Name _____ Date _____ Class _____

CHAPTER 12

Chapter Test

Form A

Select the best answer.

1. What are the first 5 terms of the sequence where $a_1 = 2$ and $a_n = -2a_{n-1}$?

A 2, 4, 8, 16, 32

B 2, −4, 8, −16, 32

C −2, 4, −8, 16, −32

2. A company is tracking the number of complaints received.During the first 4 months, they record the following numbers of complaints: 20, 25, 30, and 35. Which is a possible explicit rule for the number of complaints they will receive in the *n*th month?

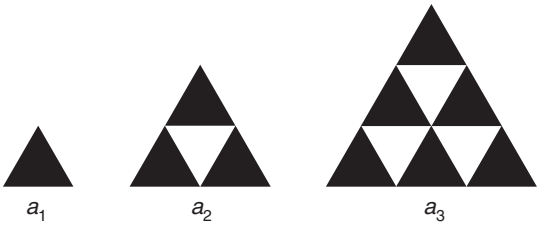
A $a_n = 20n + 5$ **B** $a_n = 15 + 5n$

3. Jeremiah puts $950 in a savings account earning 5% compounded annually. If he doesn't withdraw or make any more deposits, approximately how much is his savings account worth after 3 years?

A $995 **C** $1100

B $1092

4. How many black triangles are in the next two iterations of the sequence shown below?



A 6, 9 **C** 10, 15

B 9, 12

5. Which is summation notation for the series 2 + 4 + 8 + 16?

A $\sum_{k=1}^{4} 2k$ **B** $\sum_{k=1}^{4} 2^k$

6. The first day, Jervaise's paper route took 100 minutes to complete. Each day takes 10% less than the day before. How many minutes, total, does Jervaise work during the first 3 days?

A 90 **C** 271

B 270

7. Evaluate $\sum_{k=1}^{11} 4$.

A 4 **C** 44

B 11

8. Brittany has a 25 page report to write. If every day she writes 20% of the pages that remain unwritten, how many pages will she write in 2 days?

A 5 **C** 9

B 8

9. Evaluate $\sum_{k=1}^{4} (2)^{k-1}$.

A 8 **C** 16

B 15

10. Kieran practices piano 30 minutes the first day and adds 10 minutes each day thereafter. How many minutes does Kieran practice, total, over 4 days?

A 150 **B** 180

11. Valentine increases the number of books she reads by the same amount each month. If she reads 4 books in the second month and 8 books in the sixth month, how many books does she read in the third month?

A 5 **C** 7

B 6

Name _____ Date _____ Class _____

CHAPTER 12

Chapter Test

Form A continued

12. What is the common difference of the sequence 3, 4.5, 6, 7.5, …?

A 1.5 **C** 3

B 2

13. What is S_6 for the arithmetic series $4 + 4.2 + 4.4 + 4.6 + 4.8 + \ldots$?

A 5 **B** 27

14. A new restaurant has only 20 customers during their first week open. If they increase the number of customers by 15% each week, approximately how many customers will they have during the eighth week?

A 44 **C** 61

B 53

15. What is the geometric mean of 4 and 16?

A ± 8 **B** ± 10

16. What is the common ratio of the geometric sequence $3, \frac{3}{2}, \frac{3}{4}, \frac{3}{8}, \ldots$?

A $\frac{1}{3}$ **C** $\frac{3}{2}$

B $\frac{1}{2}$

17. Marsha saves $92 during her first month at a new job. If she increases the amount she saves by 20% each month, how much will she have saved after 3 months?

A $312.80 **B** $334.88

18. What is the sum of the geometric series $\sum_{m=1}^{3} 2(3)^{m-1}$?

A 15 **C** 26

B 18

19. A scouting troop eats 64 hot dogs on the first night of their camping trip. They eat only half as many as the night before each night. If the trip last 6 days, how many hot dogs do they eat in all?

A 126 **B** 224

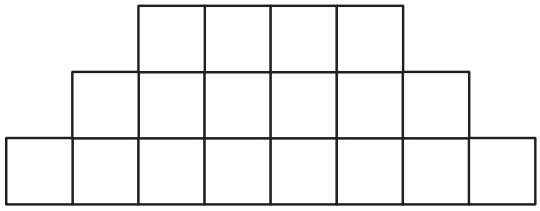
20. Which of the following series diverges?

A $10 + 5 + 2.5 + 1.25 + \ldots$

B $100 + 90 + 81 + 72.9 + \ldots$

C $10 + 15 + 22.5 + 33.75 + \ldots$

21. If you follow the pattern below, how many boxes will you use to complete the display?



A 18 **C** 24

B 20

22. Evaluate $\sum_{q=1}^{\infty} \left(\frac{1}{2}\right)^{q}$.

A 1 **B** 2

23. Which is a counterexample that disproves $3n < 3^n$?

A $n = -1$ **C** $n = 1$

B $n = 0$

24. An infinite geometric series has a sum of 10 and a common ratio of 0.5. What is the first term of the series?

A 1 **C** 20

B 5

CHAPTER 12

Chapter Test Form A: Multiple Choice

1. B
2. B
3. C
4. C
5. B
6. C
7. C
8. C
9. B
10. B
11. A
12. A
13. B
14. B
15. A
16. B
17. B
18. C
19. A
20. C
21. B
22. A
23. C
24. B