_____ 1. What is the sum of $\sum\limits_{n=1}^{61}(0.2n + 2.6)$?

    a. 451.4   c. 536.8
    b. 528   d. 1073.6

Write the letter for the correct answer in the blank at the right of each problem.

_____ 2. Express the series $5 + 9 + 13 + ... + 101$ using sigma notation.

    a. $\sum\limits_{n=1}^{\infty}(4n + 1)$ c. $\sum\limits_{n=1}^{25}(4n - 1)$

    b. $\sum\limits_{n=1}^{25}(4n + 1)$ d. $\sum\limits_{n=1}^{24}(4n + 1)$

_____ 3. Find the next two terms of the sequence $8, 2, -4, ...$.
    a. -8, -12   c. 10, 16
    b. -10, -16   d. -6, -8

_____ 4. Find the fifth term in the sequence 11, -44, 176, ...
    a. -2816   c. 704
    b. -704   d. 2816

_____ 5. The next term in the Fibonacci sequence $1, 1, 2, 3, 5, ...$ is _____.
    a. 6   c. 8
    b. 7   d. 15

_____ 6. Find the 15th term in the arithmetic sequence $14, 10.5, 7, ...$.
    a. -63   c. 63
    b. -35   d. 66.5

_____ 7. In an arithmetic sequence, what is d if a_1 is 13 and $a_{71} = 223$?
    a. -3   c. 3
    b. 6   d. -2

_____ 8. Find the sum of the first 20 terms in the arithmetic series $14 + 3 - 8 + ...$.
    a. -1810   c. 195
    b. -195   d. 1810

____ 9. **SALARY** An employee agreed to a salary plan where his annual salary increases by the same amount each year. If he earned $49,310 for the fourth year and $65,310 for the ninth year, how much was his pay for the first year?

a. $18,200   c. $42,910
b. $39,710   d. $46,110

____ 10. Which are the two geometric means between 2 and -1024?

a. -8, 8   c. -16, 128
b. -6, -14   d. 255.5, 511

____ 11. **APPRECIATION** Each year, the value of an antique increases by 6%. If the antique was worth $1600 in 2009, what will its value be in 2015?

a. $1174.25   c. $2141.16
b. $1677.22   d. $2269.63

____ 12. What is the third term in the expansion $(x + 4y)^4$?

a. $64y^3$ c. $96x^2y^2$
b. $48x^2y^2$ d. $256xy^3$

____ 13. The expression $32x^5 + 80x^4 + 80x^3 + 40x^2 + 10x + 1$ is the expansion of which binomial?

a. $(2x + 1)^5$ c. $(2x + 2)^5$
b. $(x + 2)^5$ d. $(2x - 1)^5$

____ 14. Find the sum of the geometric series.

$$14 - 7 + \frac{7}{2} - \frac{7}{4} + \ldots$$

a. $\dfrac{7007}{13}$ c. $\dfrac{28}{3}$

b. 2002 d. $\dfrac{5005}{7}$

____ 15. Find $\displaystyle\sum_{k=1}^{6}(8k + 2)$.

a. $10 + 18 + 26 + 34 + 42$; 180   c. $10 + 18 + 26 + 34 + 42$; 50
b. $18 + 26 + 34 + 42 + 50$; 10   d. $10 + 18 + 26 + 34 + 42 + 50$; 180

____ 16. 5th partial sum of $a_n = \dfrac{5n + 1}{n}$.

a. $1637/60$ c. $5129/120$
b. $265/12$ d. $5263/140$

___ 17. Find $\sum_{k=5}^{10}(5k+3)$.

    a. $33+38+43+48+53; 28$ c. $28+33+38+43+48+53; 243$

    b. $28+33+38+43+48; 53$ d. $28+33+38+43+48; 243$

___ 18. Write an arithmetic sequence that has three arithmetic means between 155 and 215.

    a.   155, 170, 185, 200, 215   c.   155, 165, 175, 185, 215

    b.   155, 200, 185, 170, 215   d.   155, 175, 195, 205, 215

Find the next four terms of each arithmetic sequence.

___ 19. −36, −53, −70,

    a.   1190, −20230, 343910, −5846470   c.   −104, −138, −172, −206

    b.   −78.5, −87, −95.5, −104   d.   −87, −104, −121, −138

Write an recursive formula for finding the nth term of each arithmetic sequence.

___ 20. −17.5, −32.25, −47, …

    a. $a_1=-47, a_n=a_{n-1}-14.75$ c. $a_1=-17.5, a_n=a_{n-1}-14.75$

    b. $a_1=-61.75, a_n=a_{n-1}+14.75$ d. $a_1=-17.5, a_n=a_{n-1}+14.75$

___ 21. An airplane is traveling due east. After the first hour of the trip, it reaches a constant speed. The total distances traveled by the airplane after the first, second, and third hours are 435, 1080, and 1725 miles respectively. If the airplane continues to travel at a constant velocity, calculate the total distance traveled by the airplane after the tenth hour.

    a.   4350 miles   c.   5805 miles

    b.   6240 miles   d.   6885 miles

___ 22. Two elevators begin descending from the same height. Elevator A has descended 4 feet after one second, 9 feet after two seconds, 14 feet after three seconds, and so on. Elevator B has descended 3.5 feet after one second, 6.5 feet after two seconds, 9.5 feet after three seconds, and so on. How many feet would each elevator descend in 10 seconds?

    a.   A: 54 ft; B: 33.5 ft   c.   A: 59 ft; B: 36.5 ft

    b.   A: 85 ft; B: 72 ft   d.   A: 49 ft; B: 30.5 ft

___ 23. Find S_n if $a_1=22, d=-11,$ and $n=20$.

    a.   −1870   c.   2310

    b.   −3300   d.   −1650

____ 24. Find the next term of the geometric sequence.

7, –35, 175, –875...

a. –700   c. 4,498
b. 4,275   d. 4,375

Write a recursive formula for finding the nth term of each geometric sequence.

____ 25. 5, 40, 320

a. $a_1 = 5, a_n = 8a_{n-1}$ c. $a_1 = 320, a_n = 8a_{n-1}$
b. $a_1 = 40, a_n = 8a_{n-1}$ d. $a_1 = 5, a_n = 8a_{n-2}$

____ 26. One minute after it is released, a hot-air balloon rises 120 feet. In each succeeding minute, the balloon rises only 60% as far as it rose in the previous minute. How far will the balloon rise in the fourth minute?

a. 15.552 ft   c. 25.92 ft
b. 0.216 ft   d. 121.8 ft

____ 27. Find the sum of an infinite geometric series in which $a_1 = 26$ and $r = -0.04$.

a. 25   c. 27.08
b. 26.4   d. 51

____ 28. Use Pascal's Triangle to expand $(3k - y)^5$.

a. $243k^5y - 405k^4y + 270k^3y^2 + 90k^2y^3 + 15ky^4 - 3ky^5$
b. $243k^5 - 405k^4y + 270k^3y^2 - 90k^2y^3 + 15ky^4 - y^5$
c. $243k^5 - 648k^4y + 270k^3y^2 - 90k^2y^3 + 24ky^4 - y^5$
d. $1215k^5 - 405k^4y + 270k^3y^2 - 90k^2y^3 + 15ky^4 - 5y^5$

____ 29. Find the seventh term of the expansion of $(8x + 2y)^{11}$.

a. $330 (2x)^6 (8y)^5$ c. $462 (8x)^4 (2y)^5$
b. $462 (8x)^5 (2y)^6$ d. none of these

Find the coefficient of the indicated term in each expansion.

____ 30. $(5x - 4y)^5, x^3y^2$ term

a. 60
b. 20000
c. 2000
d. 120000

31. Find the sixth term of the sequence $a_n = n^2 - n$.

32. Does the sequence 8, 6, 4, 2, ... *converge* or *diverge* ?

33. Find the sum of the series $\displaystyle\sum_{n=1}^{6} 2^{n-4}$.

34. Find the common difference of the sequence 19.82, 28.39, 36.96, ...

35. If $a_1 = 1000$ and $d = -4$, find a_{52}.

36. Find S_{22} of the series $0 + 1.3 + 2.6 + ...$.

37. Use Pascal's triangle to expand $(h + k)^4$.

38. Use the Binomial Theorem to find the coefficient for the fourth term of the expansion of $(3z - d)^8$.

Find the specified term of each sequence.

39. 5th term, $a_n = a_{n-1} - 4$, $a_1 = -4$

40. Aponi has joined a new job. She is paid $9.75 an hour for the first year. She has been told that at the beginning of every year, she will receive a raise of $1.00 an hour. What will her hourly wage be during the fourth year?

AFM: Sequences & Series Test Review
Answer Section

MULTIPLE CHOICE

    1. ANS: C

    2. ANS: B

    3. ANS: B

    4. ANS: D

    5. ANS: C

    6. ANS: B

    7. ANS: C

    8. ANS: A

    9. ANS: B

  10. ANS: C

  11. ANS: D

  12. ANS: C

  13. ANS: A

  14. ANS: C   DIF: Average   REF: Lesson 10-1

  15. ANS: D   DIF: Average   REF: Lesson 10-1

  16. ANS: A   DIF: Average   REF: Lesson 10-1

  17. ANS: C   DIF: Average   REF: Lesson 10-1

  18. ANS: A   DIF: Average   REF: Lesson 10-2

  19. ANS: D   DIF: Basic   REF: Lesson 10-2

  20. ANS: C   DIF: Average   REF: Lesson 10-2

  21. ANS: B   DIF: Average   REF: Lesson 10-2

  22. ANS: D   DIF: Average   REF: Lesson 10-2

  23. ANS: D   DIF: Average   REF: Lesson 10-2

24. ANS: D   DIF: Basic   REF: Lesson 10-3

25. ANS: A   DIF: Average   REF: Lesson 10-3

26. ANS: C   DIF: Average   REF: Lesson 10-3

27. ANS: A   DIF: Basic   REF: Lesson 10-3

28. ANS: B   DIF: Advanced   REF: Lesson 10-5

29. ANS: B   DIF: Average   REF: Lesson 10-5

30. ANS: B   DIF: Advanced   REF: Lesson 10-5

SHORT ANSWER

31. ANS:
    30

32. ANS:
    diverge

33. ANS:
    7.875

34. ANS:
    8.57

35. ANS:
    796

36. ANS:
    300.3

37. ANS:
    $h^4 + 4h^3k + 6h^2k^2 + 4hk^3 + k^4$

38. ANS:
    −13,608

39. ANS:
    −20

    DIF: Average   REF: Lesson 10-1

40. ANS:
    $12.75

    DIF: Basic   REF: Lesson 10-2