ALBERTA MATH 20-1 · UNIT 1 · 25 QUESTIONS

Sequences and Series — Practice Test

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, use the Flag a mistake button to let Brett know so he can fix it.

1 **The common difference of the arithmetic sequence 7, 13, 19, 25, … is**

- **A** 5
- **B** 20
- **C** 6
- **D** 7

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2 **An arithmetic sequence has first term 4 and common difference 3. The general term of the sequence is**

- **A** $t_n = 3n + 4$
- **B** $t_n = 4n + 3$
- **C** $t_n = 3n - 1$
- **D** $t_n = 3n + 1$

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3 **The 15th term of the arithmetic sequence 3, 8, 13, … is**

A 73

B 68

C 78

D 75

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4 **The 6th term of the geometric sequence 5, 15, 45, … is**

A 405

B 3645

C 243

D 1215

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5 **The sum of the first 20 terms of the arithmetic sequence 2, 5, 8, … is _____.**

ANSWER

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6 **An arithmetic sequence has $t_1 = 9$ and common difference -2. If $t_n = -31$, then the value of n is**

A 19

B 21

C 20

D 22

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7 **The two arithmetic means between 8 and 29 are**

- A 13 and 20
- B 14 and 21
- C 15 and 22
- D 16 and 23

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8 **The sum of the first 6 terms of the geometric series 3 + 6 + 12 + … is**

- A 189
- B 96
- C 381
- D 192

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9 The sum of the infinite geometric series with $t_1 = 12$ and common ratio $\frac{1}{4}$ is

- **A** undefined, since the series diverges
- **B** 9
- **C** 15
- **D** 16

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10 A ball is dropped from a height of 12 m. Each time it bounces, it rebounds to $\frac{3}{4}$ of its previous height. The total distance travelled by the ball, in metres, until it comes to rest is ____.

ANSWER _____

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11 **In an arithmetic sequence, $t_4 = 17$ and $t_{10} = 41$. The first term of the sequence is**

- A 3
- B 7
- C 5
- D 9

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12 **The number of terms of the arithmetic series 3 + 7 + 11 + … that are needed for the sum to equal 351 is**

- A 13
- B 12
- C 15
- D 14

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13 **In a geometric sequence, $t_3 = 36$ and $t_6 = 972$. The common ratio of the sequence is**

A 2

B 4

C 9

D 3

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14 **Maya earns a starting salary of $42 000 in her first year of work. Her salary increases by $1 800 each year. Her total earnings, in dollars, over 12 years are ____.**

ANSWER _____

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15 **A car originally worth $28 000 depreciates by 15% of its value each year. The value of the car, to the nearest dollar, after 6 years is**

- A $8 976
- B $12 424
- C $10 560
- D $14 880

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16 **A bacteria culture starts with 500 bacteria and triples every 4 hours. The number of bacteria in the culture after 24 hours is**

- A 364 500
- B 121 500
- C 1 093 500
- D 1 458 000

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17 **The sum of the first n terms of the geometric series 4 + 12 + 36 + … is**

- **A** $S_n = 4(3^n - 1)$
- **B** $S_n = 2(3^n + 1)$
- **C** $S_n = 6(3^n - 1)$
- **D** $S_n = 2(3^n - 1)$

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18 **A geometric sequence has $t_1 = 27$ and $t_3 = 3$, where the common ratio is positive. The sum of the infinite geometric series is ____.**

ANSWER _____

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19 The 5th term of a geometric sequence is 96 and the 8th term is 768. The first term of the sequence is

- A 3
- B 6
- C 12
- D 24

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20 The number of terms of the geometric series 2 + 6 + 18 + … that are needed for the sum to equal 242 is ____.

ANSWER _____

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21 A theatre has 18 rows of seats. The first row has 24 seats, and each row after the first has 3 more seats than the row in front of it. The total number of seats in the theatre is ____.

ANSWER _____

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22 If 2x, x + 4, and 3x - 2 are consecutive terms of an arithmetic sequence, then the value of x is

A 2

B $\frac{10}{3}$

C 4

D 5

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23 The geometric mean that can be inserted between 4 and 25 is

A 10

B ± 10

C -10

D $\frac{29}{2}$

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24 **A sequence is defined by $t_1 = 3$ and $t_n = 2t_{n-1} + 1$ for $n \geq 2$. The value of t_5 is ____.**

ANSWER

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25 **On its first swing, a pendulum travels an arc of 40 cm. Each swing after the first travels 85% of the arc of the previous swing. The total distance, to the nearest centimetre, that the pendulum travels before coming to rest is**

A 267 cm

B 235 cm

C 320 cm

D 400 cm

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ANSWER KEY

1. C
2. D
3. A
4. D
5. 610
6. B
7. C
8. A
9. D
10. 84
11. C
12. A
13. D
14. 622800
15. C
16. A
17. D
18. 40.5
19. B
20. 5
21. 891
22. B
23. B
24. 63
25. A

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