sequence is ***geometric sequences*** which is a sequence in which the pattern of the sequence is being multiplied. The formula is as follows:

 To find the ***common ratio*** calculate the following: ***second term divided by the first term***.

***Steps to writing a rule for the nth term of the geometric sequence and finding a specific term:***

In this formula, remember ***r***represents the common ratio and can be found by the following:  ***second term divided by the first term.***This will be plugged in for ***r.***The first number in the list will be plugged in for  To find a specific term, just plug in the number of the term that is being asked for the ***n***. For example, to find the 20th then plug in 20 for n. Last, enter this information in the calculator to get the final answer.

***Example 1***: 4, 12, 36, 108, …

Find the common ratio which is  =  =  =  = 3 = r

 = 4

 = 4:



To find the fifth term, plug in 5 for n: So,  so  = 324

***Recursive Rule:*** ***= 4***

***= r******so******=***

***Example 2***: 2, - 4, 8, - 16 …

Find the common ratio which is  =  =  =  = - 2 = r

 = 2

 = 2:



To find the sixth term, plug in 6 for n: So,  so  = - 64

***Recursive Rule:*** ***= 2***

***= r******so******=***

Please do not hesitate to email us with questions or concerns.

Have a blessed evening!

Thanks,

Mrs. Crawford

Sprayberry High School

Special Education Teacher