



MATHS

BOOKS - VGS BRILLIANT MATHS (TELUGU ENGLISH)

PROGRESSIONS

Examples

1. For the AP: $\frac{1}{4}, \frac{-1}{4}, \frac{-3}{4}, \frac{-5}{5}, \dots$, write the first term a and the common difference d . And find the 7^{th} term.



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2. Which of the following forms an AP? If they form AP, then write next two terms.

(i) 4,10,16,22

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3. Which of the following forms an AP? If they form AP, then write next two terms.

(ii) $1, -1, -3, -5, \dots$

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4. Which of the following forms an AP? If they form AP, then write next two terms.

(iii) $-2, 2, -2, 2, -2, \dots$

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5. Which of the following forms an AP? If they form AP, then write next two terms.

(iii) $1, 1, 1, 2, 2, 2, 3, 3, 3, \dots$

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6. Which of the following forms an AP? If they form AP, then write next two terms.

(v) $x, 2x, 3x, 4x, \dots$

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7. Find the 10^{th} term of the AP: 5,1,-3,-7

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8. Which term of the AP: 21,18,15, Is -81? Is there any term 0? Give reason for your answer.

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9. Determine the AP whose 3^{rd} term is 5 and the 7^{th} term is 9.



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10. Check whether 301 is a term of the list of numbers 5, 11, 17, 23,



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11. How many two-digit numbers are divisible by 3?



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12. Find the 11th term from the last of the A.P series given below:

A.P : 10, 7, 4,, -62



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13. A sum of Rs. 1000 is invested at 8% simple interest per year. Calculate the interest at the end of each year. Do these interests form an AP? If so,

find the interest at the end of 30 years.

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14. If a flower bed, there are 23 rose plants in the first row, 21 in the second, 19 in the third, and so on. There are 5 rose plants in the last row. How many rows are there in the flower bed?

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15. If the sum of the first 14 terms of an AP is 1050 and its first term is 10, find the 20th term.

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16. How many terms of the AP : 24, 21, 18 Must be taken so that their sum is 78 ?

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17. Find the sum of :

(i) The first 1000 positive intergers .



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18. Find the sum of :

(ii) the first n positive intergers .



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19. Find the sum of first 24 terms of the list of numbers whose n^{th} terms is given by $a_n = 3 + 2n$

(A). 672

(B). 682

(C).627

(D).0



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20. A manufacturer of TV sets produced 600 sets in the third year and 700 sets in the seventh year. Assuming that the production increase uniformly by a fixed number every year, find :

(i) the production in the 1st year.

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21. A manufacturer of TV sets produced 600 sets in the third year and 700 sets in the seventh year. Assuming that the production increase uniformly by a fixed number every year, find :

(ii) the production in the 10th year.

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22. A manufacturer of TV sets produced 600 sets in the third year and 700 sets in the seventh year. Assuming that the production increase

unifformly by a fixed number every year, find :

(iii) the total production in first 7 years

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23. Write the G.P. if the first term $a=3$, and the common ratio $r=2$.

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24. Write G.P. if $a = 256$, $r = \frac{-1}{2}$.

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25. Find the common ratio of the G.P.

25, - 5, 1, $\frac{-1}{5}$.

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26. Which of the following list of number form G.P. ?

(i) 3, 6, 12,



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27. Which of the following list of number form G.P. ?

(ii) 64, -32, 16,



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28. Which of the following list of number form G.P. ?

(iii) $\frac{1}{64}, \frac{1}{32}, \frac{1}{8}, \dots$



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29. Find the 20^{th} and n^{th} term of the G.P.

$\frac{5}{2}, \frac{5}{4}, \frac{5}{8}, \dots$



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30. Which term of the G.P.

$2, 2\sqrt{2}, 4, \dots$ Is 128?



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31. In a GP the 3^{rd} term is 24 and 6^{th} term is 192. find the 10^{th} term.



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Do These

1. Write three examples for finite A.P and three for infinite A.P.



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2. Take any Arithmetic progression.

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3. Add a fixed number to each and every term of A.P. Write the resulting numbers as a list.

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4. Similarly subtract a fixed number from each and every term of A.P. Write the resulting numbers as a list.

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5. Multiply and divide each term of A.P. by a fixed number and write the resulting numbers as a list.

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6. 5,x,10 are in G.P then x=



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7. 8,x,10 are in G.P then x=



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8. Find the sum of indicated number of terms in each of the following

A.Ps.

(i) 16, 11, 6,, 23 terms.



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9. Find the sum of indicated number of terms in each of the following

A.Ps.

(ii) $-0.5, -1.0, -1.5, \dots, 10$ terms.



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10. Find the sum of indicated number of terms in each of the following

A.Ps.

(iii) $-1, \frac{1}{4}, \frac{3}{2}, \dots, 10$ terms.



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11. Find which of the following are not G.P.

(i) $6, 12, 24, 48, \dots$



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12. Find which of the following are not G.P.

(ii) $1, 4, 9, 16, \dots$



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13. Find which of the following are not G.P.

(iii) 1, -1, 1, -1,.....



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14. Find which of the following are not G.P.

(iv) $-4, -20, -100, -500, \dots$



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Try These

1. Which of these are arithmetic progressions and why?

(i) 2,3,5,7,8,10,15,



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2. Which of these are arithmetic progressions and why?

(ii) 2,5,7,0,12,15,....



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3. Which of these are arithmetic progressions and why?

(iii) $-1, -3, -5, -7, \dots$



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4. Write 3 more Arithmetic Progressions.



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Think And Discuss

1. Think how each of the list given above form an A.P. Discuss with your friends.

(a) Heights (in cm) of some students of a school standing in a queue in the morning assembly are

147, 148, 149,.....,157



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2. Think how each of the list given above form an A.P. Discuss with your friends.

(b) Minimum temperatures (in degree celcius) recorded for a week, in the month of January in a city, arranged in assending order are

$-3.1, -3.0, -2.9, -2.8, -2.7, -2.6, -2.5$



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3. Think how each of the list given above form an A.P. Discuss with your friends.

(c) The balance money (in Rs.) after paying 5% of the total loan of Rs. 1000 every month is

950, 900, 850, 800,,50



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4. Think how each of the list given above form an A.P. Discuss with your friends.

(d) Cash prizes (in Rs.) given by a school to the toppers of classes I to XII are 200, 250, 300, 350,.....,750 respectively.



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5. Think how each of the list given above form an A.P. Discuss with your friends.

(e) Total savings (in Rs.) after every month for 10 month when Rs. 50 are saved each month are 50, 100, 150, 200, 250, 300, 350, 400,450,500.



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6. 5,x,10 are in A.P then $x=$

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7. Make a positive Arithmetic Progression in which the common difference is a small positive quantity.

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8. Make an A.P. in which the common difference is big (large) positive quantity.

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9. Make an A.P. in which the common difference is negative.

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10. Explain why each of the lists above is a G.P.

(i) 1, 4, 16, 64, 256,.....



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11. Explain why each of the lists above is a G.P.

(ii) 550, 605, 665.5,



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12. Explain why each of the lists above is a G.P.

(iii) 256, 128, 64,32,.....



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13. Explain why each of the lists above is a G.P.

(iv) 18, 16.2, 14.58, 13.122



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14. To know about a G.P. What is minimum information that we need?



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Exercise 6 1

1. In which of the following situations, does the list of numbers involved make an arithmetic progression, and why?

(i) The taxi fare after each km when the fare is Rs. 20 for the first km and rises by Rs. 8 for each additional km.



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2. In which of the following situations, does the list of numbers involved make an arithmetic progression, and why?

(ii) The amount of air present in a cylinder when a vacuum pump removes $1/4^{th}$ of the air remaining in the cylinder at a time.

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3. In which of the following situations, does the list of numbers involved make an arithmetic progression, and why?

(iii) The cost of digging a well, after every metre of digging, when it costs Rs. 150 for the first metre and rises by Rs. 50 for each subsequent metre.

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4. In which of the following situations, does the list of numbers involved make an arithmetic progression, and why?

(iv) The amount of money in the account every year, when Rs. 10000 is deposited at compound interest at 8% per annum.

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5. Write first four terms of the AP, when the first term a and the common difference d are given as follows:

(i) $a = 10, d = 12.$



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6. Write first four terms of the AP, when the first term a and the common difference d are given as follows:

(ii) $a = -2, d = 0.$



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7. Write first four terms of the AP, when the first term a and the common difference d are given as follows:

(iii) $a = 4, d = -3.$



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8. Write first four terms of the AP, when the first term a and the common difference d are given as follows:

(iv) $a = -1, d = \frac{1}{2}$.



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9. Write first four terms of the AP, when the first term a and the common difference d are given as follows:

(v) $a = -1.25, d = -0.25$.



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10. For the following A.Ps, write the first term and the common difference:

(i) $3, 1, -1, -3, \dots$



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11. For the following A.Ps, write the first term and the common difference:

(ii) -5,-1,3,7,.....

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12. For the following A.Ps, write the first term and the common difference:

(iii) $\frac{1}{3}, \frac{5}{3}, \frac{9}{3}, \frac{13}{3}, \dots$

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13. For the following A.Ps, write the first term and the common difference:

(iv) 0.6, 1.7, 2.8,3.9,.....

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14. Which of the following are Aps? If they form an AP, find the common difference d and write three more terms.

(i) 2,4,8,16,.....



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15. Which of the following are Aps? If they form an AP, find the common difference d and write three more terms.

(ii) $2, \frac{5}{2}, 3, \frac{7}{2}, \dots\dots\dots$



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16. Which of the following are Aps? If they form an AP, find the common difference d and write three more terms.

(iii) $-1.2, -3.2, -5.2, -7.2, \dots\dots\dots$



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17. Which of the following are Aps? If they form an AP, find the common difference d and write three more terms.

(iv) $-10, -6, -2, 2, \dots$



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18. Which of the following are Aps? If they form an AP, find the common difference d and write three more terms.

(v) $3, 3 + \sqrt{2}, 3 + 2\sqrt{2}, 3 + 3\sqrt{2}, \dots$



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19. Which of the following are Aps? If they form an AP, find the common difference d and write three more terms.

(vi) $0.2, 0.22, 0.222, 0.2222, \dots$



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20. Which of the following are Aps? If they form an AP, find the common difference d and write three more terms.

(vii) $0, -4, -8, -12, \dots$



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21. Which of the following are Aps? If they form an AP, find the common difference d and write three more terms.

(viii) $-\frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}, \dots$



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22. Which of the following are Aps? If they form an AP, find the common difference d and write three more terms.

(ix) $1, 3, 9, 27, \dots$



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23. Which of the following are Aps? If they form an AP, find the common difference d and write three more terms.

(x) $a, 2a, 3a, 4a, \dots$



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24. Which of the following are Aps? If they form an AP, find the common difference d and write three more terms.

(xi) a, a^2, a^3, a^4, \dots



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25. Which of the following are Aps? If they form an AP, find the common difference d and write three more terms.

(xii) $\sqrt{2}, \sqrt{8}, \sqrt{18}, \sqrt{32}, \dots$



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26. Which of the following are Aps? If they form an AP, find the common difference d and write three more terms.

(xiii) $\sqrt{3}, \sqrt{6}, \sqrt{9}, \sqrt{12}, \dots$



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Exercise 6 2

1. For the following A.Ps, write the first term and the common difference:

(i) 6, 2, -2, -6,



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2. Find the

(i) 30th term of the A.P. : 10, 7, 4,



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3. Find the

(ii) 11th term of the A.P. : $-3, \frac{-1}{2}, 2, \dots$



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4. Find the respective terms for the following following Aps.

(i) $a_1 = 2, a_3 = 26$, find a_2 .



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5. Find the respective terms for the following following Aps.

(ii) $a_2 = 13, a_4 = 26$, find a_1, a_3 .



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6. Find the respective terms for the following following Aps.

(iii) $a_1 = 5, a_4 = 9\frac{1}{2}$, find a_2, a_3 .



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7. Find the respective terms for the following APs.

(iv) $a_1 = -4$, $a_6 = 6$, find a_2 , a_3 , a_4 , a_5 .

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8. Find the respective terms for the following APs.

(v) $a_2 = 38$, $a_6 = -22$, find a_1 , a_3 , a_4 , a_5 .

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9. Which term of the AP:

3, 8, 13, 18,, is 78 ?

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10. Find the number of terms in the following AP.

7, 13, 19,205



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11. Find the number of terms in each of the following Aps :

(ii) $18, 15\frac{1}{2}, 13, \dots, -47$



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12. Check whether, -150 is a term of the AP: $11, 8, 5, 2, \dots$



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13. Find the 31^{th} term of an A.P. whose 11^{th} term is 38 and the 16^{th} term is

73.



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14. If the 3rd and the 9th terms of an A.P are 4 and -8 respectively, which term of this A.P is zero?

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15. The 17th term of an A.P exceeds its 10th term by 7. find the common difference.

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16. Two APs have the same common difference. The difference between their 100th terms is 100, what is the difference between their 1000th terms ?

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17. How many three-digit numbers are divisible by 7 ?



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18. How many multiples of 4 lie between 10 and 250?

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19. For what value of n , are the n^{th} terms of two Aps : 63, 65, 67, and 3, 10, 17, equal?

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20. Determine the AP whose third term is 16 and the 7^{th} term exceeds the 5^{th} term by 12.

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21. Find the 20^{th} term from the end of the AP : 3, 8, 13,253.

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22. The sum of the 4^{th} and 8^{th} terms of an AP is 24 and the sum of the 6^{th} and 10^{th} terms is 44. find the first three terms of the AP.

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23. Subba Rao started work in 1995 at an annual salary of Rs. 5000 and received an increment of Rs. 200 each year. In which year did his income reach Rs. 7000 ?

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Exercise 6 3

1. Find the sum of the following APs.

(i) 2, 7, 12,, to 10 terms.

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2. Find the sum of the following APs.

(ii) -37, -33, -29,....., to 12 term.

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3. Find the sum of the following APs.

(iii) 0.6, 1.7, 2.8, to 100 terms.

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4. Find the sum of the following APs.

(iv) $\frac{1}{15}$, $\frac{1}{12}$, $\frac{1}{10}$,, ot 11 terms.

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5. Find the sums given below:

(i) $7 + 10\frac{1}{2} + 14 + \dots + 84.$

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6. Find the sums given below:

(ii) $34 + 32 + 30 + \dots + 10.$

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7. Find the sums given below:

(iii) $-5 + (-8) + (-11) + \dots + (-230)$

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8. In an AP:

(i) Given $a = 5$, $d = 3$, $a_n = 50$, find n and S_n .



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9. In an AP:

(ii) Given $a = 7$, $a_{13} = 35$, find d and S_{13} .



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10. In an AP:

(iii) Given $a_{12} = 37$, $d = 3$, find a and S_{12} .



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11. In an AP:

(iv) Given $a_3 = 15$, $S_{10} = 125$, find d and a_{10} .



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12. In an AP:

(v) Given $a = 2$, $d = 8$, $S_n = 90$, find n and a_n .



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13. In an AP:

(vi) Given $a_n = 4$, $d = 2$, $S_n = -14$, find n and a .



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14. In an AP:

(vii) Given $l = 28$, $S = 144$, and there are total 9 terms. Find a .



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15. The first and the last terms of an A.P. are 17 and 350 respectively. If the common difference is 9, how many terms are there and what is their sum?



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16. Find the sum of first 51 terms of an AP whose second and third terms are 14 and 18 respectively.



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17. If the sum of first 7 terms of an AP is 49 and that of 17 terms is 289, find the sum of first n terms.



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18. Show that $a_1, a_2, \dots, a_n, \dots$ form an AP where a_n is defined as below:

(i) $a_n = 3 + 4n$. Also find the sum of the first 15 terms in each case.



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19. Show that $a_1, a_2, \dots, a_n \dots$ Form an AP where a_n is defined as below:

(i) $a_n = 3 + 4n$, (ii) $a_n = 9 - 5n$

Also find the sum of the first 15 terms in each case.



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20. If the sum of the first n terms of an AP is $4n - n^2$, what is the first term (remember the first term is S_1)? What is the sum of first two terms? What is the second term? Similarly, find the 3^{rd} , the 10^{th} and the n^{th} terms.



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21. Find the sum of the first 40 positive intergers divisible by 6.



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22. A sum of Rs. 700 is to be used to give seven cash prizes to students of a school for their overall academic performance. If each prize is Rs. 20 less than its preceding prize. Find the value of each of prizes.



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23. In a school, students thought of planting trees in an around the school to reduce air pollution. It was decided that the number of trees, that each section of each class will plant, will be the same as the class. In which they are studying e.g., a section of Class I will plant 1 tree, a section of Class II will plant 2 trees and so on till Class XII. There are three sections of each class. How many trees will be planted by the students?



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24. A sprial is made up of successive semicircles, with centres alternately at A and B, starting with centre at A, of radii 0.5 cm, 1.0 cm, 1.5 cm , 2.0 cm, As shown in figure. What is the total length of such a spiral made up of

thirteen consecutive semicircles? (Take $\pi = \frac{22}{7}$)

[Hint : Length of successive semicircles is $l_1, l_2, l_3, l_4, \dots$ with centres at A, B, A, B,, respectively.]



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25. 200 logs are stacked in the following manner : 20 logs in the bottom row, 19 in the next row, 18 in the row next to it and so on. In how many rows are the 200 logs placed and how many logs are in the top row ?



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26. In a bucket and ball race, a bucket is placed at the starting point. Which is 5m from the first ball, and other balls are placed 3m apart in a straight line. There are ten balls in the line.



A competitor starts from the bucket, picks up the nearest ball, runs back with it, drops it in the bucket, runs back to pick up the next ball, runs to

the bucket to drop it in, and she continues in the same way until all the balls are in the bucket. What is the total distance the competitor has to run?

[Hint: To pick up the second ball, the total distance (in metres) run by a competitor is $2 \times 5 + 2 \times (5 + 3)$]

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Exercise 6 4

1. In which of the following situations, does the list of numbers involved in the form a G.P.?

(i) Salary of Sharmila, when her salary is Rs. 5,00,000 for the first year and expected to receive yearly increase of 10%.

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2. In which of the following situations, does the list of numbers involved in the form a G.P.?

(ii) Number of bricks needed to make each step, if the stair case has total 30 steps. Bottom step needs 100 bricks and each successive step needs 2 bricks less than the previous step.



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3. In which of the following situations, does the list of numbers involved in the form a G.P.?

(iii) Perimeter of the each triangle , when the mid-points of sides of an equilateral triangle whose side is 24 cm are joined to form another triangle, whose mid-point in turn are joined to form still another triangle and the process continues indefinitely.



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4. Write three terms of the G.P. when the first term 'a' and the common ratio 'r' are given.

(i) $a = 4, r = 3$



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5. Write three terms of the G.P. when the first term 'a' and the common ratio 'r' are given.

(ii) $a = \sqrt{5}, r = \frac{1}{5}$.



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6. Write three terms of the G.P. when the first term 'a' and the common ratio 'r' are given.

(iii) $a = 81, r = -\frac{1}{3}$.



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7. Write three terms of the G.P. when the first term 'a' and the common ratio 'r' are given.

(iv) $a = \frac{1}{64}, r = 2.$



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8. Which of the following are G.P.? If they are G.P., write three more terms.

(i) 4,8,16,....



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9. Which of the following are G.P.? If they are G.P., write three more terms.

(ii) $\frac{1}{3}, \frac{-1}{6}, \frac{1}{12}, \dots\dots\dots$



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10. Which of the following are G.P.? If they are G.P., write three more terms.

(iii) 5, 55, 555,



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11. Which of the following are G.P.? If they are G.P., write three more terms.

(iv) $-2, -6, -18, \dots$



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12. Which of the following are G.P.? If they are G.P., write three more terms.

(v) $\frac{1}{2}, \frac{1}{4}, \frac{1}{6}, \dots$



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13. Which of the following are G.P.? If they are G.P., write three more terms.

(vi) $3, -3^2, 3^3, \dots$



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14. Which of the following are G.P.? If they are G.P., write three more terms.

(vii) $X, 1, \frac{1}{X}, \dots$

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15. Which of the following are G.P.? If they are G.P., write three more terms.

(viii) $\frac{1}{\sqrt{2}}, -2, \frac{8}{\sqrt{2}}, \dots$

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16. Which of the following are G.P.? If they are G.P., write three more terms.

(ix) $0.4, 0.04, 0.004, \dots$

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17. Find x so that $x, x + 2, x + 6$ are consecutive terms of a geometric progression.



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Exercise 6 5

1. For each geometric progression find the common ratio 'r', and then find a_n .

(i) $3, \frac{3}{2}, \frac{3}{4}, \frac{3}{8}, \dots$



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2. For each geometric progression find the common ratio 'r', and then find a_n .

(ii) $2, -6, 18, -54$



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3. For each geometric progression find the common ratio 'r', and then find a_n .

(iii) $-1, -3, -9, -27, \dots$



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4. For each geometric progression find the common ratio 'r', and then find a_n .

(iv) $-1, -3, -9, -27, \dots$



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5. Find the 10^{th} and n^{th} term of G.P. : 5, 25, 125,.....



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6. Find the indicated term of each geometric progression.

(i) $a_1 = 9, r = \frac{1}{3}$, find a_7 .



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7. Find the indicated term of each geometric progression.

(ii) $a_1 = -12$, $r = \frac{1}{3}$, find a_6 .



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8. Which term of the G.P.

(i) 2, 8, 32,....is 512?



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9. Which term of the G.P.

(ii) $\sqrt{3}$, 3, $3\sqrt{3}$,is 729?



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10. Which term of the G.P.

(iii) $\frac{1}{3}$, $\frac{1}{9}$, $\frac{1}{27}$ is $\frac{1}{2187}$?



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11. Find the 12^{th} term of a G.P. whose 8^{th} term is 192 and the common ratio is 2.

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12. The 4^{th} term of a geometric progression is $\frac{2}{3}$ and the seventh term is $\frac{16}{81}$. Find the geometric series.

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13. If the geometric progressions $162, 54, 18, \dots$ and $\frac{2}{81}, \frac{2}{27}, \frac{2}{9}, \dots$ have their n^{th} term equal, find the value of n .

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Optional Exercise

1. Which term of the AP : 121, 117, 113, , is the first negative term?

[Hint: Find n for $a_n < 0$]



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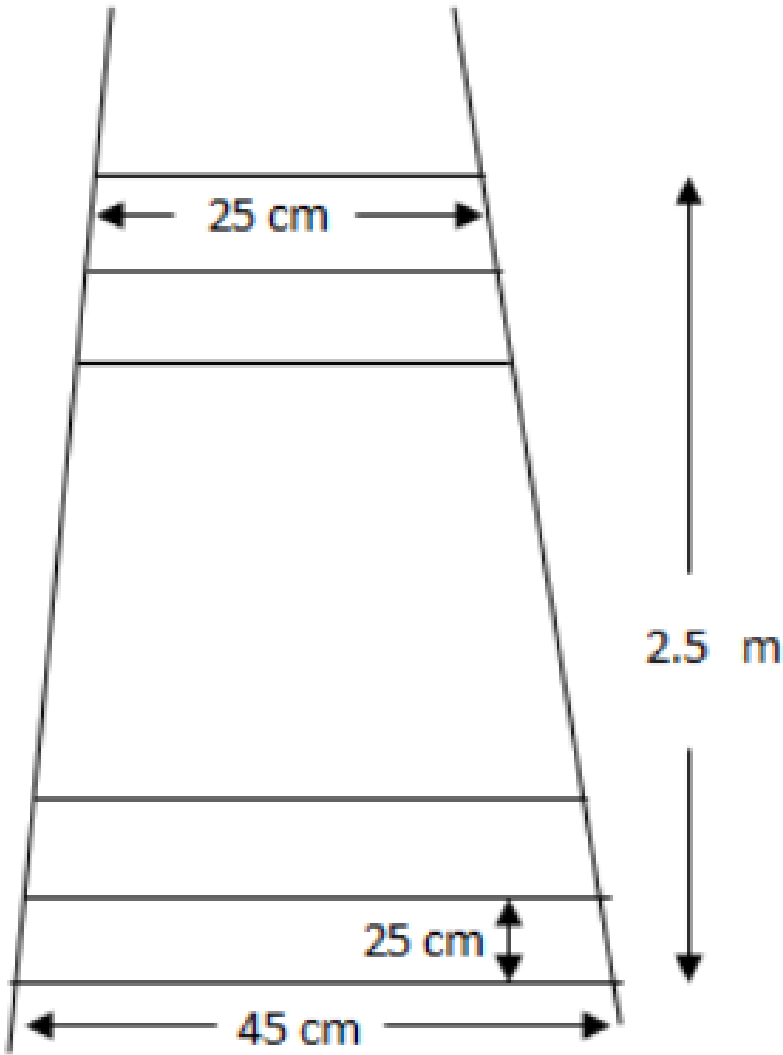
2. The sum of the third and the seventh terms of an AP is 6 and their product is 8. find the sum of first sixteen terms of the AP.



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3. A ladder has rungs 25 cm apart. The rungs decrease uniformly in length from 45 cm at the bottom to 25 cm at the top. If the top and the bottom rungs are $2\frac{1}{2}$ m apart. What is the length of the wood required

for the rungs? [Hint : Number of rungs = $\frac{250}{25} + 1$]



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4. The houses of a row are numbered consecutively from 1 to 49. Show that there is a value of x such that the sum of the numbers of the houses preceding the house numbered x is equal to the sum of the numbers of the houses following it. And find this value of x . [Hint: $S_{x-1} = S_{49} - S_x$]

11



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5. A small terrace at a football ground comprises of 15 steps each of which is 50 m long and built of solid concrete.

Each step has a rise of $\frac{1}{4}$ m and a tread of $\frac{1}{2}$ m. (see Fig.). Calculate the total volume of concrete required to build the terrace.

[Hint : Volume of concrete required to build the first step =

$$\frac{1}{4} \times \frac{1}{2} \times 50m^3]$$



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6. 150 workers were engaged to finish a piece of work in a certain number of days. Four workers dropped from the work in the second day. Four workers dropped in third day and so on. It took 8 more days to finish the work. Find the number of days in which the work was completed.

[Let the no. of days to finish the work is 'x' then

$$150x = \frac{x + 8}{2} [2 \times 150 + (x + 8 - 1)(-4)]$$



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7. A machine costs Rs. 5,00,000. if the value depreciates 15% in the first year, $13\frac{1}{2}\%$ in the second year, 12% in the third year and so on. What will be its value at the end of 10 years, when all the percentages will be applied to the original cost?



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Part A Observation Material To Solve Various Questions Given In The Public Examination 1 Mark Questions

1. Check whether -25 is a term in the progression 5,3,1,, or not?

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2. Find out the common ratio in the GP $2, \sqrt{2}, 4, \dots$

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3. Show that the sum of multiple of 3 between 1 and 100 is 1683.

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4. The hand borewell driller charges Rs. 200 for the first one meter only and raises drilling charges @ 30/- for every subsequent meter. Write a progression for the above data.

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5. Write the common difference of an Arithmetic Progression, whose n^{th} term is given by $t_n = 3n + 7$.

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6. Find the sum of first 200 natural numbers.

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7. Is 'zero' a term of the Arithmetic Progression 31, 28, 25,? Justify your answer.

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8. In a GP. $t_n = (-1)^n \cdot 2017$. find the common ratio.

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9. The n th term of an A.P. is $6n + 2$. Find the common difference. ($x \in \mathbb{N}$)



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10. Is the sequence $\sqrt{3}, \sqrt{6}, \sqrt{9}, \sqrt{12}, \dots$ form an Arithmetic Progression ?

Give reason.



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Part A Observation Material To Solve Various Questions Given In The Public Examination 2 Mark Questions

1. Find the number of terms in the following A.P.

7, 13, 19,205



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2. n^{th} term of an A.P. is a_n . If $a_1 + a_2 + a_3 = 102$ and $a_1 = 15$, then find a_{10} .

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3. How many three digit numbers are divisible by 3?

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4. In a flower garden there are 23 plants in first row, 21 plants in second row, 19 plants in 3rd row and so on. If there are 10 rows in that garden, then find the total number of plants in the last row with the help of the formula $t_n = a + (n - 1)d$

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5. If seven times of 7th term of an Arithmetic Progression is equal to the 11 times of 11th term of it, then find the 18th term of that Arithmetic Progression.



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6. Measures of sides of a triangle are in Arithmetic Progression. Its perimeter is 30 cm, and the difference between the longest and shortest side is 4 cm, then find the measures of the sides.



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7. Explain the terms in the formula.

$$S_n = \frac{n}{2} [2a + (n - 1)d].$$



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8. Find the sum of first 10 terms of an A.P.

3, 15, 27, 39,.....



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9. Find the value of 'k' , so that $k + 2$, $4k - 6$ and $3k - 2$ are the three consecutive terms of an A.P.



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10. Find the 7^{th} term from the end of the Arithmetic Progression.

7, 10, 13,, 184.



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11. If the sum of first 15 terms of an A.P. is 675 and its first term is 10, then find 25th term.



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Part A Observation Material To Solve Various Questions Given In The Public Examination 4 Mark Questions

1. A sum of Rs. 1000 is invested at 8% simple interest per year. Calculate the interest at the end of each year. Do these interests 1^{st} , 2^{nd} and 3^{rd} years form a AP? If so, find the total interest to be paid for 30 years making the use of this fact.



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2. If the sum of first 7 terms and 15 terms of an A.P. are 98 and 390 respectively, then find the sum of first 10 terms.



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3. A manufacture of TV sets produced 500 sets in the third year and 700 sets in the seventh year. Assuming that the production increase uniformly by a fixed number every year. Find.

(i) The production of TV sets in the 15th year.

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4. A manufacture of TV sets produced 500 sets in the third year and 700 sets in the seventh year. Assuming that the production increase uniformly by a fixed number every year. Find.

(ii) The total production of TV sets in the first ten years.

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5. Find the sum of all 3 digit numbers that are divisible by 4.

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6. The sum of the three terms which are in an Arithmetic Progression is 33. If the product of the first and the third terms exceeds the second term by 29, find the Arithmetic Progression.

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7. Find the sum of all three digit natural numbers, which are divisible by 3 and not divisible by 6.

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8. The sum of 5^{th} and 9^{th} terms of A.P. is 72 and the sum of 7th and 12th terms is 97. Find the A.P.

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9. Which term of G.P. : 3, 9, 27, Is 2187?

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10. Find the sum of all two digit positive integers which are divisible by 3 but not by 2?

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11. Check whether -321 is a term of the A.P. : 22, 15, 8, 1,.....

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Creative Questions For Cce Model Examination

1. Find the 13th term of the A.P. 2, 7, 12,

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2. In an A.P. the common difference (d) is 6 and seventh term is 36. Can we write such an A.P.?

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3. The ' n 'th term of a given A.P. is $6n + 2$. Then write the first four terms in it.

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4. In an A.P. the seventh term is 13 and 3rd term is 7. so find ' a ' and ' d ' in the method of elimination.

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5. Which terms are to be known to calculate ' n 'th term of A.P. ?

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6. Establish the relationship between the first and 'n' th term of an A.P. in which 'd' = 0.

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7. What will be the salary of a person in the year 2020, whose salary in the year 2016 is Rs. 10,000, which increases Rs. 1500 every year?

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8. Parking fee for a two wheeler is Rs. 10 per day i.e., for first day, and then after Rs. 2 for everyday. So what will be the amount to be paid for 15 days?

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1. The n th term of a GP = $a_n = ar^{n-1}$ here 'r' denotes

A. Common difference

B. common ratio

C. first term

D. radius

Answer: B



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2. In the formula of n^{th} term of a Geometric Progression

$a_n = a \cdot r^{n-1}$, r denotes

A. Common difference

B. common ratio

C. first term

D. radius

Answer: B



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3. In the formula of n^{th} term of term of a Geometric Progression

$$a_n = a \cdot r^{n-1}, r \text{ denotes}$$

- A. Common difference
- B. common ratio
- C. first term
- D. radius

Answer: B



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4. The 'n' th term of an A.P. is $a_n = 3 + 2n$ then the common difference is

.....

A. 2

B. 3

C. 4

D. 5

Answer: A



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5. The common difference of the AP $x - y, x, x + y$ is

A. x

B. y

C. $-x$

D. $-y$

Answer: B



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6. The common difference of the AP $2a - b, 4a - 3b, 6a - 5b$ is

A. $2a - 2b$

B. $a - b$

C. $2a - b$

D. $4a - 3b$

Answer: A



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7. In a GP $a_1 = 20$ and $a_4 = 540$ then $r = \dots\dots\dots$

A. 27

B. 3

C. 520

D. 18

Answer: B

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8. Formula for sum of 'n' terms in an AP =

A. $\sum n = \frac{n(n+1)}{2}$

B. $\sum n^2 = \frac{n^2(n+1)(n+2)}{6}$

C. $S_n = \frac{n}{2}[2a + (n-1)d]$ or $S_n = \frac{n}{2}[a + l]$

D. $a_n = a + (n-1)d$

Answer: C

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9. The common difference of AP 1, -1, -3, Is

A. -1

B. $+2$

C. -2

D. $+1$

Answer: C



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10. In an AP $a_n = \frac{5n - 3}{4}$, then $a_7 = \dots\dots\dots$

A. 8

B. 10

C. 9

D. 7

Answer: A



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11. Which term of G.P. $3, 3\sqrt{3}, 9, \dots$ equals to 243?

A. 6

B. 7

C. 8

D. 9

Answer: D



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12. If $x, x + 2, x + 6$ are three consecutive terms in G.P. find the value of 'x'.

A. 3

B. 4

C. 2

D. 1

Answer: C



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13. If $a_n = \frac{n(n+3)}{n+2}$, then find a_{17} .

A. $\frac{340}{20}$

B. $\frac{341}{19}$

C. $\frac{340}{19}$

D. $\frac{341}{20}$

Answer: C



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14. The 21^{th} of an A.P., whose first two terms are -3 and 4 is

A. 143

B. -143

C. 137

D. 17

Answer: C

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15. The common difference of an A.P. for which $a_{18} - a_{14} = 32$ is

A. 8

B. -8

C. -4

D. 4

Answer: A

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16. In an A.P., if $a = 1$, $a_n = 20$ and $S_n = 399$, then $n = \dots\dots$

A. 19

B. 42

C. 28

D. 38

Answer: D



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17. Which term of the G.P. $\frac{1}{3}, \frac{1}{9}, \frac{1}{27}, \dots\dots\dots$ is $\frac{1}{2187}$?

A. 5th

B. 6th

C. 7th

D. 8th

Answer: C



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18. Which term of A.P., 18,15,12,..... Equal to '0' ?

A. 4

B. 5

C. 6

D. 7

Answer: D



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19. If $k, 2k+1, 2k+3$ are three consecutive terms in A.P., then find the value of k .

A. 1

B. 0

C. 2

D. 3

Answer: A



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20. If $a_n = \frac{n}{n+1}$, then $a_{2017} = \dots\dots\dots$

A. $\frac{2017}{2016}$

B. $\frac{2017}{2018}$

C. $\frac{2017}{2019}$

D. $\frac{2018}{2017}$

Answer: B



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21. n^{th} term of a progression a, ar ar^2 , is

A. ar

B. ar^2

C. $a + (n - r)r$

D. ar^{n-1}

Answer: D



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22. IF 4,a,9 are in G.P, then a=.....

A. 6

B. -6

C. 7

D. ± 7

Answer: B



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23. The next term in A.P., $\sqrt{3}$, $\sqrt{12}$, $\sqrt{27}$ is

A. $\sqrt{32}$

B. $\sqrt{36}$

C. $\sqrt{42}$

D. $\sqrt{48}$

Answer: D



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24. The common difference of A.P. $\log_2 2, \log_2 4, \log_2 8$, is

A. 1

B. 2

C. 3

D. 4

Answer: A



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25. The sum of first 'n' odd natural numbers is

A. n

B. n^2

C. $n(n + 1)$

D. $\frac{n(n + 1)}{2}$

Answer: B



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26. Determine the AP whose 3rd term is 5 and the 7th term is 9.

A. 1

B. 2

C. 3

D. 4

Answer: A



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27. If (i) $-1.0, -1.5, -2.0, -2.5, \dots$ and (ii) $-1, -3, -9, -27, \dots$ are two progressions, then which of them is a Geometric Progression?

A. (i) Only

B. (ii) Only

C. (i) and (ii) both

D. None of them

Answer: B



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28. Which of the following is a GP has the common ratio as $\sqrt{2}$?

A. $\sqrt{2}, \sqrt{6}, \sqrt{18}$

B. $\sqrt{3}, \sqrt{6}, \sqrt{12}$

C. $\sqrt{5}, \sqrt{15}, \sqrt{45}$

D. $\sqrt{7}, \sqrt{21}, \sqrt{63}$

Answer: B



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29. The common difference of an Arithmetic Progression in which

$$a_{25} - a_{12} = -52 \text{ is}$$

A. 4

B. -4

C. -3

D. 3

Answer: B



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30. Sum of 10 terms of the progression

$$\log 2 + \log 4 + \log 8 + \log 6 + \dots \text{ is}$$

A. $45 \log 2$

B. $90 \log 2$

C. $10 \log 2$

D. $55 \log 2$

Answer: D



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31. Which term of the Arithmetic Progression 24, 21, 18, Is the first negative term?

A. 8^{th}

B. 9^{th}

C. 10^{th}

D. 12^{th}

Answer: C



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32. The sum of first 100 natural numbers is

A. 4050

B. 4500

C. 5500

D. 5050

Answer: D



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33. If a, b, c are in G.P., then $b =$

A. ac

B. \sqrt{ac}

C. $\frac{a+c}{2}$

D. a^2c^2

Answer: B



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34. If $-\frac{2}{7}, x, -\frac{7}{2}$ are in Geometric Progression, then the value of x is

A. 2

B. 1

C. 0

D. 14

Answer: B



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35. In an Arithmetic Progression, 4^{th} term is 11 and 7^{th} term is 17, then its common difference is

A. 1

B. 2

C. 3

D. 4

Answer: B



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Creative Bits For Cce Model Examination

1. How many terms of A.P. $-6, \frac{-11}{2}, -5$ are needed to obtain a sum -25?

A. 10 or 15

B. 15 or 18

C. 5 or 20

D. 8 or 12

Answer: C



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2. The sum of natural numbers from 1 to 100 is

A. 4050

B. 10100

C. 55

D. 5050

Answer: D



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3. The sum of first 50 even numbers is

A. 1250

B. 2550

C. 1275

D. 2275

Answer: B



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4. The sum of first 20 odd numbers is

A. 400

B. 210

C. 420

D. 405

Answer: A



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5. If $x - 1$, $x + 3$, $3x - 1$ are in A.P., then x is equal

A. 5

B. 8

C. 6

D. 4

Answer: D



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6. The numbers -15 , -11 , -7 , -3 , isis

A. A.P. with $d = 4$

B. A.P. with $d = -4$

C. A.P. with $d = 8$

D. G.P.

Answer: A



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7. The next term of the A.P.

$\sqrt{48}, \sqrt{75}, \sqrt{108}, \sqrt{147}, \dots$ Is

A. $\sqrt{27}$

B. $\sqrt{197}$

C. $\sqrt{192}$

D. $\sqrt{243}$

Answer: C



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8. Which term of the Arithmetic Progression 24, 21, 18, Is the first negative term?

A. a_{10}

B. a_9

C. a_6

D. a_{11}

Answer: A



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9. Which term of the A.P. 125, 120, 115, Is the first negative?

A. 25^{th}

B. 26^{th}

C. 24^{th}

D. 27^{th}

Answer: D



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10. Which term of the A.P

100 , 90, 80, Is zero?

A. 10^{th}

B. 9^{th}

C. 11^{th}

D. 12^{th}

Answer: C



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11. $(a + 3d), (a + d), (a - d), \dots$ the next term of the A.P. is

A. $a + 2d$

B. $a - 2d$

C. $a - 4d$

D. $a - 3d$

Answer: D



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12. The sum of 15 terms of the A.P. 4, 7, 10, Is

A. 385

B. 475

C. 375

D. 325

Answer: C



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13. If $a_7 - a_3 = 32$, then the common difference of the A.P. is

A. 8

B. 6

C. 4

D. 6

Answer: A



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14. $a_{28} - a_{23} = 15$, then the common difference of the A.P. is

A. 3

B. 5

C. 7

D. 15

Answer: A



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15. if a, b,c are in A.P. then b =

A. $a + c$

B. $\frac{a + c}{2}$

C. $a - c$

D. $\frac{a - c}{2}$

Answer: B



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16. The 17th term of 1.1, 2.2, 3.3, 4.4, Is

A. 18.7

B. 19.8

C. 17.6

D. 17.17

Answer: A



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17. The 25th term of

$-300, -290, -280, \dots$ is

A. -60

B. -80

C. 60

D. 80

Answer: A



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18. How many numbers are divisible by 4 lying between 101 and 250 ?

A. 40

B. 62

C. 38

D. 37

Answer: D



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19. The common ratio of the G.P.

3, 6, 12, 24, Is

A. 3

B. 2

C. $1/2$

D. $1/3$

Answer: B



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20. The common ratio of the G.P.

144, 36, 9,..... is

A. 4

B. 2

C. 6

D. $1/4$

Answer: D



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21. The 103^{rd} term of $1, -1, 1, -1, \dots$ is

A. -1

B. 1

C. 0

D. -2

Answer: B



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22. Which term of the G.P.

2, 6, 18, 54, is 2×3^{10} ?

A. 10^{th}

B. 11^{th}

C. 12^{th}

D. 9^{th}

Answer: B

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23. If $a_7 + a_4$ of a G.P. is 343, then the common ratio is

A. 11

B. 9

C. 3

D. 7

Answer: D

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24. If a, b, c are in G.P., then $b =$

A. ac

B. $\frac{a+c}{2}$

C. a^2c^2

D. \sqrt{ac}

Answer: D



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25. If 4, x, 9 are in G.P. , then x =

A. 7

B. 6

C. 8

D. 5

Answer: B



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26. If 3, x, 11 are in A.P. , then x =

A. $\sqrt{21}$

B. 14

C. 4

D. 7

Answer: D

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27. If x, xy, xy^2, xy^3, \dots Forms a G.P., then its 15^{th} term is

A. xy^{15}

B. xy^{14}

C. $x^{14}y$

D. $x^{15}y$

Answer: B

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28. if $a = 3$ and $a_7 = 33$, then a_{11} is

A. 55

B. 53

C. 73

D. 63

Answer: B



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29. $-20, -18, -16, \dots$ which term of this A.P. is a first positive term?

A. 10

B. 11

C. 12

D. 9

Answer: C

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30. 1, -1, 1, -1, 1, -1, up to 131 terms, then $S_{131} =$

A. 1

B. -1

C. 131

D. 130

Answer: A

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31. The 10th term of the AP 3, 11, 19, Is

A. 73

B. 16

C. 75

D. 85

Answer: C



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32. term of AP 21 , 18, 15, is -81.

A. 35

B. 16

C. 30

D. none

Answer: A



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33. The 8th term from the end of the AP 7,10,13, 184 is

A. 324

B. 181

C. 163

D. 161

Answer: C



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34. The n th term of $a, a + d, a + 2d, \dots$ is

A. $a + (n - 1)d$

B. $a - (n + 1)d$

C. $a^2 - (n - 1)d$

D. $d + (n - 1)a$

Answer: A



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35. In the AP, first term is 4 and common difference is -1 then AP is

A. 9,3,-6,.....

B. 10, 12, 14,

C. 5,8,16,.....

D. 4,3,2,.....

Answer: D



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36. The AP with first term is 8 and common difference $2\frac{1}{2}$ is

A. $8, 10\frac{1}{2}, 13, \dots$

B. $8, 10, 11\frac{1}{2}, \dots$

C. $16, 15\frac{1}{2}, 10\frac{1}{2}, \dots$

D. none

Answer: A

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37. In the AP $-9, -14, -19, -24, \dots$ $a_{30} - a_{20} = \dots$

A. 80

B. -60

C. 50

D. -50

Answer: D

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38. The next term of the AP 51, 59 , 67 , 75 is

A. 12

B. 16

C. 83

D. 38

Answer: C



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39. Find the sums given below:

(iii) $-5 + (-8) + (-11) + \dots + (-230)$

A. 66

B. 76

C. 86

D. none

Answer: B



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40. 15th term of the AP $x - 7, x - 2, x + 3, \dots$ is

A. $x + 63$

B. $x - 6$

C. $x - 63$

D. x_{16}

Answer: A



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41. The common ratio of the GP

4, 20, 100, 500, Is

A. 8

B. 2

C. 5

D. 9

Answer: C



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42. The 16th term of 4, -4, 4, -4, Is

A. 16

B. 8

C. 4

D. -4

Answer: D



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43. AP $1, -1, -3, -5, \dots$ $d = \dots$

A. -2

B. 1

C. 2

D. 10

Answer: A



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44. In the AP $-11, -9, -7, \dots$ $d = \dots$

A. 4

B. 3

C. -2

D. 2

Answer: D



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45. In the AP 100, 103, 106,d =

A. 4

B. 8

C. 6

D. none

Answer: D



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46. A GP with $r = -2$ is

A. 5, - 10, 20. - 40.....

B. 2, 4, 8, 16,

C. 3, -6, 10 ,16,

D. all

Answer: A



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47. A GP with $r = 2$ is

A. 7, 14, 28,.....

B. 8, 16, 10,

C. 12, 24, 19,.....

D. none

Answer: A



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48. 5, 10, 15, 10th term is

A. 20

B. 90

C. 60

D. 50

Answer: D



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49. 8, 16, 32,6th term is

A. 256

B. 156

C. 108

D. none

Answer: A



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50. $-1, 1, -1, \dots$ 11th term is

A. 1

B. -1

C. 10

D. 9

Answer: B



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51. $-8, -6, -4, \dots \dots \dots a_7 = \dots \dots \dots$

A. 1

B. 12

C. 10

D. 6

Answer: D



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52. $1, 2, 3, \dots$ sum to 10 term is $\dots \dots \dots$

A. 55

B. 65

C. 60

D. 90

Answer: A



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53. If a, b, c are in GP then $b^2 = \dots\dots$

A. c/a

B. a/c

C. \sqrt{ac}

D. ac

Answer: D



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54. In a GP $a_6 = \dots\dots\dots$

A. ar^5

B. $a^5 r$

C. $a^5 r^5$

D. all

Answer: A



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55. Which term of the G.P.

(i) 2, 8, 32,....is 512?

A. 16

B. 5

C. 9

D. 10

Answer: B



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56. Which term of the G.P. $\frac{1}{3}, \frac{1}{9}, \frac{1}{27}, \dots$ is $\frac{1}{2187}$?

A. $\frac{1}{1827}$

B. $\frac{1}{2187}$

C. $\frac{1}{8127}$

D. none

Answer: B



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57. 2, 4, 6, D=

A. 1

B. -2

C. 2

D. none

Answer: C



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58. If 2, x, 6 are in GP then $x = \dots\dots\dots$

A. $2\sqrt{3}$

B. $8\sqrt{3}$

C. $2\sqrt{3}$

D. $\sqrt{3}$

Answer: A



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59. 4, 16, \square , 256,..... then $\square = \dots\dots\dots$

A. 161

B. 64

C. 62

D. 68

Answer: B



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60. $1+2+3+\dots+64 = \dots\dots\dots$



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61. $1^2 + 2^2 + 3^2 + \dots\dots\dots + 25^2 = \dots\dots\dots$



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62. In an AP $7a_7 = 11a_{11}$ then $a_{18} = \dots\dots\dots$

A. -1

B. 0

C. 1

D. 7

Answer: B



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63. AM of 24 and 16 is

A. 22

B. 19

C. 16

D. 20

Answer: D



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64. If a, b, c are in AP then $2b = \dots\dots\dots$

A. $a + c$

B. $a - c$

C. $\frac{a + c}{2}$

D. $\frac{a}{2}$

Answer: A



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65. The sum of first 40 positive intergers divisible by 6 is

A. 9420

B. 4920

C. 9920

D. 1290

Answer: B

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66. $a_n = 9 - 5n$, $a_4 = \dots\dots\dots$

A. 30

B. 10

C. 11

D. - 11

Answer: D

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67. In a GP, $a_8 = 192$, $r = 2$ then $a_{12} = \dots\dots\dots$

A. 3072

B. 7032

C. 1032

D. 1100

Answer: A



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68. 2, -6, 18, -54,r =

A. -3

B. 3

C. 1

D. -2

Answer: D



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69. $5/2, 5/4, 5/8, \dots a_n = \dots$

A. $\frac{5}{2^{n-1}}$

B. $\frac{5}{2^n}$

C. $\frac{5}{2^{n-2}}$

D. none

Answer: B



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70. $\frac{1}{\sqrt{2}}, -2, \frac{8}{\sqrt{2}}, \dots a_5 = \dots$

A. $16\sqrt{2}$

B. $32\sqrt{2}$

C. $6\sqrt{2}$

D. $31\sqrt{2}$

Answer: B



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71. $3, -3^2, 3^3, \dots, a_6 = \dots$

A. -729

B. 729

C. 829

D. 114

Answer: A



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72. In a G.P. $a = 81, r = -\frac{1}{3}, a_3 = \dots$

A. -9

B. 9

C. -3

D. none

Answer: B



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73. In a G.P. 25, -5, 1, -1/5,r =

A. $\frac{-3}{5}$

B. 2

C. -1

D. $\frac{-1}{5}$

Answer: D



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74. S_n in AP =

A. $\frac{n}{2}(a + l)$

B. $\frac{n}{3}(a + l)$

C. $2n(a + l)$

D. none

Answer: A



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75. In AP $a_{12} = 37, d = 3$, then $a = \dots$

A. 8

B. -4

C. -3

D. 4

Answer: D



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76. For the following A.Ps, write the the common difference: (i) 2,6,10,14

A. 4

B. 8

C. 2

D. 10

Answer: A



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77. $-1, \frac{1}{4}, \frac{3}{2}, \dots$. Sum to 10 terms =

A. 26.25

B. 16.25

C. 36.25

D. 46.25

Answer: D



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78. Find the sums given below:

(iii) $-5 + (-8) + (-11) + \dots + (-230)$

A. -8930

B. 8930

C. 8390

D. none

Answer: A

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79. Find the sum of :

(i) The first 1000 positive intergers .

A. 500500

B. 50051

C. 8005

D. none

Answer: A

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80. $16 + 11 + 6 + \dots\dots\dots 23$ terms =

A. 119

B. -987

C. 891

D. -891

Answer: D



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81. Identify the number of 3 digit number that divisible by 7.

A. 126

B. 128

C. 122

D. none

Answer: B



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82. In an AP $a_1 = -4$, $a_6 = 6$ then $a_2 = \dots$

A. 3

B. 6

C. 1

D. -2

Answer: D



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83. For the following A.Ps, write the first term and the common difference:

(i) 3,6,9,12,.....

A. 4

B. 3

C. 6

D. -4

Answer: B



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84. In the formula $a_n = 3.6$, $a = -18.9$, $d = 2.5$, $n = \dots\dots\dots$

A. 13

B. 12

C. 10

D. 20

Answer: C



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85. 5, 1, -3, -7, $a_{10} = \dots\dots\dots$

A. -23

B. 22

C. 31

D. -31

Answer: D



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86. $\frac{1}{4}, \frac{-1}{4}, \frac{-3}{4}, \frac{-5}{4}, d = \dots\dots\dots$

A. $\frac{-1}{2}$

B. $\frac{1}{2}$

C. 2

D. -1

Answer: A



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87. If 4, x, 16 are in G.P. then x =

A. 12

B. 16

C. 8

D. none

Answer: C



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88. $1^3 + 2^3 + 3^3 + \dots + n^3 = \dots$

A. $\frac{n}{2}$

B. $\frac{(n+1)^2}{2}$

C. $\frac{n(n+1)}{2}$

D. $\frac{n^2(n+1)^2}{4}$

Answer: D



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89. G.M. of a and b is

A. \sqrt{ab}

B. $\frac{ab}{2}$

C. $\frac{a + b}{2}$

D. none

Answer: A



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90. G.M. of a and $\frac{1}{a}$ is

A. -3

B. 1

C. 7

D. 8

Answer: B



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91. Reciprocals of term of GP is

A. AP

B. GP

C. HP

D. none

Answer: B



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92. If a, b, c are in GP then $\frac{b}{a} = \dots\dots\dots$

A. $\frac{c}{b}$

B. $\frac{b}{c}$

C. $\frac{1}{b}$

D. none

Answer: A



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93. a_n in GP =

A. ar

B. ar^{n-1}

C. a^{n-1}

D. $\frac{a}{2}r^{n-1}$

Answer: B



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94. $1+1+1+\dots+n$ terms =

A. $n/2$

B. n

C. $n - 1$

D. none

Answer: B



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95. If a, b, c are in GP then b is called

A. Geometric mean

B. Arithmetic mean

C. Number

D. none

Answer: A



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96. $\sum n = 10, \sum n^3 = \dots\dots\dots$

A. 100

B. 1001

C. 200

D. 80

Answer: A



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97. In a series $a_n = \frac{n(n+1)}{3}$, $a_2 = \dots\dots\dots$

A. 41

B. 3

C. 4

D. 2

Answer: D



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98. AM of 10 and 20 is

A. 12

B. 15

C. 25

D. 10

Answer: B



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99. $a_n = (n - 1)(n - 2)$ then $a_2 = \dots\dots\dots$

A. 1

B. 0

C. 2

D. 3

Answer: B



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100. If a, b, c are in AP then $b - a = \dots\dots\dots$

A. $c + b$

B. $a + b$

C. $c - b$

D. none

Answer: C



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101. GM of x, y, z is

A. xyz^3

B. $\sqrt[3]{xyz}$

C. $\frac{xyz}{3}$

D. $\frac{x + y + z}{3}$

Answer: B



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102. GM of 5 and 125 is

A. 13

B. 16

C. 10

D. 25

Answer: D



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103. S_n in AP =

A. $\frac{n}{2}[2a + (n - 1)d]$

B. $\frac{n}{2}[a + (n + 1)d]$

C. $n[2a + (n - 1)d]$

D. none

Answer: A



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104. $a_n = \frac{n}{n+2}$, $a_3 = \dots\dots\dots$

A. $1/2$

B. $5/3$

C. $3/5$

D. none

Answer: C



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105. The n th term of a GP is $2(0.5)^{n-1}$, $r = \dots\dots\dots$

A. -2

B. $1/2$

C. 2

D. -1

Answer: B



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106. The common ratio of the GP

$\sqrt{2}, \sqrt[3]{8}, 4, \dots$ is

A. $\sqrt{3}$

B. 4

C. 3

D. $\sqrt{2}$

Answer: D



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107. a, b, c are in AP then $3^a, 3^b, 3^c$ are in

A. GP

B. HP

C. AP

D. none

Answer: A



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108. $2, 5/2, 3, \dots, S_{(25)} = \dots$

A. 110

B. 180

C. 100

D. none

Answer: D

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109. AM of M, P, C is

A. $\frac{MPC}{3}$

B. $M - P - C$

C. $\frac{M + P + C}{3}$

D. $\frac{M + P - C}{2}$

Answer: C

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110. $a_n = 2^n$, $a_5 = \dots\dots\dots$

A. 32

B. 23

C. 18

D. 13

Answer: A



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111. AM of 5 and 95 is

A. 105

B. 505

C. 501

D. 50

Answer: D



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112. GM of x^3 and $\frac{1}{x^3} = \dots\dots\dots$

A. -7

B. 1

C. 3

D. none

Answer: B



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113. $n - 1, n - 2, n - 3, \dots\dots\dots a_{10} = \dots\dots\dots$

A. $n - 10$

B. $n - 9$

C. $n + 9$

D. $n - 3$

Answer: A



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114. Product of n GM's between a and b is

A. $(ab)^{n/2}$

B. $(ab)^n$

C. $\frac{a}{b}$

D. $\frac{a^n}{b}$

Answer: A



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115. If $\frac{a^{n+1} + b^{n+1}}{a^n + b^n}$ is the AM of a and b then n =

A. $\frac{-1}{2}$

B. 1

C. 0

D. 4

Answer: C



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116. 7, 10, 13,, $a_5 = \dots\dots\dots$

A. 19

B. 100

C. 131

D. 12

Answer: A



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117. 22, 32, 42, , $a_7 = \dots\dots\dots$

A. 81

B. 92

C. 69

D. 82

Answer: D



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118. 1,4,7,10,....., d =

A. 13

B. 3

C. 4

D. none

Answer: B



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119. In AP $a_p = q, a_q = p$ then $a_{p+q} = \dots\dots\dots$

A. $q - p$

B. $p - q$

C. 0

D. -1

Answer: C



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120. Which term of AP $7+4+1+\dots\dots\dots$ is -56 ?

A. 22

B. 20

C. 18

D. 19

Answer: A



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121. $1+6+4+9+7+12+\dots$ to 40 terms

A. 20

B. 60

C. 90

D. none

Answer: D



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122. AM of $x^2 + y^2$ and $x^2 - y^2$ is

A. $\frac{x^2}{2}$

B. x^2

C. x

D. $2x$

Answer: B



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123. a, b, c are in AP then $\frac{1}{a}, \frac{1}{b}, \frac{1}{c}$ are in

A. HP

B. GP

C. AP

D. None

Answer: C



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124. If there are n AM's between a and b then $d = \dots\dots\dots$

A. $\frac{b - a}{n + 1}$

B. $\frac{b}{n + 1}$

C. $\frac{a - b}{n}$

D. $\frac{b}{n + 2}$

Answer: A



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125. 10, 100, 1000,, $r = \dots\dots\dots$

A. 12

B. 9

C. 8

D. 10

Answer: D



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126. $1 + \frac{1}{2} + \frac{1}{2^2} + \dots, r = \dots$

A. 3

B. $1/2$

C. 2

D. -1

Answer: B



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127. 3,6,12,..... $r = \dots\dots\dots$

A. 1

B. 10

C. 3

D. none

Answer: D



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128. $a, a^2, a^3, \dots\dots\dots, r = \dots\dots\dots$

A. a

B. a^2

C. a^3

D. none

Answer: A



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129. a,b,c are in AP then $\frac{1}{a}, \frac{1}{b}, \frac{1}{c}$ are in

A. GP

B. AP

C. HP

D. none

Answer: C



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Progressions Multiple Choice Question

1. A circle with area A , is contained in the interior of a larger with area $A_1 + A_2$. IF the radius of the larger circle is 3 units and A_1, A_2 and $(A_1 + A_2)$ are in A.P., then find the radius of smaller circle....

A. $\sqrt{3}$ units

B. $\sqrt{2}$ units

C. Unity

D. None

Answer: A



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2. IF $x \neq y$ and the sequence x, a, a, y and x_1, b_1, b_2, y each are in A.P., then find the value of $\frac{a_2 - a_1}{b_2 - b_1} = \dots$

A. -1

B. 1

C. 2

D. -2

Answer: B



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3. If $a, b,$ and c are in G.P., with $1 < a < b < x$ and $n > 1$ is an integer then find the sequence formed by $\log_a n, \log_b n, \log_c n, \dots$

A. A.P.

B. G.P.

C. H.P.

D. None

Answer: C



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4. IF x, y, z are positive integers (numbers) then.....

A. $(x + y)(y + z)(z + x) = 8xyz$

B. $(x + y)(y + z)(z + x) < 8xyz$

C. $(x + y)(y + z)(z + x) = 0$

D. $(x + y)(y + z)(z + x) > 8xyz$

Answer: D



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5. IF $S_1 + S_3 = K, S_2$, where S_1, S_2 and S_3 are the sum of 'n' terms of the series in A.P .The first term of each being one and the respective common difference being 1,2,3 then find $k=.....$

A. 2

B. -2

C. 1

D. 0

Answer: A



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6. Find the G.M. of the numbers 2,3 and 4.

A. $\sqrt{9}$

B. $(24)^{1/3}$

C. 24

D. $3/2$

Answer: B



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7. Find S_n of $\sqrt{2} + \sqrt{8} + \sqrt{18} + \sqrt{32} + \dots + n$.

A. $(2-n)$

B. $\frac{\sqrt{2}}{n+1}$

C. $\frac{n(n+1)}{\sqrt{2}}$

D. 0

Answer: C

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8. Find the co-efficient of x^{99} in the polynomial $(x-1)(x-2)(x-3)\dots(x-100)$.

A. -2020

B. 2020

C. 5050

D. -5050

Answer: D

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9. Find S, for the G.P. $\frac{-3}{4}, \frac{3}{16}, \frac{3}{64}, \dots$

A. $\frac{-3}{5}$

B. $\frac{-5}{3}$

C. $\frac{3}{5}$

D. $\frac{5}{3}$

Answer: A



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10. Find the sum of the infinity of the G.P. $5, \frac{20}{7}, \frac{80}{49}, \dots$

A. $\frac{3}{35}$

B. $\frac{35}{3}$

C. $\frac{-3}{35}$

D. $\frac{-35}{3}$

Answer: B



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11. Which term of the series 1,2,4,8,..... is 256?

A. ∞

B. 19

C. 9

D. $-\infty$

Answer: C



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12. IF g_1, g_2, g_3 are three geometric means between "m" and "n". Then

$$g_1 \cdot g_3 = g_2^2 = \dots\dots$$

A. mn

B. m/n

C. $m-n$

D. m^n

Answer: A



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13. The sum of the first three terms of a G.P is $\frac{39}{10}$ and their product is one. Find the common ratio.

A. 1

B. $\frac{2}{5}$

C. 0

D. 5

Answer: B



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14. How many terms of a G.P. $3, 3^2, 3^3, \dots$ are needed to give the sum 120?

A. 4

B. 3

C. -4

D. 5

Answer: A



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15. Find the sum of the first 8 terms of $3, 6, 12, 24, \dots$

A. 567

B. 765

C. 675

D. None

Answer: B



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16. IF the A.M and G.M of two numbers are 13 and 12 respectively. Find the numbers.

A. 8,18

B. 8,9

C. 9,20

D. 1,2

Answer: A

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17. What is the G.M. of 6 and 24?

A. 21

B. 32

C. 36

D. 12

Answer: D

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18. Find the values of x so that $\frac{-2}{7}$, x , $\frac{-7}{2}$ are three consecutive terms of a G.P.

A. ± 1

B. ± 2

C. ± 3

D. ± 4

Answer: A



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19. The 5^{th} , 8^{th} and 11^{th} terms of a G.P. are p, q and s respectively. Then q^2
=.....

A. ps

B. pr

C. p/s

D. p/r

Answer: A



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20. The product of two numbers is 91 and their A.M. is 10. Find the two numbers.

A. 12,13

B. 13,7

C. 13,14

D. None

Answer: B



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Exercise

1. Which of these are arithmetic progressions and why?

(i) 2,3,5,7,8,10,15,



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2. Which of these are arithmetic progressions and why?

(ii) 2,5,7,0,12,15,....



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3. Which of these are arithmetic progressions and why?

(iii) $-1, -3, -5, -7, \dots$



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4. Write 3 more Arithmetic Progressions.



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5. Think how each of the list given above form an A.P. Discuss with your friends.

(d) Cash prizes (in Rs.) given by a school to the toppers of classes I to XII are 200, 250, 300, 350,.....,750 respectively.

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6. Think how each of the list given above form an A.P. Discuss with your friends.

(a) Heights (in cm) of some students of a school standing in a queue in the morning assembly are

147, 148, 149,.....,157

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7. Think how each of the list given above form an A.P. Discuss with your friends.

(b) Minimum temperatures (in degree celcius) recorded for a week, in the month of January in a city, arranged in assending order are

- 3.1, - 3.0, - 2.9, - 2.8, - 2.7, - 2.6, - 2.5



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8. Think how each of the list given above form an A.P. Discuss with your friends.

(c) The balance money (in Rs.) after paying 5% of the total loan of Rs. 1000 every month is

950, 900, 850, 800,,50



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9. Think how each of the list given above form an A.P. Discuss with your friends.

(d) Cash prizes (in Rs.) given by a school to the toppers of classes I to XII are 200, 250, 300, 350,,750 respectively.



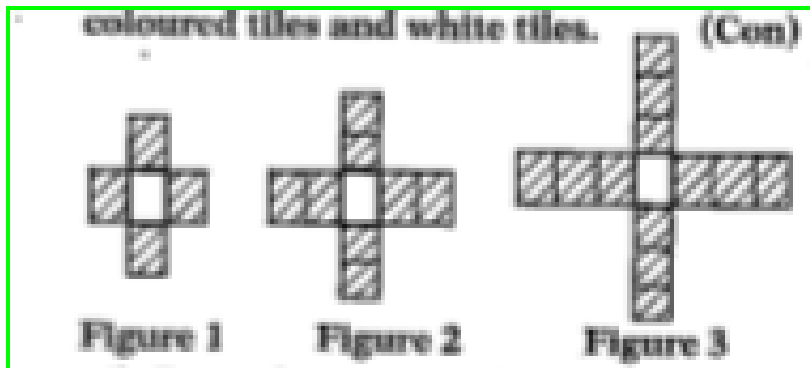
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10. Think how each of the list given above form an A.P. Discuss with your friends.

(e) Total savings (in Rs.) after every month for 10 month when Rs. 50 are saved each month are 50, 100, 150, 200, 250, 300, 350, 400, 450, 500.

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11. Draw the next two figures in the pattern above.



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12. Make a positive Arithmetic Progression in which the common difference is a small positive quantity.



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13. Make an A.P. in which the common difference is big (large) positive quantity.



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14. Make an A.P. in which the common difference is negative.



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15. Write three examples for finite A.P and three for infinite A.P.



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16. Take any Arithmetic progression.



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17. Add a fixed number to each and every term of A.P. Write the resulting numbers as a list.

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18. Similarly subtract a fixed number from each and every term of A.P. Write the resulting numbers as a list.

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19. Multiply and divide each term of A.P. by a fixed number and write the resulting numbers as a list.

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20. Write the negation of the following statements and check whether the resulting statements are true,
Australia is a continent.

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21. You might have touched soap water or lime water. How do you feel ?
What is your conclusion?

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22. For the AP: $\frac{1}{4}, \frac{-1}{4}, \frac{-3}{4}, \frac{-5}{5}, \dots$, write the first term a and the common difference d . And find the 7^{th} term.

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23. Which of the following forms an AP? If they form AP, then write next two terms.

(i) 4,10 ,16,22



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24. Which of the following forms an AP? If they form AP, then write next two terms.

(ii) 1, - 1, - 3, - 5,



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25. Which of the following forms an AP? If they form AP, then write next two terms.

(iii) -2, 2, - 2, 2, - 2,



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26. Which of the following forms an AP? If they form AP, then write next two terms.

(iii) 1, 1, 1, 2, 2, 2, 3, 3, 3,



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27. Which of the following forms an AP? If they form AP, then write next two terms.

(v) $x, 2x, 3x, 4x, \dots$



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28. In which of the following situations, does the list of numbers involved make an arithmetic progression, and why?

(i) The taxi fare after each km when the fare is Rs. 20 for the first km and rises by Rs. 8 for each additional km.



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29. In which of the following situations, does the list of numbers involved make an arithmetic progression, and why?

(ii) The amount of air present in a cylinder when a vacuum pump removes $1/4^{\text{th}}$ of the air remaining in the cylinder at a time.



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30. In which of the following situations, does the list of numbers involved make an arithmetic progression, and why?

(iii) The cost of digging a well, after every metre of digging, when it costs Rs. 150 for the first metre and rises by Rs. 50 for each subsequent metre.



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31. In which of the following situations, does the list of numbers involved make an arithmetic progression, and why?

(iv) The amount of money in the account every year, when Rs. 10000 is deposited at compound interest at 8% per annum.



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32. Write first four terms of the AP, when the first term a and the common difference d are given as follows:

(i) $a = 10, d = 12.$



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33. Write first four terms of the AP, when the first term a and the common difference d are given as follows:

(ii) $a = -2, d = 0.$



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34. Write first four terms of the AP, when the first term a and the common difference d are given as follows:

(iii) $a = 4, d = -3.$



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35. Write first four terms of the AP, when the first term a and the common difference d are given as follows:

(iv) $a = -1, d = \frac{1}{2}$.

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36. Write first four terms of the AP, when the first term a and the common difference d are given as follows:

(v) $a = -1.25, d = -0.25$.

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37. For the following A.Ps, write the first term and the common difference:

(i) $3, 1, -1, -3, \dots$

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38. For the following A.Ps, write the first term and the common difference:

(ii) -5,-1,3,7,.....



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39. For the following A.Ps, write the first term and the common difference:

(iii) $\frac{1}{3}, \frac{5}{3}, \frac{9}{3}, \frac{13}{3}, \dots$



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40. For the following A.Ps, write the first term and the common difference:

(iv) 0.6, 1.7, 2.8,3.9,.....



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41. Which of the following are Aps? If they form an AP, find the common difference d and write three more terms.

(i) 2,4,8,16,.....



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42. Which of the following are Aps? If they form an AP, find the common difference d and write three more terms.

(ii) $2, \frac{5}{2}, 3, \frac{7}{2}, \dots\dots$



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43. Which of the following are Aps? If they form an AP, find the common difference d and write three more terms.

(iii) $-1.2, -3.2, -5.2, -7.2, \dots\dots$



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44. Which of the following are Aps? If they form an AP, find the common difference d and write three more terms.

(iv) $-10, -6, -2, 2, \dots$



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45. Which of the following are Aps? If they form an AP, find the common difference d and write three more terms.

(v) $3, 3 + \sqrt{2}, 3 + 2\sqrt{2}, 3 + 3\sqrt{2}, \dots$



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46. Which of the following are Aps? If they form an AP, find the common difference d and write three more terms.

(vi) $0.2, 0.22, 0.222, 0.2222, \dots$



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47. Which of the following are Aps? If they form an AP, find the common difference d and write three more terms.

(vii) $0, -4, -8, -12, \dots$



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48. Which of the following are Aps? If they form an AP, find the common difference d and write three more terms.

(viii) $-\frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}, \dots$



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49. Which of the following are Aps? If they form an AP, find the common difference d and write three more terms.

(ix) $1, 3, 9, 27, \dots$



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50. Which of the following are Aps? If they form an AP, find the common difference d and write three more terms.

(x) $a, 2a, 3a, 4a, \dots$



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51. Which of the following are Aps? If they form an AP, find the common difference d and write three more terms.

(x) $a, 2a, 3a, 4a, \dots$



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52. Which of the following are Aps? If they form an AP, find the common difference d and write three more terms.

(xii) $\sqrt{2}, \sqrt{8}, \sqrt{18}, \sqrt{32}, \dots$



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53. Which of the following are Aps? If they form an AP, find the common difference d and write three more terms.

(xiii) $\sqrt{3}, \sqrt{6}, \sqrt{9}, \sqrt{12}, \dots\dots\dots$

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54. Find the 10^{th} term of the AP: 5,1,-3,-7

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55. Which term of the AP: 21,18,15, Is -81? Is there any term 0? Give reason for your answer.

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56. Determine the AP whose 3^{rd} term is 5 and the 7^{th} term is 9.

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57. Check whether 301 is a term of the list of numbers 5, 11, 17, 23,

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58. How many two-digit numbers are divisible by 3?

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59. Find the 11th term from the last of the A.P series given below:

A.P : 10, 7, 4,, -62

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60. A sum of Rs. 1000 is invested at 8% simple interest per year. Calculate the interest at the end of each year. Do these interests form an AP? If so, find the interest at the end of 30 years.



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61. If a flower bed, there are 23 rose plants in the first row, 21 in the second, 19 in the third, and so on. There are 5 rose plants in the last row. How many rows are there in the flower bed?

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62. Fill in the blanks in the following table, given that 'a' is the first term, d the common difference and a_n the n^{th} term of the A.P :

S. No.	a	d	n	a_n
i)	7	3	8	...
ii)	-18	...	10	0
iii)	...	-3	18	-5
iv)	-18.9	2.5	...	3.6
v)	3.5	0	105	...

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63. Fill in the blanks in the following table, given that 'a' is the first term, d the common difference and a_n the n^{th} term of the A.P :

S. No.	a	d	n	a_n
i)	7	3	8	...
ii)	-18	...	10	0
iii)	...	-3	18	-5
iv)	-18.9	2.5	...	3.6
v)	3.5	0	105	...



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64. Fill in the blanks in the following table, given that 'a' is the first term, d the common difference and a_n the n^{th} term of the A.P :

S. No.	a	d	n	a_n
i)	7	3	8	...
ii)	-18	...	10	0
iii)	...	-3	18	-5
iv)	-18.9	2.5	...	3.6
v)	3.5	0	105	...



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65.

Fill in the blanks in the following table, given that 'a' is the first term, d the common difference

a_n then n^{th} term of the A.P.:

S. No.	a	d	n	a_n
i)	7	3	8	...
ii)	-18	...	10	0
iii)	...	-3	18	-5
iv)	-18.9	2.5	...	3.6
v)	3.5	0	105	...



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66.

Fill in the blanks in the following table, given that 'a' is the first term, d the common difference

a_n then n^{th} term of the A.P.:

S. No.	a	d	n	a_n
i)	7	3	8	...
ii)	-18	...	10	0
iii)	...	-3	18	-5
iv)	-18.9	2.5	...	3.6
v)	3.5	0	105	...

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67. Find the

(i) 30^{th} term of the A.P. : 10, 7, 4,

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68. Find the

(ii) 11^{th} term of the A.P. : $-3, \frac{-1}{2}, 2, \dots\dots$

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69. Find the respective terms for the following Aps.

(i) $a_1 = 2$, $a_3 = 26$, find a_2 .



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70. Find the respective terms for the following Aps.

(ii) $a_2 = 13$, $a_4 = 26$, find a_1 , a_3 .



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71. Find the respective terms for the following Aps.

(iii) $a_1 = 5$, $a_4 = 9\frac{1}{2}$, find a_2 , a_3 .



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72. Find the respective terms for the following Aps.

(iv) $a_1 = -4$, $a_6 = 6$, find a_2 , a_3 , a_4 , a_5 .



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73. Find the respective terms for the following following Aps.

(v) $a_2 = 38$, $a_6 = -22$, find a_1, a_3, a_4, a_5 .



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74. Which term of the AP:

3, 8, 13, 18,, is 78 ?



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75. Find the number of terms in the following A.P.

7, 13, 19,205



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76. Find the number of terms in each of the following Aps :

(ii) $18, 15\frac{1}{2}, 13, \dots, -47$

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77. Check whether, -150 is a term of the AP: $11, 8, 5, 2, \dots$

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78. Find the 31^{th} term of an A.P. whose 11^{th} term is 38 and the 16^{th} term is 73.

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79. If the 3^{rd} and the 9^{th} terms of an A.P are 4 and -8 respectively, which term of this A.P is zero?

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80. The 17^{th} term of an A.P exceeds its 10^{th} term by 7. find the common difference.

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81. Two APs have the same common difference. The difference between their 100^{th} terms is 100, what is the difference between their 1000^{th} terms ?

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82. How many three-digit numbers are divisible by 7 ?

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83. How many multiples of 4 lie between 10 and 250?

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84. For what value of n , are the n^{th} terms of two Aps : 63, 65, 67, and 3, 10, 17, equal?

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85. Determine the AP whose third term is 16 and the 7^{th} term exceeds the 5^{th} term by 12.

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86. Find the 20^{th} term from the end of the AP : 3, 8, 13,253.

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87. The sum of the 4^{th} and 8^{th} terms of an AP is 24 and the sum of the 6^{th} and 10^{th} terms is 44. find the first three terms of the AP.



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88. Subba Rao started work in 1995 at an annual salary of Rs. 5000 and received an increment of Rs. 200 each year. In which year did his income reach Rs. 7000 ?



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89. Find the sum of indicated number of terms in each of the following A.Ps.

(i) 16, 11, 6,, 23 terms.



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90. Find the sum of indicated number of terms in each of the following A.Ps.

(ii) $-0.5, -1.0, -1.5, \dots, 10$ terms.



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91. Find the sum of indicated number of terms in each of the following

A.Ps.

(iii) $-1, \frac{1}{4}, \frac{3}{2}, \dots$ 10 terms.



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92. If the sum of the first 14 terms of an AP is 1050 and its first term is 10,

find the 20^{th} term.



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93. How many terms of the AP : 24, 21, 18 Must be taken so that their

sum is 78 ?



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94. Find the sum of:

(i) the first 1000 natural numbers, (ii) the first n natural numbers.

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95. Find the sum of : the first n natural numbers

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96. Find the sum of first 24 terms of the list of numbers whose n^{th} terms is given by $a_n = 3 + 2n$

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97. A manufacturer of TV sets produced 600 sets in the third year and 700 sets in the seventh year. Assuming that the production increases uniformly by a fixed number every year, find:

(i) the production in the 1st year

(ii) the production in the 10th year

(iii) the total production in first 7 years Solution :



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98. A manufacturer of TV sets produced 600 sets in the third year and 700 sets in the seventh year. Assuming that the production increases uniformly by a fixed number every year, find:

(i) the production in the 1st year

(ii) the production in the 10th year

(iii) the total production in first 7 years Solution :



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99. A manufacturer of TV sets produced 600 sets in the third year and 700 sets in the seventh year. Assuming that the production increases uniformly by a fixed number every year, find:

(i) the production in the 1st year

(ii) the production in the 10th year

(iii) the total production in first 7 years Solution :

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100. Find the sum of the following Aps,

(i) 2,7,12,.....to 10 terms.

(ii) $-37, -33, -29$, to 12 terms

(iii) 0.6, 1.7, 2.8,..... to 100 terms

(iv) $\frac{1}{15}, \frac{1}{12}, \frac{1}{10}, \dots\dots\dots$ To 11 terms.

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101. Find the sum of the following APs.

(ii) $-37, -33, -29, \dots\dots\dots$, to 12 term.

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102. Find the sum of the following APs.

(i) 2,7,12,....., to 10 terms.

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103. Find the sum of the following APs.

(iv) $\frac{1}{15}, \frac{1}{12}, \frac{1}{10}, \dots$, ot 11 terms.

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104. Find the sums given below:

(i) $7 + 10\frac{1}{2} + 14 + \dots + 84$.

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105. Find the sums given below:

(ii) $34 + 32 + 30 + \dots + 10$.





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106. Find the sums given below:

(iii) $-5 + (-8) + (-11) + \dots + (-230)$



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107. In an AP:

(i) Given $a = 5$, $d = 3$, $a_n = 50$, find n and S_n .



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108. In an AP:

(ii) Given $a = 7$, $a_{13} = 35$, find d and S_{13} .



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109. In an AP:

(iii) Given $a_{12} = 37$, $d = 3$, find a and S_{12} .



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110. In an AP:

(iv) Given $a_3 = 15$, $S_{10} = 125$, find d and a_{10} .



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111. In an AP:

(v) Given $a = 2$, $d = 8$, $S_n = 90$, find n and a_n .



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112. In an AP:

(vi) Given $a_n = 4$, $d = 2$, $S_n = -14$, find n and a .





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113. In an AP:

(vii) Given $l = 28$, $S = 144$, and there are total 9 terms. Find a.



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114. The first and the last terms of an A.P. are 17 and 350 respectively. If the common difference is 9, how many terms are there and what is their sum?



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115. Find the sum of first 51 terms of an AP whose second and third terms are 14 and 18 respectively.



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116. If the sum of first 7 terms of an AP is 49 and that of 17 terms is 289, find the sum of first n terms.

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117. Show that $a_1, a_2, \dots, a_n, \dots$ form an AP where a_n is defined as below:

(i) $a_n = 3 + 4n$. Also find the sum of the first 15 terms in each case.

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118. Show that $a_1, a_2, \dots, a_n, \dots$ form an AP where a_n is defined as below:

(i) $a_n = 3 + 4n$. Also find the sum of the first 15 terms in each case.

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119. If the sum of the first n terms of an AP is $4n - n^2$, what is the first term (remember the first term is S_1)? What is the sum of first two terms? What is the second term? Similarly, find the 3rd, the 10th and the n^{th} terms.



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120. Find the sum of the first 40 positive integers divisible by 6.



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121. A sum of Rs. 700 is to be used to give seven cash prizes to students of a school for their overall academic performance. If each prize is Rs. 20 less than its preceding prize. Find the value of each of prizes.



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122. In a school, students thought of planting trees in an around the school to reduce air pollution. It was decided that the number of trees, that each section of each class will plant, will be the same as the class. In which they are studying e.g., a section of Class I will plant 1 tree, a section of Class II will plant 2 trees and so on till Class XII. There are three sections of each class. How many trees will be planted by the students?

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123. A spiral is made up of successive semicircles, with centres alternately at A and B, starting with centre at A, of radii 0.5 cm, 1.0 cm, 1.5 cm, 2.0 cm, As shown in figure. What is the total length of such a spiral made up of thirteen consecutive semicircles? (Take $\pi = \frac{22}{7}$)

[Hint : Length of successive semicircles is $l_1, l_2, l_3, l_4, \dots$ with centres at A, B, A, B,, respectively.]



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124. 200 logs are stacked in the following manner : 20 logs in the bottom row, 19 in the row above, 18 in the row above to it and so on. In how many rows are the 200 logs placed and how many logs are in the top row ?



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125. In a bucket and ball race, a bucket is placed at the starting point. Which is 5m from the first ball, and other balls are placed 3m apart in a straight line. There are ten balls in the line.



A competitor starts from the bucket, picks up the nearest ball, runs back with it, drops it in the bucket, runs back to pick up the next ball, runs to the bucket to drop it in, and she continues in the same way until all the balls are in the bucket. What is the total distance the competitor has to run?

[Hint: To pick up the second ball, the total distance (in metres) run by a competitor is $2 \times 5 + 2 \times (5 + 3)$]



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126. A runner starts from the bucket, picks up the nearest ball, runs back with it, drops it in the bucket, runs back to pick up the next ball, runs to the bucket to drop it in, and she continues in the same way until all the balls are in the bucket. What is the total distance the runner has to run?

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127. Find which of the following are not G.P.

(i) 6,12, 24, 48,

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128. Find which of the following are not G.P.

(ii) 1,4,9,16,.....

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129. Find which of the following are not G.P.

(iii) 1, -1, 1, -1,.....



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130. Find which of the following are not G.P.

(iv) $-4, -20, -100, -500, \dots$



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131. Explain why each of the lists above is a G.P.

(i) 1, 4, 16, 64, 256,.....



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132. Explain why each of the lists above is a G.P.

(ii) 550, 605, 665.5,



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133. Explain why each of the lists above is a G.P.

(iii) 256, 128, 64, 32,



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134. Explain why each of the lists above is a G.P.

(iv) 18, 16.2, 14.58, 13.122



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135. To know about a G.P. What is minimum information that we need?



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136. Write the G.P. If the first term $a=3$, and the common ratio $r= 2$.



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137. Write G.P. If $a = 256, r = \frac{-1}{2}$.

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138. Find the common ratio of the G.P.

25, -5, 1, $\frac{-1}{5}$.

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139. Which of the following list of number form G.P. ?

(i) 3, 6, 12,

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140. Which of the following list of number form G.P. ?

(ii) 64, -32, 16,



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141. Which of the following list of number form G.P. ?

(iii) $\frac{1}{64}, \frac{1}{32}, \frac{1}{8}, \dots$



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142. In which of the following situations, does the list of numbers involved in the form a G.P.?

(i) Salary of Sharmila, when her salary is Rs. 5,00,000 for the first year and expected to receive yearly increase of 10%.



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143. In which of the following situations, does the list of numbers involved in the form a G.P.?

(ii) Number of bricks needed to make each step, if the stair case has total

30 steps. Bottom step needs 100 bricks and each successive step needs 2 bricks less than the previous step.

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144. In which of the following situations, does the list of numbers involved in the form a G.P.?

(iii) Perimeter of the each triangle , when the mid-points of sides of an equilateral triangle whose side is 24 cm are joined to form another triangle, whose mid-point in turn are joined to form still another triangle and the process continues indefinitely.



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145. Write three terms of the G.P. when the first term 'a' and the common ratio 'r' are given.

(i) $a = 4, r = 3$

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146. Write three terms of the G.P. when the first term 'a' and the common ratio 'r' are given.

(ii) $a = \sqrt{5}, r = \frac{1}{5}$.

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147. Write three terms of the G.P. when the first term 'a' and the common ratio 'r' are given.

(i) $a = 4, r = 3$

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148. Write three terms of the G.P. when the first term 'a' and the common ratio 'r' are given.

(iv) $a = \frac{1}{64}, r = 2$.

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149. Which of the following are G.P.? If they are G.P., write three more terms.

(i) 4,8,16,....



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150. Which of the following are G.P.? If they are G.P., write three more terms.

(ii) $\frac{1}{3}, \frac{-1}{6}, \frac{1}{12}, \dots\dots\dots$



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151. Which of the following are G.P.? If they are G.P., write three more terms.

(iii) 5, 55, 555,



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152. Which of the following are G.P.? If they are G.P., write three more terms.

(iv) $-2, -6, -18, \dots$



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153. Which of the following are G.P.? If they are G.P., write three more terms.

(v) $\frac{1}{2}, \frac{1}{4}, \frac{1}{6}, \dots$



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154. Which of the following are G.P.? If they are G.P., write three more terms.

(vi) $3, -3^2, 3^3, \dots$



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155. Which of the following are G.P.? If they are G.P., write three more terms.

(vii) $X, 1, \frac{1}{X}, \dots$



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156. Which of the following are G.P.? If they are G.P., write three more terms.

(viii) $\frac{1}{\sqrt{2}}, -2, \frac{8}{\sqrt{2}}, \dots$



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157. Which of the following are G.P.? If they are G.P., write three more terms.

(ix) $0.4, 0.04, 0.004, \dots$



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158. Find x so that $x, x + 2, x + 6$ are consecutive terms of a geometric progression.

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159. Find the 20^{th} and n^{th} term of the G.P.

$$\frac{5}{2}, \frac{5}{4}, \frac{5}{8}, \dots$$

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160. Which term of the G.P.

$2, 2\sqrt{2}, 4, \dots$ is 128?

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161. In a GP the 3^{rd} term is 24 and 6^{th} term is 192. find the 10^{th} term.

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162. For each geometric progression find the common ratio 'r', and then find a_n .

(i) $3, \frac{3}{2}, \frac{3}{4}, \frac{3}{8}, \dots$

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163. For each geometric progression find the common ratio 'r', and then find a_n .

(ii) $2, -6, 18, -54$

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164. For each geometric progression find the common ratio 'r', and then find a_n .

(iv) $-1, -3, -9, -27, \dots$

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165. For each geometric progressions find the common ratio 'r'. And then find a_n .

(i) $3, \frac{3}{2}, \frac{3}{4}, \frac{3}{8}, \dots$

(ii) $2, -6, 18, -54$

(iii) $-1, -3, -9, -27, \dots$

(iv) $5, 2, \frac{4}{5}, \frac{8}{25}, \dots$

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166. Find the 10^{th} and n^{th} term of G.P. : 5, 25, 125,.....

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167. Find the indicated term of each geometric progression.

(i) $a_1 = 9, r = \frac{1}{3}$, find a_7 .

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168. Find the indicated term of each geometric progression.

(ii) $a_1 = -12$, $r = \frac{1}{3}$, find a_6 .



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169. Which term of the G.P.

(i) 2, 8, 32,....is 512?



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170. Which term of the G.P.

(ii) $\sqrt{3}$, 3, $3\sqrt{3}$, is 729?



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171. Which term of the G.P. $\frac{1}{3}$, $\frac{1}{9}$, $\frac{1}{27}$, is $\frac{1}{2187}$?



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172. Find the 12^{th} term of a G.P. whose 8^{th} term is 192 and the common ratio is 2.

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173. The 4^{th} term of a geometric progression is $\frac{2}{3}$ and the seventh term is $\frac{16}{81}$. Find the geometric series.

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174. If the geometric progressions $162, 54, 18, \dots$ and $\frac{2}{81}, \frac{2}{27}, \frac{2}{9}, \dots$ have their n^{th} term equal, find the value of n .

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175. Which term of the AP : 121, 117, 113, , is the first negative term? [Hint: Find n for $a_n < 0$]



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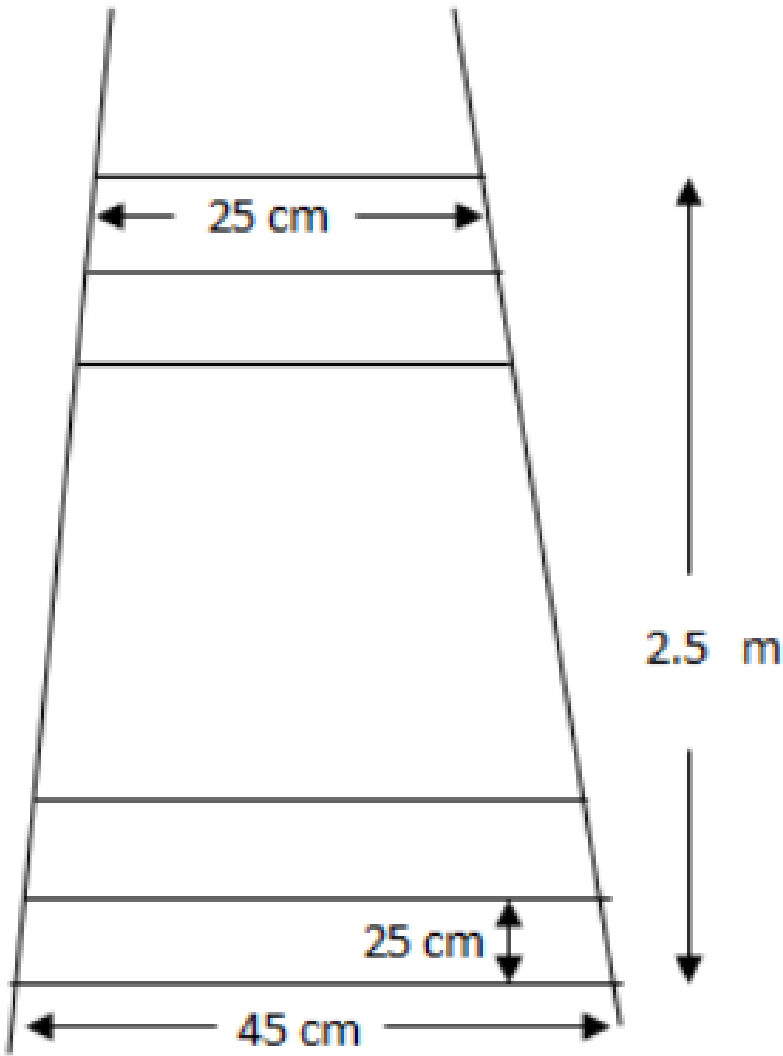
176. The sum of the third and the seventh terms of an AP is 6 and their product is 8. find the sum of first sixteen terms of the AP.



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177. A ladder has rungs 25 cm apart. The rungs decrease uniformly in length from 45 cm at the bottom to 25 cm at the top. If the top and the bottom rungs are $2\frac{1}{2}$ m apart. What is the length of the wood required

for the rungs? [Hint : Number of rungs = $\frac{250}{25} + 1$]



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178. The house of a row are numbered consecutively from 1 to 49. Show that there is a value of x such that the sum of the numbers of the house preceding the house numbered x is equal to the sum of the numbers of the houses following it. And find this value of x . [Hint: $S_{x-1} = S_{49} - S_x$]

11



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179. A small terrace at a football ground comprises of 15 steps each of which is 50 m long and built of solid concrete.

Each step has a rise a $\frac{1}{4}$ m and a tread of $\frac{1}{2}$ m. (see Fig.). Calculate the total volume of concrete required to build the terrace.

[Hint : Volume of concrete required to build the first step =

$$\frac{1}{4} \times \frac{1}{2} \times 50m^3]$$



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180. 150 workers were engaged to finish a piece of work in a certain number of days. Four workers dropped from the work in the second day. Four workers dropped in third day and so on. It took 8 more days to finish the work. Find the number of days in which the work was completed.



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181. A machine costs Rs. 5,00,000. if the value depreciates 15% in the first year, $13\frac{1}{2}\%$ in the second year, 12% in the third year and so on. What will be its value at the end of 10 years, when all the percentages will be applied to the original cost?



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182. The hand borewell driller charges Rs. 200 for the first one meter only and raises drilling charges @ 30/- for every subsequent meter. Write a progression for the above data.



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183. Write the common difference of an Arithmetic Progression, whose n^{th} term is given by $t_n = 3n + 7$.

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184. Find the sum of first 200 natural numbers.

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185. Is 'zero' a term of the Arithmetic Progression 31, 28, 25,? Justify your answer.

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186. In a GP. $t_n = (-1)^n$. 2017. find the common ratio.

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187. The n th term of an A.P. is $6n + 2$. Find the common difference.

$(x \in \mathbb{N})$



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188. Is the sequence $\sqrt{3}, \sqrt{6}, \sqrt{9}, \sqrt{12}, \dots$ form an Arithmetic Progression

? Give reason.



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189. Radha says “1,1,1,... are in A.P and also G.P”.Do you agree with Radha,?

Give reason.



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190. In the AP $-9, -14, -19, -24, \dots$ $a_{30} - a_{20} = \dots$



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191. Find the 11^{th} term of the A.P. : 15, 12, 9,



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192. In a flower garden there are 23 plants in first row, 21 plants in second row, 19 plants in 3rd row and so on. If there are 10 rows in that garden, then find the total number of plants in the last row with the help of the formula $t_n = a + (n - 1)d$



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193. If seven times of 7th term of an Arithmetic Progression is equal to the 11 times of 11^{th} term of it, then find the 18^{th} term of that Arithmetic Progression.



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194. Measures of sides of a triangle are in Arithmetic Progression. Its perimeter is 30 cm, and the difference between the longest and shortest side is 4 cm , then find the measures of the sides.



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195. Explain the terms in the formula.

$$S_n = \frac{n}{2}[2a + (n - 1)d].$$



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196. Find the sum of first 10 terms of an A.P.

3, 15, 27, 39,.....



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197. Find the value of 'k', so that $k + 2$, $4k - 6$ and $3k - 2$ are the three consecutive terms of an A.P.



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198. Find the 7^{th} term from the end of the Arithmetic Progression.

7, 10, 13,, 184.



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199. Write the formula of n^{th} term of G.P. and explain the terms in it.



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200. In a rangoli design of 13 rows, every row increases its previous row by two dots and first row contains 5 dots then how many total dots are in the design?



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201. Which term of the G.P. : $\sqrt{2}, 2, 2\sqrt{2}, 4, \dots$ is 32 ?



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202. A manufacture of TV sets produced 500 sets in the third year and 700 sets in the seventh year. Assuming that the production increase uniformly by a fixed number every year. Find.

(i) The production of TV sets in the 15th year.



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203. A manufacture of TV sets produced 500 sets in the third year and 700 sets in the seventh year. Assuming that the production increase uniformly by a fixed number every year. Find.

(ii) The total production of TV sets in the first ten years.



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204. Find the sum of all 3 digit numbers that are divisible by 4.



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205. The sum of the three terms which are in an Arithmetic Progression is 33. If the product of the first and the third terms exceeds the second term by 29, find the Arithmetic Progression.



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206. Find the sum of all three digit natural numbers, which are divisible by 3 and not divisible by 6.



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207. The sum of 5^{th} and 9^{th} terms of A.P. is 72 and the sum of 7th and 12th terms is 97. Find the A.P.

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208. Which term of G.P. : 3, 9, 27, Is 2187?

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209. Find the sum of all two digit positive integers which are divisible by 3 but not by 2?

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210. Find the sum of all two digit odd multiples of 3.

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211. Find the sum of the integers between 100 and 500 that are divisible by 9.



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212. Find the sum of all the integers between 1 to 50 which are not divisible by 3.



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213. Find the 13th term of the A.P. 2, 7, 12,



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214. In an A.P. the common difference (d) is 6 and seventh term is 36. Can we write such an A.P.?



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215. The 'n' the term of a given A.P. is $6n + 2$. Then write the first four terms in it.



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216. Which terms are to be known to calculate 'n' th term of A.P. ?



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217. Find out the common ratio in the GP `2, sqrt(2),4,.....



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218. Find the number of terms in the following A.P.

7, 13, 19,205



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219. In an A.P. the seventh term is 13 and 3rd term is 7. so find 'a' and 'd' in the method of elimination.

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220. Establish the relationship between the first and 'n' th term of an A.P. in which 'd' = 0.

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221. What will be the salary of a person in the year 2020, whose salary in the year 2016 is Rs. 10,000, which increases Rs. 1500 every year?

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222. Check whether -25 is a term in the progression 5,3,1,, or not?

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223. Parking fee for a two wheeler is Rs. 10 per day i.e., for first day, and then after Rs. 2 for everyday. So what will be the amount to be paid for 15 days?



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224. Determine the AP whose 3^{rd} term is 5 and the 7^{th} term is 9.

A. 1

B. 2

C. 3

D. 4

Answer:



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225. If (i) $-1.0, -1.5, -2.0, -2.5, \dots$ and (ii) $-1, -3, -9, -27, \dots$ are two progressions, then which of them is a Geometric Progression?

- A. (i)only
- B. (ii) only
- C. (i)and(ii)both
- D. None of them

Answer:



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226. In the formula of n^{th} term of term of a Geometric Progression

$$a_n = a \cdot r^{n-1}, r \text{ denotes } \dots$$

- A. Nth term
- B. Number of terms

C. Common ratio

D. First term

Answer:



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227. Which of the following is a geometric progression has the common ratio as $\sqrt{2}$?

A. $\sqrt{2}, \sqrt{6}, \sqrt{18}$

B. $\sqrt{3}, \sqrt{6}, \sqrt{12}$

C. $\sqrt{5}, \sqrt{15}, \sqrt{45}$

D. $\sqrt{7}, \sqrt{21}, \sqrt{63}$

Answer:



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228. In the formula of n^{th} term of a Geometric Progression

$$a_n = a \cdot r^{n-1}, r \text{ denotes } \dots\dots$$

- A. First term
- B. Common ratio
- C. Common difference
- D. Number of terms

Answer:



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229. The common difference of an Arithmetic Progression in which

$$a_{25} - a_{12} = -52 \text{ is } \dots\dots$$

- A. 4
- B. -4
- C. -4

D. 3

Answer:



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230. Sum of 10 terms of the progression

$\log 2 + \log 4 + \log 8 + \log 6 + \dots$ is

A. $45 \log 2$

B. $90 \log 2$

C. $10 \log 2$

D. $55 \log 2$

Answer:



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231. Which term of the Arithmetic Progression 24, 21, 18, Is the first negative term?

A. 8th

B. 9th

C. 10th

D. 12th

Answer:



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232. The sum of first 100 natural numbers is

A. 4050

B. 4500

C. 5500

D. 5050

Answer:



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233. If a, b, c are in G.P., then $b =$

A. Ac

B. \sqrt{ac}

C. $\frac{a+c}{2}$

D. a^2c^2

Answer:



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234. If $-\frac{2}{7}, x, -\frac{7}{2}$ are in Geometric Progression, then the value of x is

A. 2

B. 1

C. 0

D. 14

Answer:



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235. In an Arithmetic Progression , 4^{th} term is 11 and 7^{th} term is 17, then its common difference is

A. 1

B. 2

C. 3

D. 4

Answer:



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236. If the common difference of AP is 2 then $a_{10} - a_5 =$

A. 5

B. 10

C. 2

D. 20

Answer:



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237. In a G.P, the 5^{th} term is 32 and 7^{th} term is 128, then the common ratio of GP

A. 2

B. 5

C. 7

D. 3

Answer:



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238. Sum of the first 10 natural numbers is

A. $\frac{10 \times 9}{2}$

B. $\frac{10 \times 10}{2}$

C. $\frac{10 \times 11}{2}$

D. Both a and b

Answer:



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239. The nth term if a GP = $a_n = ar^{n-1}$ here 'r' means

A. Radius

B. Common ratio

C. Common difference

D. Common multiple

Answer:



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240. if a, b, c are in A.P. then $b =$

A. $\frac{a + c}{2}$

B. $A + c$

C. \sqrt{ac}

D. AC

Answer:



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241. The sum of the first 20 even natural numbers is

A. 5050

B. 55

C. 505

D. 420

Answer:



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242. How many terms of A.P. $-6, \frac{-11}{2}, -5$ are needed to obtain a sum -25?

A. 10 or 15

B. 15 or 18

C. 5 or 20

D. 8 or 12

Answer:



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243. The sum of natural numbers from 1 to 100 is

A. 4050

B. 10100

C. 55

D. 5050

Answer:



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244. The sum of first 50 even numbers is

A. 1250

B. 2550

C. 1275

D. 2275

Answer:



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245. The sum of first 20 odd numbers is

A. 400

B. 210

C. 420

D. 405

Answer:



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246. If $x - 1$, $x + 3$, $3x - 1$ are in A.P., then x is equal

- A. 5
- B. 8
- C. Six
- D. 4

Answer:



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247. The numbers -15 , -11 , -7 , -3 , isis

- A. AP with $d=4$
- B. AP with $d=-4$
- C. AP with $d=8$

D. GP

Answer:



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248. The next term of the A.P.

$\sqrt{48}, \sqrt{75}, \sqrt{108}, \sqrt{147}, \dots$ Is

A. $\sqrt{27}$

B. $\sqrt{197}$

C. $\sqrt{197}$

D. $\sqrt{243}$

Answer:



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249. Which term of the Arithmetic Progression 24, 21, 18, Is the first negative term?

A. a_{10}

B. a_9

C. a_6

D. a_{11}

Answer:



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250. Which term of the A.P. 125, 120, 115, Is the first negative?

A. 25^{th}

B. 26^{th}

C. 24^{th}

D. 27^{th}

Answer:



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251. Which term of the A.P

100 , 90, 80, Is zero?

A. 10^{th}

B. 9^{th}

C. 11^{th}

D. 12^{th}

Answer:



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252. $(a + 3d)$, $(a + d)$, $(a - d)$, the next term of the A.P. is

A. $a+2d$

B. $a-2d$

C. $a-4d$

D. $a-3d$

Answer:



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253. The sum of 15 terms of the A.P. 4, 7, 10, Is

A. 385

B. 475

C. 375

D. 325

Answer:



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254. If $a_7 - a_3 = 32$, then the common difference of the A.P. is

A. 8

B. 6

C. 4

D. 6

Answer:



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255. $a_{28} - a_{23} = 15$, then the common difference of the A.P. is

A. 3

B. 5

C. 7

D. 15

Answer:



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256. If a, b, c are in AP then $b - a = \dots\dots\dots$

A. $a + c$

B. $\frac{a + c}{2}$

C. $a - c$

D. $\frac{a - c}{2}$

Answer:



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257. The 17^{th} term of $1.1, 2.2, 3.3, 4.4, \dots\dots\dots$ is

A. 18.7

B. 19.8

C. 17.6

D. 17.17

Answer:



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258. The 25th term of

$-300, -290, -280, \dots$ is

A. -60

B. -80

C. 60

D. 80

Answer:

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259. How many numbers are divisible by 4 lying between 101 and 250 ?

A. 40

B. 62

C. 38

D. 37

Answer:

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260. The common ratio of the G.P.

3, 6, 12, 24, Is

A. 3

B. 2

C. $\frac{1}{2}$

D. $\frac{1}{3}$

Answer:



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261. The common ratio of the G.P.

3, 6, 12, 24, Is

A. 4

B. 2

C. 6

D. $\frac{1}{4}$

Answer:



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262. The 103^{rd} term of $1, -1, 1, -1, \dots$ is

A. 1

B. -1

C. 0

D. -2

Answer:



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263. Which term of the G.P.

$2, 6, 18, 54, \dots$ is 2×3^{10} ?

A. 10^{th}

B. 11^{th}

C. 12th

D. 9th

Answer:



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264. If $a_7 + a_4$ of a G.P. is 343, then the common ratio is

A. 11

B. 9

C. 3

D. 7

Answer:



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265. If a, b, c are in G.P., then $b =$

A. Ac

B. $\frac{a + c}{2}$

C. a^2c^2

D. \sqrt{ac}

Answer:



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266. If 4, x, 9 are in G.P. , then x =

A. 7

B. 6

C. 8

D. 5

Answer:



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267. If 3, x , 11 are in A.P. , then $x =$

A. $\sqrt{21}$

B. 14

C. 4

D. 7

Answer:



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268. If x, xy, xy^2, xy^3, \dots Forms a G.P., then its 15^{th} term is

A. xy^{15}

B. xy^{14}

C. $x^{14}y$

D. $x^{15}y$

Answer:



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269. if $a = 3$ and $a_7 = 33$, then a_{11} is

A. 55

B. 53

C. 73

D. 63

Answer:



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270. $-20, -18, -16, \dots$ which term of this A.P. is a first positive term?

A. 10

B. 11

C. 12

D. 9

Answer:

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271. 1,-1, 1, -1,1,-1,..... up to 131 terms, then $S_{131} =$

A. 1

B. -1

C. 131

D. 130

Answer:

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272. The 10^{th} term of the AP 3,11,19,... Is

A. 73

B. 16

C. 75

D. 85

Answer:



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273. term of AP 21 , 18, 15, is -81.

A. 35

B. 16

C. 30

D. None

Answer:



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274. The 8th term from the end of the AP 7,10,13, 184 is

A. 324

B. 181

C. 163

D. 161

Answer:



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275. The n th term of $a, a + d, a + 2d, \dots$ is

A. $A+(n-1)d$

B. $a-(n+1)d$

C. $a^2 - (n - 1)d$

D. $D+(n-1)d$

Answer:



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276. In the AP, first term is 4 and common difference is -1 then AP is

A. 9, 3, -6,

B. 10, 12, 14, ...

C. 5, 8, 16, ...

D. 4, 3, 2, ...

Answer:



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277. The AP with first term is 8 and common difference $2\frac{1}{2}$ is

A. $8, 10\frac{1}{2}, 13, \dots$

B. $8, 10, \frac{111}{2}$

C. $16, 15\frac{1}{2}, 10\frac{1}{2}$

D. None

Answer:



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278. In the AP $-9, -14, -19, -24, \dots$ $a_{30} - a_{20} = \dots$

A. 80

B. -60

C. 50

D. -50

Answer:



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279. The next term of the AP 51, 59 , 67 , 75 is

A. 12

B. 16

C. 83

D. 38

Answer:



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280. Find the sums given below:

(iii) $-5 + (-8) + (-11) + \dots + (-230)$

A. 66

B. 76

C. 86

D. None

Answer:



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281. 15th term of the AP $x - 7, x - 2, x + 3, \dots$ is

A. $X+63$

B. $x-6$

C. $x-63$

D. $X+16$

Answer:



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282. The common ratio of the GP

4, 20, 100, 500, Is

A. 8

B. 2

C. 5

D. 9

Answer:



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283. The 16th term of 4, -4, 4, -4, Is

A. 16

B. 8

C. 4

D. -4

Answer:



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284. AP 1, - 1, - 3, - 5d =

A. -2

B. 1

C. 2

D. 10

Answer:



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285. In the AP -11, -9, -7,d =

A. 4

B. 3

C. -2

D. 2

Answer:



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286. In the AP 100, 103, 106,d =

A. 4

B. 8

C. Six

D. None

Answer:



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287. A GP with $r = -2$ is

A. 5,-10, 20,-40

B. 2 ,4 ,8, 16

C. 3,-6,10,16....

D. All

Answer:



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288. A GP with $r = 2$ is

A. 7, 14, 28

B. 8, 16, 10

C. 12, 24, 19, ...

D. None

Answer:



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289. 5, 10, 15, 10th term is

A. 20

B. 90

C. 60

D. 50

Answer:



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290. 8, 16, 32,6th term is

A. 256

B. 156

C. 108

D. None

Answer:



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291. $-1, 1, -1, \dots$ 11th term is

A. 1

B. -1

C. 10

D. 9

Answer:



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292. $-8, -6, -4, \dots a_7 = \dots$

A. 1

B. 12

C. 10

D. 6

Answer:



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293. $1, 2, 3, \dots$ sum to 10 term is \dots

A. 55

B. 65

C. 60

D. 90

Answer:

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294. If a, b, c are in GP then $b^2 = \dots\dots$

A. $\frac{c}{a}$

B. $\frac{a}{c}$

C. \sqrt{ac}

D. Ac

Answer:

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295. In a GP $a_6 = \dots\dots\dots$

A. ar^5

B. a^5r

C. a^5r^5

D. All

Answer:



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296. Which term of the G.P., 2,8,32, ... up to n terms is 131072 ?

A. 16

B. 5

C. 9

D. 10

Answer:



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297. $\frac{1}{3}, \frac{1}{9}, \frac{1}{27}, \dots, a_7$

A. $\frac{1}{1827}$

B. $\frac{1}{2187}$

C. $\frac{1}{8127}$

D. None

Answer:



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298. $3, \frac{3}{2}, \frac{3}{4}, \dots, r =$

A. 1

B. 2

C. -1

D. None

Answer:



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299. If 2, x, 6 are in GP then $x = \dots\dots\dots$

A. $2\sqrt{3}$

B. $8\sqrt{3}$

C. $2\sqrt{2}$

D. $\sqrt{3}$

Answer:



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300. 4, 16, \square , 256,..... then $\square = \dots\dots$

A. 161

B. 64

C. 62

D. 68

Answer:



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301. $1+2+3+..+n=...$

A. $\frac{(n + 1)}{2}$

B. $\frac{n(n - 1)}{2}$

C. $\frac{n^2 + 1}{2}$

D. None

Answer:



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302. Using the principle of Mathematical Induction , $\forall n \in N$, prove that

$$1^2 + 2^2 + 3^2 + \dots + n^2 = \frac{n(n+1)(2n+1)}{6}$$

A. $\frac{n^2(n-1)^2}{2}$

B. $\frac{n(2n+1)}{4}$

C. $\frac{n(n+1)(2n+1)}{6}$

D. $\frac{(n+1)^2}{2}$

Answer:



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303. In an AP $7a_7 = 11a_{11}$ then $a_{18} = \dots\dots\dots$

A. -1

B. 0

C. 1

D. 7

Answer:



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304. AM of 24 and 16 is

A. 22

B. 19

C. 16

D. 20

Answer:



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305. If a, b, c are in AP then $2b = \dots\dots\dots$

A. $A + c$

B. $a - c$

C. $\frac{a + c}{2}$

D. $\frac{a}{2}$

Answer:



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306. The sum of first 40 positive intergers divisible by 6 is

A. 9420

B. 4920

C. 9920

D. 1290

Answer:



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307. $a_n = 9 - 5n$, $a_4 = \dots\dots\dots$

A. 30

B. 10

C. 11

D. -11

Answer:



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308. In a GP, $a_8 = 192$, $r = 2$ then $a_{12} = \dots\dots\dots$

A. 3072

B. 7032

C. 1032

D. 1100

Answer:



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309. 2, -6, 18, -54,r =

A. -3

B. 3

C. 1

D. -2

Answer:



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310. $5/2, 5/4, 5/8, \dots a_n = \dots$

A. $\frac{5}{2^{n-1}}$

B. $\frac{5}{2^n}$

C. $\frac{5}{2^{n-2}}$

D. None

Answer:



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311. $\frac{1}{\sqrt{2}}, -2, \frac{8}{\sqrt{2}}, \dots a_5 = \dots$

A. $16\sqrt{2}$

B. $32\sqrt{2}$

C. $6\sqrt{2}$

D. $31\sqrt{2}$

Answer:

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312. $3, -3^2, 3^3, \dots, a_6 = \dots$

A. -729

B. 729

C. 829

D. 114

Answer:

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313. In a G.P. $a = 81$, $r = -\frac{1}{3}$, $a_3 = \dots\dots\dots$

A. -9

B. 9

C. -3

D. None

Answer:



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314. In a G.P. 25, -5, 1, -1/5,r =

A. $-\frac{3}{5}$

B. 2

C. -1

D. $-\frac{1}{5}$

Answer:

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315. S_n in A.P.=

A. $\frac{n}{2}(a + l)$

B. $\frac{n}{3}(a + l)$

C. $2n(a+l)$

D. None

Answer:

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316. In AP $a_{12} = 37, d = 3$, then $a = \dots\dots\dots$

A. 8

B. -4

C. -3

D. 4

Answer:



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317. In the above problem $a_5 = \dots$

A. 246

B. 146

C. 123

D. 112

Answer:



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318. $-1, \frac{1}{4}, \frac{3}{2}, \dots$. Sum to 10 terms =

A. 26.25

B. 16.25

C. 36.25

D. 46.25

Answer:



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319. Find the sums given below:

(iii) $-5 + (-8) + (-11) + \dots + (-230)$

A. -8930

B. 8930

C. 8390

D. none

Answer:



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320. Find the sum of :

(i) The first 1000 positive intergers .

A. 500500

B. 50051

C. 8005

D. none

Answer:



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321. $16 + 11 + 6 + \dots \dots \dots 23$ terms =

A. 119

B. -987

C. 891

D. -897

Answer:



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322. Identify the number of 3 digit number that divisible by 7.

A. 126

B. 128

C. 122

D. none

Answer:



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323. In an AP $a_1 = -4$, $a_6 = 6$ then $a_2 = \dots\dots$

A. 3

B. 6

C. 1

D. -2

Answer:



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324. In the above problem $a_5 = \dots$

A. 4

B. -3

C. 6

D. -4

Answer:



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325. In the formula $a_n = 3.6$, $a = -18.9$, $d = 2.5$, $n = \dots\dots\dots$

A. 13

B. 12

C. 10

D. 20

Answer:



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326. 5, 1, -3, -7, $a_{10} = \dots\dots\dots$

A. -23

B. 22

C. 31

D. -31

Answer:

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327. $\frac{1}{4}, \frac{-1}{4}, \frac{-3}{4}, \frac{-5}{4}, d = \dots\dots\dots$

A. $\frac{-1}{2}$

B. $\frac{1}{2}$

C. 2

D. -1

Answer:

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328. If 4, x, 16 are in G.P. then x =

A. 12

B. 16

C. 8

D. None

Answer:



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329. $1^3 + 2^3 + 3^3 + \dots + n^3 = \dots$

A. $\frac{n}{2}$

B. $\frac{(n+1)^2}{2}$

C. $\frac{n(n+1)}{2}$

D. $\frac{n^2(n+1)^2}{2}$

Answer:



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330. G.M. of a and b is

A. \sqrt{ab}

B. $\frac{ab}{2}$

C. $\frac{a+b}{2}$

D. none

Answer:



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331. G.M. of a and $\frac{1}{a}$ is

A. -3

B. 1

C. 7

D. 8

Answer:



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332. Reciprocals of term of GP is

A. AP

B. GP

C. HP

D. none

Answer:



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333. If a, b, c are in GP then $\frac{b}{a} = \dots\dots\dots$

A. $\frac{c}{b}$

B. $\frac{b}{c}$

C. $\frac{1}{b}$

D. none

Answer:



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334. a_n in GP =

A. ar

B. ar^{n-1}

C. a^{n-1}

D. $\frac{a}{2} r^{n-1}$

Answer:



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335. $1+1+1+\dots+n$ terms =

A. $n/2$

B. n

C. $n - 1$

D. none

Answer:



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336. If a, b, c are in GP then b is called

A. Geometric mean

B. Arithmetic mean

C. Number

D. None

Answer:

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337. $\sum n = 10, \sum n^3 = \dots\dots\dots$

A. 100

B. 1001

C. 200

D. 80

Answer:

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338. In a series $a_n = \frac{n(n+1)}{2}$, $a_2 = \dots$

A. 41

B. 3

C. 4

D. 2

Answer:



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339. AM of 10 and 20 is

A. 12

B. 15

C. 25

D. 10

Answer:



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340. $a_n = (n - 1)(n - 2)$ then $a_2 = \dots\dots\dots$

A. 1

B. 0

C. 2

D. 3

Answer:



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341. If a, b, c are in AP then $b - a = \dots\dots\dots$

A. $c + b$

B. $a + b$

C. $c - b$

D. none

Answer:



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342. Find the values of x so that $\frac{-2}{7}$, x , $\frac{-7}{2}$ are three consecutive terms of a G.P.

A. ± 1

B. ± 2

C. ± 3

D. ± 4

Answer:

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343. GM of 5 and 125 is

A. 13

B. 16

C. 10

D. 25

Answer:

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344. S_n in AP =

A. $\frac{n}{2}[2a + (n - 1)d]$

B. $\frac{n}{2}[a + (n + 1)d]$

C. $n[2a + (n - 1)d]$

D. none

Answer:



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345. $a_n = \frac{1}{n + 2}, a_3 = \dots\dots\dots$

A. $1/2$

B. $5/3$

C. $3/5$

D. none

Answer:



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346. The n th term of a GP is $2(0.5)^{n-1}, r = \dots\dots\dots$

A. -2

B. $1/2$

C. 2

D. -1

Answer:



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347. The common ratio of the GP

$2, \sqrt{8}, 4, \dots$ is

A. $\sqrt{3}$

B. 4

C. 3

D. $\sqrt{2}$

Answer:

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348. a, b, c are in AP then $3^a, 3^b, 3^c$ are in

A. GP

B. HP

C. AP

D. none

Answer:

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349. $2, 5/2, 3, \dots S_{(25)} = \dots$

A. 110

B. 180

C. 100

D. none

Answer:



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350. AM of M, P, C is

A. $\frac{MPC}{3}$

B. $M - P - C$

C. $\frac{M + P + C}{3}$

D. $\frac{M + P - C}{2}$

Answer:



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351. $a_n = 2^n$, $a_5 = \dots\dots$

A. 32

B. 23

C. 18

D. 13

Answer:



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352. AM of 5 and 95 is

A. 105

B. 505

C. 501

D. 50

Answer:



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353. GM of x^3 and $\frac{1}{x^3} = \dots\dots\dots$

- A. -7
- B. 1
- C. 3
- D. none

Answer:



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354. $n - 1, n - 2, n - 3, \dots\dots\dots a_{10} = \dots\dots\dots$

- A. $n - 10$
- B. $n - 9$
- C. $n + 9$

D. $n - 3$

Answer:



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355. Product of n GM's between a and b is

A. $(ab)^{n/2}$

B. $(ab)^n$

C. $\frac{a}{b}$

D. $\frac{a^n}{b}$

Answer:



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356. If $\frac{a^{n+1} + b^{n+1}}{a^n + b^n}$ is the AM of a and b then $n = \dots\dots\dots$

A. $\frac{-1}{2}$

B. 1

C. 0

D. 4

Answer:



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357. 7, 10, 13,, a_5 =

A. 19

B. 100

C. 131

D. 12

Answer:



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358. 22, 32, 42,, a_7 =

A. 81

B. 92

C. 69

D. 82

Answer:



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359. 1, 4, 7, 10,, d =

A. 13

B. 3

C. 4

D. none

Answer:



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360. In AP $a_p = q, a_q = p$ then $a_{p+q} = \dots\dots\dots$

A. $q - p$

B. $p - q$

C. 0

D. -1

Answer:



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361. Which term of AP $7+4+1+\dots\dots\dots$ is -56 ?

A. 22

B. 20

C. 18

D. 19

Answer:



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362. $1+6+4+9+7+12+\dots$ to 40 terms

A. 20

B. 60

C. 90

D. none

Answer:



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363. AM of $x^2 + y^2$ and $x^2 - y^2$ is

A. $\frac{x^2}{2}$

B. x^2

C. x

D. $2x$

Answer:



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364. $\frac{b+c-a}{a}$, $\frac{c+a-b}{b}$, $\frac{a+b-c}{c}$ are in AP then $\frac{1}{a}$, $\frac{1}{b}$, $\frac{1}{c}$ are in

.....

A. HP

B. GP

C. AP

D. None

Answer:



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365. If there are n AM's between a and b then $d = \dots\dots\dots$

A. $\frac{b - a}{n + 1}$

B. $\frac{b}{n + 1}$

C. $\frac{a - b}{n}$

D. $\frac{b}{n + 2}$

Answer:



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366. 10, 100, 1000,, $r = \dots\dots\dots$

A. 12

B. 9

C. 8

D. 10

Answer:



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$$367.1 + \frac{1}{2} + \frac{1}{2^2} + \dots, r = \dots$$

A. 3

B. $1/2$

C. 2

D. -1

Answer:



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368. 3, 6, 12,, $r = \dots$

A. 1

B. 10

C. 3

D. none

Answer:



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369. $a, a^2, a^3, \dots, r = \dots$

A. a

B. a^2

C. a^3

D. none

Answer:



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370. a, b, c are in AP then $\frac{1}{a}, \frac{1}{b}, \frac{1}{c}$ are in

A. GP

B. AP

C. HP

D. none

Answer:



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371. GM of x, y, z is

A. xyz^3

B. $\sqrt[3]{xyz}$

C. $\frac{xyz}{3}$

D. $\frac{x + y + z}{3}$

Answer:



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372. The nth term if a GP = $a_n = ar^{n-1}$ here 'r' means

A. common difference

B. common ratio

C. first term

D. radius

Answer:



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373. The 'n' th term of an A.P. is $a_n = 3 + 2n$ then the common difference is

A. 2

B. 3

C. 4

D. 5

Answer:



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374. The common difference of the AP $x - y, x, x + y$ is

A. x

B. y

C. $-x$

D. $-y$

Answer:



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375. The common difference of the AP $2a - b, 4a - 3b, 6a - 5b$ is

A. $2a - 2b$

B. $a - b$

C. $2a - b$

D. $4a - 3b$

Answer:



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376. In a GP $a_1 = 20$ and $a_4 = 540$ then $r = \dots\dots\dots$

A. 27

B. 3

C. 520

D. 18

Answer:

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377. Formula for sum of 'n' terms in an AP =

A. $Sum_n = \frac{n(n + l)}{2}$

B. $Sum_{n^2} = \frac{n^2(n + l)(n + 2)}{6}$

C. $S_n = \frac{n}{2}[2a + (n - 1)d]$ or $S_n = \frac{n}{2}[a + l]$

D. $a_n = a + (n - 1)d$

Answer:

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378. In an AP $a_n = \frac{5n - 3}{4}$, then $a_7 = \dots\dots\dots$

A. 8

B. 10

C. 9

D. 7

Answer:



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