Review Name_____

Unit 10 Summative

Assessment

10.1 I can differentiate between a sequence and a series

a) explain the difference between a sequence and a series

b) give an example of an arithmetic sequence

c) give an example of a geometric sequence

d) give an example of an arithmetic series

e) give an example of a geometric series

10.2 I can find the nth term of an arithmetic sequence

Find the nth term of the following:

1) n=32 of -19, -4, 11, 26,...

2) n=28 of -11, -13, -15, -17,...

3) n=73 of 9,6,3,0,...

4) n=47 of 1/7, 3/7, 5/7, 1,...

5) Find the 100th term of this arithmetic sequence

14, 18, 22, 26,...

6) The first term of an arithmetic sequence is -25 and the constant difference is d_1. The first term of another sequence is 80 and its constant difference is d_2. If the 15th term of both sequences are the same, what must be true about d_1 and d_2.

10.3 I can find the nth term of a geometric sequence

1) n=13 of 2,-4,8,-16,...

2) n=137 of -1,1,-1,1,-1,...

3) n=11 of 5,35,245,1715,...

4) n=8 of 64, 32,16,8,4,...

5)

10.4 I can find the sum of a finite arithmetic series

1) This table shows some terms of an arithmetic sequence. The sum of the first n terms is 810. What is the nth term?

n	1	2	3	4	5	6	7
a_n		54			63		69

2) What is the sum of the arithmetic sequence a, b, c, d, e in terms of a, b, c, and d?

3) On the first of every month, a store receives a new shipment of 1250 boxes of cereal. If the store starts with 671 boxes of cereal, how many boxes of cereal will it have at the end of 4 years assuming it has sold no boxes?

4) For the arithmetic sequence $\{a_n\}$, $a_5=18$ and $a_8=72$. Find the sum of the first 12 terms.

5) Find the sum of the series

$$\sum_{x=1}^{45} 3x-2$$

10.5 I can find the sum of a finite geometric series

1) $\sum_{n=15}^{20} n^3 - n^2$

2) $\sum_{n=3}^{7} n^3$

3) Find the sum of the first 30 terms of the series
64+32+16+8+...

4) Find n given that S_n=3280 for the series
1+3+9+27+...

5) Find the sum of the first 12 terms of the series
8+40+200+1000+...

10.6 I can write a rule for a sequence

1) Write a rule for the arithmetic sequence where $a_3=12$ and $a_7=28$

2)Write a rule for -3, 6,-12,24,-48...

3) Write a rule for the nth term of a geometric sequence where $a_2=10$ and $a_5=1/100$

4)Write a rule for 6.6, 5.4, 4.2, 3.0, ...

5) Write a rule for for the sequence 8,4,2,1,.5,...

10.7 I can find the position of a given term of an arithmetic sequence

1) An arithmetic sequence has a constant difference of 6b and a first term of x. The nth term has a value of 54. What is the value of n?

2) Given an arithmetic sequence where $a_1=5$, $a_5=25$, and $a_n=155$, what is the value of n?

3) Given an arithmetic sequence where $a_1=3$, $d=7$, and $a_n=52$, what is the value of n?

4) Given an arithmetic sequence where $a_1=4$, $d=-6$, and $a_n=-602$, what is the value of n?

5) Given an arithmetic sequence where $a_1=6$, $a_3=14$, and $a_n=102$, what is the value of n?

10.8 I can find the position of a given term of a geometric sequence

1) Tyler starts with $3 on day one and doubles his money every day thereafter. On which day will he first have more than $20,000?

2) Given a geometric sequence with $a_1=3$, $r=2$, and $a_n= 384$, what is the value of n?

3) Given a geometric sequence with $a_1=800$, $r=1/2$, and $a_n= 6.25$, what is the value of n?

4) Given a geometric sequence with $a_1=2$, $a_3=8$, and $a_n= 1024$, what is the value of n?

5) Given a geometric sequence with $a_1=3$, $r=-2$, and $a_n= 49152$, what is the value of n?

Unit 10 Review

1) Evaluate $\sum_{x=1}^{15}(8-5x)$

2) Use sigma notation to represent this sum

19+21+23+25+...+77

3) Evaluate $\sum_{x=1}^{20}(507-2x)$

4) Evaluate $\sum_{x=1}^{39}(2x+9)$

5) Write in sigma notation 1+1/3+1/9+1/27

Unit 10 Review

10.10 I can use sequences and series to solve real-world problems

1) In the first year, the tuition at a college is $5,225. If the tuition increases by $327 per year, how much will tuition be in the 10th year?

2) In her garden, Bailey is creating a brick mocaic in a trapezoidal shape. The pattern has 8 rows. The first row has 5 bricks, and the last row has 28 bricks. Given that Bailey's pattern follows an arithmetic sequence, how many bricks does she need? (note: partial bricks are allowed)

3) Jacob and Brant are each creating a trapezoidal brick patio in their gardens. In total, Jacob uses twice the bricks that Brant uses. The first row of Brant's garden has 6 bricks and the last row has 32 bricks, with n rows. Given that the pattern follows an arithmetic sequence, how many bricks are in Jacob's garden?

4) A career advisor tells Tay that an architect earns $53,913 for the first year, and there is a 2% annual increase. If Tay takes a job as an architect, what will be her highest annual salary after working for a total of 32 years?

5) Michael is starting a new workout program where he completes 3 more pull-ups than the day before. If he starts with 7 pull-ups, how many will he do in the 15th day?

Albert is choosing between two jobs. For job a, he would earn $32,000 the first year and each year after receive a raise of $2750. For job B, he would earn $35,000 and each year get a pay raise of 4% of the previous year's salary

a) What is the first year where Albert's salary for job A would exceed that of job b? show the computations you used to make your decision and explain how you found your answer.

b) For which year would the total amount earned since starting job A first exceed the total amount earned since starting job B? Show the computations you used to make your decision, and explain how you found your answer.

c) Using sequence and series formulas, what would Albert's yearly salary and total amount of money earned be after 20 years at Job A? What would her yearly salary and total amount of money earned be after 20 years at job B? show your work, and explain how you found your answer.