MATHS

BOOKS - OSWAL PUBLICATION

ARITHMETIC PROGRESSIONS

Self Assessment 1

1. If 2, x, 26 are in A. P., then the value of x is.

A. 28

B. 26

C. 14

D. 24

Answer: C

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2. Find the common difference of the A.P whose first term is 12 and fifth term is 0.

A. 3

B. -3

C. 4

D. -4

Answer:

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3. Which term of the arithmetic progression 8,14,20,26, ... will be 72 more than its 41st term?

A. 63

B. -53

C. 73

D. 53

Answer:

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4. The 10th term of the A.P. : 5, 8,11,14, ... is .....

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5. In an A.P., if a = - 7.2, d = 3.6, an = 7.2, then value of n is .....

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6. The 41^{st} term of the A.P., whose first two terms are -6 and -5 is .....

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7. In an A.P., if the common difference (d)=-4 and the seventh term (a_7) is 4 then find the first term

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8. Find the 11^{th} term from the last term of the A.P : 27, 23, 19, ..., -65.

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9. If the n^{th} term of an A.P. - 1, 4, 9, 14 , is 129. Find the value of n.

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10. Find, how many three digit natural numbers are divisible by 13?

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11. If the 2^{nd} term of an A.P. is 8 and the 5^{th} term is 17, find its 19^{th} term.

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12. Find the 2^{nd} term from the end of the A.P. :

1, 6, 11 , 16 ... 211, 216.

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13. If 10 times the 7^{th} term of an A. P. is equal to 5 times its 11^{th} term, then find its 3^{rd} term.

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14. Find the 20^{th} term of an A.P.whose 3^{rd} term is 7 and the 7^{th} term exceeds three times the 3^{rd} term by 2.Also find its n^{th} term (a_n)

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15. If the seventh term of an AP is 1/9 and its ninth term is 1/7, find its $(63)^{rd}$ term.

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16. Which term of the Arithetic Progression $-7, -12, -17, -22, \ldots\ldots\ldots\ldots$ will be -102 ? Is - 200 any term of the A. P. ? Given reason for your answer.

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17. The sum of three numbers in A.P. is 12 and the sum of their cubes is 288. Find the numbers.

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18. Find the value of a,b and c such that the number a, 17, b, 37 and c are in A. P.

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Self Assessment 2

1. In an A.P., if $S_n = n(4n + 1),$ then the value of S_{20} is

A. 1610

B. 1520

C. 1620

D. 1400

Answer: C

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2. How many terms of the $A.P.\ 65, 60, 55....$ be taken so that their sum is zero?

A. 27

B. 29

C. 35

D. 28

Answer:

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3. In an A.P., if $a = 8, a_4, = 17, S_n = 148$ then value of n is.

A. 6

B. 8

C. 10

D. 12

Answer: B

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4. Find the mean of first six multiples of 5

5. Find the sum of first seven numbers which are multiples of 2 as well as of 9.

6. The sun of first 16 terms of the AP 10, 6, 2, ... is

7. Find the sum of first 8 multiples of 3

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8. If n^{th} term of an A.P. is (2n + 1), what is the sum of its first three terms ?

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9. If the sum of first k terms of an A.P. is $3k^2 - k$ and its common difference is 6. What is the first term ?

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10. If the n^{th} term of an A.P. is 7-3n, find the sum of twenty five terms.

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11. The first and the last terms of an A.P. are 5 and 45 respectively. If the sum of all its terms is 400, find its common difference.

12. If the sum of the first 9 terms of an A.P. is 81 and that of the first 18 terms is 324, find the sum of its first n terms.

13. Find the sum of all two digit natural numbers which are divisible by 4.

14. Find the sum of the integers between 100 and 200 that are divisible by 3

15. Find the sum of all odd numbers lying between 100 and 200.

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16. If the sum of first 14 terms of an A.P. is 1050 and its first term is 10, find the 20^{th} term.

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17. The sum of four consecutive numbers in an A.P. is 52 and the ratio of the product of the first and the last term to the product of two middle terms is 11:20. Find the numbers.

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18. Find the 60^{th} term of the A.P. 8, 10, 12, ..., if it has a total of 60 terms and hence find the sum of its last 10 terms.

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19. 

Sarika has a daughter Sita. Sarika wanted to save the money for her future. So she purchased a money box when Sita was born, was born, and put Rs 100 into her daughter's money box when she was one year old, Rs 150

on her second birthday, Rs 200 on her third birthday, Rs 250 on her forth birthday and will continue in the same way.

How much money will be collected in the money box by the time her daughter is 21 years old ?

A. Rs 5,600

B. Rs 12,600

C. Rs,10,000

D. Rs 16,600

Answer:

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20. 

Sarika has a daughter Sita. Sarika wanted to save the money for her future. So she purchased a money box when Sita was born,

was born, and put Rs 100 into her daughter's money box when she was one year old, Rs 150 on her second birthday, Rs 200 on her third birthday, Rs 250 on her forth birthday and will continue in the same way.

How much money will be collected in the money box by the time her daughter is 10 years old ?

A. Rs 2850

B. Rs 6450

C. Rs 3250

D. Rs 1050

Answer:

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21.

Sarika has a daughter Sita. Sarika wanted to save the money for her future. So she purchased a money box when Sita was born, was born, and put Rs 100 into her daughter's money box when she was one year old, Rs 150

on her second birthday, Rs 200 on her third birthday, Rs 250 on her forth birthday and will continue in the same way.

How much money will Sarika put in the money box on her tenth birthday ?

A. Rs 600

B. Rs 450

C. Rs 650

D. Rs 550

Answer:

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22. 

Sarika has a daughter Sita. Sarika wanted to save the money for her future. So she purchased a money box when Sita was born, was born, and put Rs 100 into her daughter's

money box when she was one year old, Rs 150 on her second birthday, Rs 200 on her third birthday, Rs 250 on her forth birthday and will continue in the same way.

How much money will Sarika put in the money box on her 21st birthday?

A. Rs 1100

B. Rs 1050

C. Rs 1150

D. Rs 1000

Answer:

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23. Ramkali would need Rs. 1800 for admission fee and books etc., for her daughter to start going to school from next year. She saved Rs. 50 in the first month of this year and increased her monthly saving by Rs. 20. After a year, how much money will she save? Will she be able to fulfil her dream of sending her daughter to school?

A. 20 years

B. 15 years

C. 17 years

D. 18 years

Answer:

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24. A ladder has rungs 25 cm apart, (see Figure). 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?

A. 49 cm

B. 37 cm

C. 39 cm

D. 41 cm

Answer:

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25. A ladder has rungs 25 cm apart, (see Figure). 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?

A. 29 cm

B. 37 cm

C. 27 cm

D. 33 cm

Answer:

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26. A ladder has rungs 25 cm apart, (see Figure). 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?

A. 147 cm

B. 168 cm

C. 165 cm

D. 178 cm

Answer:

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27. A ladder has rungs 25 cm apart, (see Figure). 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?

A. 333 cm

B. 133 cm

C. 337 cm

D. 268 cm

Answer:

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28. A ladder has rungs 25 cm apart, (see Figure). 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?

A. 37 cm

B. 39 cm

C. 35 cm

D. 41 cm

Answer:

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Ncert Corner Exercise 5 1

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

the taxi fare after each km when the fare is Rs 15 for the first km and 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 ?

The amount of air present in a cylinder when a vacuum pump removes $\frac{1}{4}$ 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 ?

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

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

$a = 1, d = 10$

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

$a = -2, d = 0$

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

$a = 4, d = -3$

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7. Write first four terms of the A. P., when the first term a and the common difference d are

given as follows :

$a = -1, d = \frac{1}{2}$

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

$a = -1.25, d = -0.25$

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9. For the following A.P.'s write the first term and the common difference:

$3, \ -1, \ -3 \ldots$

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10. For the following A.P.'s write the first term and the common difference:

$-5, \ -1, 3, 7 \ldots \ldots$

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11. For the following A.P.'s write the first term and the common difference:

$\frac{1}{3}, \frac{5}{3}, \frac{9}{3}, \frac{13}{3} \ldots$

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12. For the following A.P.'s write the first term and the common difference:

$0.6, 1.7, 2.83.9 \ldots$

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13. Which of the following are AP's ? If they form an A. P. , find the common difference d and write three more terms.

$2, 4, 8, 16. \ldots .$

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

$2, \frac{5}{2}, 3, \frac{7}{2} \ldots$

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

$-1.2,\ -3.2,\ -5.2,\ -7.2, \ldots$

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

$-10,\ -6,\ -2, 2 \ldots$

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

$3, 3+\sqrt{2}, 3+2\sqrt{2}, 3+3\sqrt{2}, \ldots.$

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18. Which of the following are AP's ? If they form an A. P. , find the common difference d

and write three more terms.

$0.2, 0.22, 0.222, 0.2222, \ldots$

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

$-0, \ -4, \ -8, \ -12, \ldots$

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

$$-\frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}, \ldots.$$

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

$a, 2a, 3a, 4a, \ldots$

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

$a, a^2, a^3, a^4, \ldots$`

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23. Which of the following are AP's ? If they form an A. P. , find the common difference d

and write three more terms.

$\sqrt{2}, \sqrt{8}, \sqrt{18}, \sqrt{32}, \ldots$

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

$\sqrt{3}, \sqrt{6}, \sqrt{9}, \sqrt{12}, \ldots$

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

$1^2, 3^2, 5^2, 7^2, \ldots$

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

$1^2, 5^2, 7^2, 73, \ldots$

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Ncert Corner Exercise 5 2

1. Fill in the blanks in the following table, given that a is the first term, d the common difference and a_n the nth term of the AP:

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2. Choose the correct choice in the following and justify :

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

A. 97

B. 44

C. -77

D. -87

Answer: C

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3. Choose the correct choice in the following and justify :

11^{th} term of the $A.\ P.\ :\ -3-\frac{1}{2}, 2, \ldots.$ is

A. 28

B. 22

C. -38

D. $-48\frac{1}{2}$

Answer: B

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4. In the following A.P. 's find the missing terms in the boxes :

$2, \square, 26$

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5. In the following A.P. 's find the missing terms in the boxes :

$\square, 13, \square, 3$

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6. In the following A.P. 's find the missing terms in the boxes :

$5, \square, \square, 9\frac{1}{2}$

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7. In the following A.P. 's find the missing terms in the boxes :

$-4, \square, \square, \square, \square, 6$

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8. In the following A.P. 's find the missing terms in the boxes :

$\square, 38, \square, \square, \square, -22$

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9. Which term of the A.P.3,8,13,18,.....is 78 ?

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10. Find the number of tterms in each of the following A.P.'s:

$7, 13, 19, \ldots 205$

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11. Find the number of tterms in each of the following A.P.'s:

$18, 15\frac{1}{2}, 13, \ldots, -47$

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12. Cheack whether -150 is a term of the A.P. 11, 8, 5, 2,.....

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

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14. An A.P. consists of 50 terms of which 3^{rd} term is 12 and the last term is 106. Find the 39^{th} term.

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15. If the 3rd and the 9^{th} terms of an AP are 4 and $\setminus \quad 8$ respectively, which term of this AP is zero?

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16. The 7^{th} term of an A.P. exceeds its 10^{th} term by 7. Find the common difference.

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17. Which term of the AP : 3, 15, 27, 39, ... Will be 132 more than its 54^{th} term ?

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18. 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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19. How many three digit numbers are divisible by 7?

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

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21. For what value of n, are the with terms of two APs: 63, 65, 67, . . . and 3, 10, 17, . . . equal?

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

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

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24. The sum of the 4th and 8th terms of an AP is 24 and the sum of the 6th and 10th terms is 44. Find the first three terms of the AP.

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25. 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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26. Ramkali saved Rs 5 in the first week of a year and then increased her weekly savings by Rs 1.75. If in the nth week, her weekly savings become Rs 20.75, find n.

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Ncert Corner Exercise 5 3

1. Find the sum of the following A. P. s:

$2, 7, 12, \ldots,$ to 10 terms.

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2. Find the sum of the first 12 terms of the A.P.

-37, -33, -29..... .

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3. Find the sum of the following A. P. s:

$0.6, 1.7, 2.8, \ldots,$ to 100 terms.

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4. Find the sum of the following A. P. s:

$\frac{1}{15}, \frac{1}{12}, \frac{1}{10}, \ldots,$ to 11 terms

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5. Find the sums given below:

$7 + 10\frac{1}{2} + 14 + \ldots + 84$

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6. Find the sums given below:

$34 + 32 + 30 + \ldots + 10$

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7. Find the sums given below:

$-5+(-8)+(-11)+\ldots+(-230)$

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8. In an A. P. :

given $a=5, d=3, a_n=50,$ find n and S_n.

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9. In an A. P. :

given $a = 7, a_{13} = 35,$ find d and S_{13}

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10. In an A. P. :

given $a_{12} = 37, d = 3,$ find a and $S_{12}.$

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11. given: $a_3 = 15, S_{10} = 125,$ find d and a_{10}

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12. given $d = 5, S_9 = 75$, find a and a_9.

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13. In an A. P. :

given $a = 2, d = 8, S_n = 90,$ find n and a_n

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14. In an A. P. :

given $a = 8, a_n = 62, S_n = 210,$ find n and d.

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15. In an AP, given $a_n = 4, d = 2, S_n = -14$

find n and a

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16. In an A. P. :

given $a = 3, n = 8, S = 192,$ find d.

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17. In an A. P. :

given $l = 28, S = 144,$ and there are total 9 terms Find a.

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18. How many terms of the AP: 9, 17, 25, . . . must be taken to give a sum of 636?

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19. The first term of an A.P. is 5, the last term is 45 and the sum is 400. Find the number of terms and the common difference.

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20. 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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21. Find the sum of first 22 terms of an A.P. in which d = 7 and 22 nd term is 149.

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22. Find the sum of first 51 terms of an A.P. whose second and third terms are 14 and 18 respectively.

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

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24. Show that $a_1, a_2, \ldots, a_n, \ldots$ from an A.P.

where a_n is defined as below :

$a_n = 3 + 4n$

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25. Show that $a_1, a_2, \ldots, a_n, \ldots$ from an A.P.

where a_n is defined as below :

$a_n = 9 - 5n$

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26. If the sum of the first n terms of an A.P. is $4n - n^2$, what is the first term (that 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 ten n^{th} terms.

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27. The sum of first 40 positive integers divisible by 6 is

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28. Find the sum of the first 15 multiples of 8.

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29. Find the sum of the odd numbers between 0 and 50.

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30. A contract on construction job specifies a penalty for delay of completion beyond a certain date as follows: Rs 200 for the first day, Rs 250 for the second day Rs 300 for the third day, etc., the penalty for each succeeding day being Rs 50 more

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31. 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 the prizes.

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32. In a school, students thought of planting trees in and 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?

A. 234

B. 235

C. 236

D. 237

Answer: A

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33. 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 consec

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34. 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 (see Figure). In how may rows are the 200 logs placed and how many logs are in the top row?

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35. In a potato race, a bucket is placed at the starting point, which is 5 m from the first potato, and the other potatoes are placed 3 m apart in a straight line. There are ten potatoes in the line (see Figure). A competitor starts from the bucket, pi

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Ncert Corner Exercise 5 4

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

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2. The sum of the third and the seventh terms of an A.P. is 6 and the product is 8. Find the sum of first sixteen terms of the A.P

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3. A ladder has rungs 25 cm apart, (see Figure). 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?

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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. Find this va

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Ncert Examplar Exercise 5 1

1. 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 Figure). Calculate the total volume of concrete required to build the ter

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2. In an AP, if d = -4, n = 7 and a_n = 4, then a is equal to

A. 6

B. 7

C. 20

D. 28

Answer: D

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3. In an AP, if a = 3.5, d = 0 and n = 101, then a_n will be

A. 0

B. 3.5

C. 93.5

D. 104.5

Answer: B

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4. The list of number -10, -6, -2, 2, ... is

A. an A.P. with d =- 16

B. an A.P. with d = 4

C. an A.P. with $d = -4$

D. not an A.P.

Answer: B

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5. The 11^{th} term of the $A.P.: -5, -\frac{5}{2}, 0, \frac{5}{2}, \ldots$ is

A. -20

B. 20

C. -30

D. 30

Answer: B

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6. The first four terms of an A.P. whose first term is -2 and the common difference is -2 are

A. $-2, 0, 2, 4$

B. $-2, 4, -8, 16$

C. $-2, -4, -6, -8$

D. $-2, -4, -8, -16$

Answer: C

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7. The 21st term of an AP whose first two terms are -3 and 4, is

A. 17

B. 137

C. 143

D. -143

Answer: B

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8. If the 2^{nd} term of an A.P. is 13 and the 5^{th} term is 25, what is its 7^{th} term ?

A. 30

B. 33

C. 37

D. 38

Answer: B

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9. Which term of the AP 21, 42, 63, 84,.. Is 210?

A. 9^{th}

B. 10^{th}

C. 11^{th}

D. 12^{th}

Answer: B

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10. If the common difference of an AP is 5, then what is $a_{18} - a_{13}$?

A. 5

B. 20

C. 25

D. 30

Answer: C

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11. What is the common difference of an AP in which $a_{18} - a_{14} = 32$?

A. 8

B. -8

C. -4

D. 4

Answer: B

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12. Two APs have the same common difference. The first term of one of these is -1 and that of the other is -8. The difference between their 4th terms is

A. -1

B. -8

C. 7

D. -9

Answer: C

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13. If 7 times the 7th term of an AP is equal to 11 times its 11th term, then its 18th term will be

A. 7

B. 11

C. 18

D. 0

Answer: D

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14. The 4th term from the end of an AP -11, -8, -5, ..., 49 is

A. 37

B. 40

C. 43

D. 58

Answer: B

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15. The famous mathematician associated with finding the sum of the first 100 natural numbers is

A. Pythagoras

B. Newton

C. Gauss

D. Eculid

Answer: C

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16. If the first term of an AP is -5 and the common difference is 2, then the sum of the first 6 terms is

A. 0

B. 5

C. 6

D. 15

Answer: A

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17. The sum of first 16 terms of the A.P.: 10,6,2,...

Is

A. -320

B. 320

C. -352

D. -400

Answer: A

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18. In an AP, if a = 1, a_n = 20 and S_n = 399, then n is equal to

A. 19

B. 21

C. 38

D. 42

Answer: C

 Watch Video Solution

19. The sum of first five multiples of 3 is

A. 45

B. 55

C. 65

D. 75

Answer: A

Watch Video Solution

Ncert Examplar Exercise 5 2

1. Which of the following form an A.P. ? Justify your answer.

$-1, \ -1, \ -1, \ -1, \ldots$

Watch Video Solution

2. Which of the following form an A.P. ? Justify your answer.

$0, 2, 0, 2, \ldots$

Watch Video Solution

3. Which of the following form an A.P. ? Justify your answer.

$1, 1, 2, 2, 3, 3, \ldots$

Watch Video Solution

4. Which of the following form an A.P. ? Justify your answer.

$11, 22, 33, \ldots$

Watch Video Solution

5. Which of the following form an A.P. ? Justify your answer.

$\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \ldots$

Watch Video Solution

6. Which of the following form an A.P. ? Justify your answer.

$2, 2^2, 2^3, 2^4, \ldots$

Watch Video Solution

7. Which of the following form an A.P. ? Justify your answer.

$\sqrt{3}, \sqrt{12}, \sqrt{27}, \sqrt{48}, \ldots$

Watch Video Solution

8. Justify whether it is true to say that $-1, \frac{-3}{2}, -2, \frac{5}{2}, \ldots$ Forms an AP as $a_2 - a_1 = a_3 - a_2$.

Watch Video Solution

9. For the AP $-3, -7, -11, \ldots$ can we find directly $a_{30} - a_{20}$ without actually finding a_{30}

and a_{20} ? Give reason for your answer.

Watch Video Solution

10. Two A.P.'s have the same common difference. The first term of one A.P. is 2 and that of the other is 7. Show that the difference between their 10th terms is the same as the difference between their 21th terms, which is the same as the difference between any two corresponding terms.

Watch Video Solution

11. Two A.P have the same common difference. The first term of one A.P is 2 and that of the other is 7 .The difference between their 10^{th} terms is the same as, the difference between their 21^{st} terms, which is the same as the difference between any two corresponding terms. Wht ?

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12. Is 0 a term of the AP 31, 28, 25, ...? Justify your answer.

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13. The taxi fare after each km, when the fare is Rs 15 for the first km and Rs 8 for each additional km, does not form an A.P. as the total fare (in Rs) after each km is : $15, 8, 8, 8, \ldots$

Is the statement true ? Give reasons.

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14. In which of the following situations, do the lists of numbers involved form an A.P. ? Give reasons for your answer.

The fee charged from a student every month by a school for the shole session when the monthly fee is Rs 400.

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15. In which of the following situations, do the lists of numbers involved form an A.P. ? Give reasons for your answer.

The fee charged every month by a school from Classes I to XII, when the monthly fee for Class I is Rs 250, and it increases by Rs 50 for the next higher class.

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16. In which of the following situations, do the lists of numbers involved form an A.P. ? Give reasons for your answer.

The amount of money in the account of Varun at the end of every year, when Rs 1000 is deposited at simple interest of 10% per annum.

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17. In which of the following situations, do the lists of numbers involved form an A.P. ? Give reasons for your answer.

The number of bacteria in a certain food item after each second , when they double in every second.

 Watch Video Solution

18. Justify whether it is true to say that the following are the nth terms of an AP.

(i) $2n - 3$ (ii) $3n^2 + 5$ (iii) $1 + n + n^2$

Watch Video Solution

19. Justify whether it is true to say that the following are the nth terms of an AP.

(i) $2n - 3$ (ii) $3n^2 + 5$ (iii) $1 + n + n^2$

Watch Video Solution

20. Justify whether it is true to say that the following are the nth terms of an AP.

(i) $2n - 3$ (ii) $3n^2 + 5$ (iii) $1 + n + n^2$

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Ncert Examplar Exercise 5 3

1. Match the A.P.s given in column A with situable common difference given in column B.

Column A		Column B	
A_1	$2, -2, -6, -10, \ldots$	B_1	$\frac{2}{3}$
A_2	$a = -18, n = 10, a_n = 0$	B_2	-5
A_3	$a = 0, a_{10} = 6$	B_3	4
A_4	$a_2 = 13, a_4 = 3$	B_4	-4
		B_5	2
		B_6	$\frac{1}{2}$
		B_7	5

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2. Verify that each of the following is an AP and then write its next three terms.

(i) $0, \frac{1}{4}, \frac{1}{2}, \frac{3}{4}, \ldots$ (ii) $5, \frac{14}{3}, \frac{13}{3}, 4, \ldots$

(iii) $\sqrt{3}, 2\sqrt{3}, 3\sqrt{3}, \ldots$ (iv)

$a + b, (a + 1) + b, (a + 1) + (b + 1), \ldots$

(v) $a, 2a + 1, 3a + 2, 4a + 3, \ldots$

Watch Video Solution

3. Verify that each of the following is an AP and then write its next three terms.

(i) $0, \frac{1}{4}, \frac{1}{2}, \frac{3}{4}, \ldots$ (ii) $5, \frac{14}{3}, \frac{13}{3}, 4, \ldots$

(iii) $\sqrt{3}, 2\sqrt{3}, 3\sqrt{3}, \ldots$ (iv)

$a + b, (a + 1) + b, (a + 1) + (b + 1), \ldots$

(v) $a, 2a + 1, 3a + 2, 4a + 3, \ldots$

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4. Verify the following is an A.P. or not, and then write its next three terms.

$\sqrt{3}, 2\sqrt{3}, 3\sqrt{3}, \ldots$

Watch Video Solution

5. Verify that each of the following is an A.P., and then write its next three terms.

$a+b, (a+1)+b, (a+1)+(b+1), \ldots$

Watch Video Solution

6. Verify that the following is an A.P. or not, and then write its next three terms.

$a, 2a + 1, 3a + 2, 4a + 3, \ldots$

Watch Video Solution

7. Write the first three terms of the AP's, when a and d are as given below

(i) $a = \frac{1}{2}, d = -\frac{1}{6}$ (ii)

$a = -5, d = -3$

(iii) $a = \sqrt{2}, d = \frac{1}{\sqrt{2}}$

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8. Write the first three terms of the AP's, when a and d are as given below

(i) $a = \frac{1}{2}, d = -\frac{1}{6}$ (ii)

$a = -5, d = -3$

(iii) $a = \sqrt{2}, d = \frac{1}{\sqrt{2}}$

Watch Video Solution

9. Write the first three terms of the AP's, when a and d are as given below

(i) $a = \frac{1}{2}, d = -\frac{1}{6}$ (ii)

$a = -5, d = -3$

(iii) $a = \sqrt{2}, d = \frac{1}{\sqrt{2}}$

Watch Video Solution

10. Find a, b and c such that the following numbers are in AP, a, 7, b, 23 and c.

Watch Video Solution

11. Determine the AP whose fifth term is 19 and the difference of the eighth term from the thirteenth term is 20.

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12. The 26th, 11th and last term of an A.P. are $0, 3, -\frac{1}{5}$ respectively. Find the common difference and the number of terms

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13. The sum of the 5^{th} and $the 7^{th}$ terms of an A.P. is 52 and then 10^{th} term is 46. Find the A.P..

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14. Find the 20th term of the AP whose 7th term is 24 less than the 11th term, first term being 12.

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15. If the 9^{th} term of an A.P. is zero, then prove that 29^{th} term is double of 19^{th} term.

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16. Find whether 55 is a term of the AP 7, 10, 13, ... or not. If yes, find which term it is.

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17. Determine k, so that $K^2 + 4k + 8, 2k^2 + 3k + 6$ and $3k^2 + 4k + 4$ are three consecutive terms of an AP.

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18. Split 207 into three parts such that these are in AP and the product of the two smaller parts is 4623.

Watch Video Solution

19. The angles of a triangle are in A.P. The greatest angle is twice the least. Find all the angles

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20. If the nth terms of the two AP's 9, 7, 5, ... and 24, 21, 18, ... are the same, then find the value of n. Also, that term.

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21. If sum of the 3^{rd} and the 8^{th} terms of A.P. is 7 and the sum of the 7^{th} and the 14^{th} terms is -3, find the 10^{th} term.

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22. Find the 12th term from the end of the AP $-2, -4, -6, \ldots, -100.$

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23. Which term of the AP 53, 48, 43, ... is the first negative term ?

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24. How many numbers lie between 10 and 300, which divided by 4 leave a remainder 3?

Watch Video Solution

25. Find the sum of two middle terms of the AP

$$-\frac{4}{3}, -1, -\frac{2}{3}, -\frac{1}{3}, \ldots, 4\left(\frac{1}{3}\right)$$

Watch Video Solution

26. The first term of an AP is -5 and the last term is 45. If the sum of the terms of the AP is 120, then find the number of terms and the common difference.

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27. Find the sum :

$1 + 1.2 + 1.4 + 1.6 + 1.8 + \ldots$ (upto 21 terms)

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28. Find:

$\left(4 - \frac{1}{n}\right) + \left(7 - \frac{2}{n}\right) + \left(10 - \frac{3}{n}\right) \ldots$ upto n terms

Watch Video Solution

29. Find the sum

(i)

$$1 + (-2) + (-5) + (-8) + \ldots + (-236)$$

(ii)

$$\left(4 - \frac{1}{n}\right) + \left(4 - \frac{2}{n}\right) + \left(4 - \frac{3}{n}\right) + \ldots$$

upto n terms.

(iii) $\frac{a-b}{a+b} + \frac{3a-2b}{a+b} + \frac{5a-3b}{a+b} + \ldots$ to 11 terms.

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30. Which term of the AP $-2, -7, -12, \ldots$ will be -77 ? Find the sum of this AP upto the term -77.

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31. If $a_n = 3 - 4n$, then show that $a_1, a_2, a_3, \ldots$ form an AP. Also, find S_{20}.

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32. In an AP, If $S_n = n(4n + 1),$ then find the AP.

Watch Video Solution

33. In an AP, If $S_n = 3n^2 + 5n$ and $a_k = 164,$ then find the value of k.

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34. If S_n denotes the sum of first n terms of an A.P., prove that $S_{12} = 3(S_8 - S_4)$.

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35. Find the sum of first 17 terms of an AP whose 4th and 9th terms are -15 and -30, respectively.

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36. If sum of first 6 terms of an AP is 36 and that of the first 16 terms is 256 , then find the sum of first 10 terms.

37. Find the sum of all the 11 terms of an AP whose middle most term is 30.

38. Find the sum of last ten terms of the AP 8, 10, 12, ..., 126.

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39. Find the sum of first seven numbers which are multiples of 2 as well as of 9.

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40. How many terms of the AP $-15, -13, -11, \ldots$ are needed to make the sun -55 ?

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41. The sum of the first n terms of an AP whose first term is 8 and the common difference is 20 is equal to the sum of first 2n terms of another AP whose first term is -30 and the common difference is 8. Find n.

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42. Kanika was given her pocket money on Jan 1st , 2008. She puts Rs. 1 on day 1, Rs. 2 on day 2, Rs. 3 on day 3 and continued doing so till the end of the month, from this money into her piggy bank she also spent Rs. 204 of her pocket money, and found that at the end of the month she still had Rs. 100 with her. How much was her pocket money for the month ?

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43. Yasmeen saves Rs. 32 during the first month, Rs. 36 in the second month and Rs. 40 in the third month. If she continues to save in this manner, in how many months will she save Rs. 2000 ?

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Ncert Examplar Exercise 5 4

1. The sum of the first five terms of an A.P. and the sum of the first seven terms of the same

A.P. is 167. If the sum of first 10 terms of this A.P. is 235, find the sum of its first twenty terms.

 Watch Video Solution

2. Find the

(i) sum of those integers between 1 and 500 which are multiples of 2 as well as of 5.

(ii) sum of those integers from 1 to 500 which are multiples of 2 as well as of 5.

(iii) sum of those integers from 1 to 500 which are multiples of 2 or 5.

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3. Find the

(i) sum of those integers between 1 and 500 which are multiples of 2 as well as of 5.

(ii) sum of those integers from 1 to 500 which are multiples of 2 as well as of 5.

(iii) sum of those integers from 1 to 500 which are multiples of 2 or 5.

Watch Video Solution

4. Find the

(i) sum of those integers between 1 and 500 which are multiples of 2 as well as of 5.

(ii) sum of those integers from 1 to 500 which are multiples of 2 as well as of 5.

(iii) sum of those integers from 1 to 500 which are multiples of 2 or 5.

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5. The eighth term of an AP is half its second term and the eleventh term exceeds one-third of its fourth term by 1. Find the 15th term.

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6. An AP consists of 37 terms. The sum of the three middle most terms is 225 and the sumj of the last three terms is 429. Find the AP.

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7. Find the sum of the integers between 100 and 200 that are

(i) divisible by 9. (ii) not divisible by 9.

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8. Find the sum of the integers between 100 and 200 that are

(i) divisible by 9. (ii) not divisible by 9.

Watch Video Solution

9. Show that the sum of an AP whose first term is a, the second term b and the last term c, is equal to $\frac{(a+c)(b+c-2a)}{2(b-a)}$.

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10. Solve the equation $-4+(-1)+2+\ldots+x=437.$

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11. Jaspal Singh repays his total loan of Rs. 118000 by paying every month starting with the first installment of Rs. 1000. If he increases the installment by Rs. 100 every month, what amount will be paid by him in the 30th installment? What amount of loan does he still have to pay after the 30th installment?

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12. The students of a shool decided to beautifly the school on the annual day by fixing colourful flags on the straight passage of the school. They have 27 flags to be fixed at intervals of every 2 m. The flags are stored at the position of the middle most flag. Ruchi was given the responsibility of placing the flags.

Ruchi kept her books where the flags wer stored. She could carry only one flag at a time. How much distance she did cover in completing this job and returning back to

collect her books ? What is the maximum distance she travelled carrying a flag ?

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Board Corner Very Short Answer Type Questions

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

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2. Find the common difference of the Arithmetic Progression (A.P.)

$5, \frac{14}{3}, \frac{13}{3}, 4, \ldots .$

Watch Video Solution

3. Find 21^{st} term of the $A.P. -4\frac{1}{2}, -3, -1\frac{1}{2}, \ldots$

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4. In an A.P., if the common difference (d)=-4 and the seventh term (a_7) is 4 then find the first term

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5. What is the common difference of an AP in which $a_{27} - a_7 = 80$?

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Board Corner Short Answer Type Questions

1. Which term of the A.P. 3,15,27, 39, ... will be 120 more than its 21st term?

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2. If S_n the sum of first n terms of an A.P. is given by $Sn = 3n^2 - 4n$, find the nth term.

Watch Video Solution

3. Find how many two digit natural numbers are divisible by 7 ?

Watch Video Solution

4. If the sum of first n terms of an AP 2,4,6, . . . 240, then the value of n is

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5. Find the sum of first 8 multiples of 3

Watch Video Solution

6. Find how many integers between 200 and 500 are divisible by 8.

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7. Which term of the A.P. 43, 49, 55, 61, ... is 103 ?

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8. For what value of n, are the with terms of two APs: 63, 65, 67, . . . and 3, 10, 17, . . . equal?

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9. If the m^{th} term of an A.P. is $\frac{1}{n}$ and the n^{th} term is $\frac{1}{m}$, show that the sum of mn terms is $\frac{1}{2}(mn+1)$.

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10. find the sum of n terms of the series $\left(4-\frac{1}{n}\right)+\left(4-\frac{2}{n}\right)+\left(4-\frac{3}{n}\right)+\ldots\ldots\ldots$

Watch Video Solution

11. The mth term of an A.P. is $\frac{1}{n}$ and nth term is $\frac{1}{m}$. Its (mn)th term is :

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12. If the 10th term of an A.Pis 52 and 17th term is 20 more than the 13th term, find the A.P.

Watch Video Solution

13. How many terms of the AP: 9, 17, 25, . . . must be taken to give a sum of 636?

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14. If the p^{th} term of an A.P is q and q^{th} term is p, prove that its n^{th} term is (p+q-n)

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Board Corner Long Answer Type Questions

1. If the sum of first 7 terms of an A.P. is 49 and that of its 17 terms is 289, find the sum of first n terms of the A.P.

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2. The first term of an A.P. is 3, the last term is 83 and the sum of all its terms is 903. Find the number of terms and the common difference of the A.P.

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3. Which term of the Arithmetic Progression $-7,\ -12,\ -17,\ -22,$ ..... will be - 82 ? Is - 100 any term of the A.P. ? Gien reason for your answer.

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4. How many terms of the arthmetic progression 45,39,33,.... must be taken so that sum is 180?

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5. The sum of four consecutive numbers in A.P. is 32 and the ratio of the product of the first

and last term to the product of two middle terms is 7:15. Find the numbers.

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6. The ratio of the sums of m terms and n terms of an A.P. is $m^2 : n^2$. Prove that the ratio of their mth and nth term will be (2m - 1) : (2n-1).

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7. If p th term of an A.P. is $\frac{1}{q}$ and q th term is $\frac{1}{p}$ prove that the sum of the first pq terms is $\frac{1}{2}[pq+1]$

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8. If the ratio of the sum of the first n terms of two Aps is (7n + 1) : (4n + 27) then find the ratio of their 9th terms.

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Stand Alone Mcqs

1. 11th term of the A.P., $-3, \frac{-1}{2}, 2, \ldots\ldots\ldots\ldots$ is:

A. 28

B. 22

C. -38

D. $-48\frac{1}{2}$

Answer: B

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2. In an AP if d =4, n=7,$a_n = 4$ then a is

A. 6

B. 7

C. 20

D. 28

Answer: D

Watch Video Solution

3. Which term of an AP : 21, 42, 63, 84, ... is 210 ?

A. 9^{th}

B. 10^{th}

C. 11^{th}

D. 12^{th}

Answer: B

Watch Video Solution

4. The 4th term from the end of an AP -11, -8, -5, ..., 49 is

A. 37

B. 40

C. 43

D. 58

Answer: B

Watch Video Solution

5. the comman difference of the `1/p,

A. p

B. $-p$

C. -1

D. 1

Answer: C

Watch Video Solution

6. If the common difference of an AP is 5, then what is $a_{18} - a_{13}$?

A. 5

B. 20

C. 25

D. 30

Answer: C

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7. In an Ap, if a = 3.5, d = 0 and n = 101, then a_n will be

A. 0

B. 3.5

C. 103.5

D. 104.5

Answer: B

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8. If the second term of an A.P. is 13 and 5th term is 25, what is its 7th term?

A. 30

B. 33

C. 37

D. 38

Answer: B

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9. The famous mathematician associated with finding the sum of the first 100 natural numbers is

A. Pythagoras

B. Newton

C. Gauss

D. Euclid

Answer: C

Watch Video Solution

10. If the first term of an AP is -5 and the common difference is 2, then the sum of the first 6 terms is

A. 0

B. 5

C. 6

D. 15

Answer: A

 Watch Video Solution

11. The sum of first 16 terms of the A.P.: 10,6,2,... is :

Watch Video Solution

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

A. 19

B. 21

C. 38

D. 42

Answer: C

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13. The sum of first five multiples of 2 is :

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14. The 13^{th} term of an AP is 4 times its 3^{rd} term. If its 5^{th} term is 16 then the sum of its

first ten terms is

A. 135

B. 160

C. 150

D. 175

Answer: D

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15. What will be the sum of first 20 natural number ?

A. 400

B. 210

C. 420

D. 100

Answer: A

 Watch Video Solution

16. What will be sum of first 40 positive integers divisible by 6

A. 2460

B. 4880

C. 4920

D. 4860

Answer: C

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Assertion And Reason Based Mcqs

1. Assertion (A) : If the n^{th} term of an A.P. is 7-4n, then its common differences is -4.

Reason (R) : Common differences of an A.P .is given by $d = a_{n+1} - a_n$

A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true and R is not correct explanation for A.

C. A is true but R is false.

D. A is false but R is true.

Answer: A

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2. Assertion (A) : 184 is the 50^{th} term of the sequence 3, 7,11,.....

Reason (R) : The nth term of A.P .is given by $a_n = a + (n-1)d$

A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true and R is not correct explanation for A.

C. A is true but R is false.

D. A is false but R is true.

Answer: D

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3. If five times the fifth term of an A.P. is equal to 8 times its eighth term, show that its $13th$ term is zero.

A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true and R is not correct explanation for A.

C. A is true but R is false.

D. A is false but R is true.

Answer: B

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4. Assertion (A) : Common difference of the A.P.: $-5, -1, 3, 7, \ldots\ldots$ Is 4.

Reason (R) : Common difference of the A.P.a,a+d, $a + 2d, \ldots$, is given by d $= 2^{nd}$ term $- 1^{st}$ term.

A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true and R is not correct explanation for A.

C. A is true but R is false.

D. A is false but R is true.

Answer: A

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5. Assertion (A) : There will be 10 rows in the flower bed if there are 23 plants in the first row , 21 in the second row , 19 in the third and

so on .Also 5 rose plants are in the last row.

Reason (R) : Sum of first n terms of an A.P is given by $S_n = \frac{N}{2}[2a + (n-1)d]$.

A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true and R is not correct explanation for A.

C. A is true but R is false.

D. A is false but R is true.

Answer: B

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6. Assertion (A) : Sum of first hundred even natural numbers divisible by 5 is 500 .

Reason (R) : Sum of first n terms of an A.P is given by $S_N = \frac{n}{2}[a + l]$, l is last term

A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true and R is not correct explanation for A.

C. A is true but R is false.

D. A is false but R is true.

Answer: D

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7. If S_n the sum of first n terms of an A.P. is given by $Sn = 3n^2 - 4n$, find the nth term.

A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true and R is not correct explanation for A.

C. A is true but R is false.

D. A is false but R is true.

Answer: A

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8. Assertion (A) : Sum of all 11 terms of an A.P whose middle most term is 30 is 330.

Reason (R) : Sum of first n terms of an A.P is given by $S_n = \frac{n}{2}[a + l], l$ is the middle term

A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true and R is not correct explanation for A.

C. A is true but R is false.

D. A is false but R is true.

Answer: C

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Case Based Mcqs

1. Read the following text and answer the following questions on the basis of the same :

Amit has a packet of Candies .It consists of 288 candies .He arranges the candies in a way that first row contains 3 candies ,second row has 5 and third row has 7 and so on .

How many rows are there ?

A. 10

B. 15

C. 16

D. 18

Answer: C

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2. Amit has a packet of Candies .It consists of 288 candies .He arranges the candies in a way that first row contains 3 candies ,second row

has 5 and third row has 7 and so on .

How many candies are there in the last row ?

A. 33

B. 32

C. 31

D. 30

Answer: A

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3. Amit has a packet of Candies .It consists of 288 candies .He arranges the candies in a way that first row contains 3 candies ,second row has 5 and third row has 7 and so on .

Find the difference in the candies placed in the 10^{th} and 15^{th} row.

A. 6

B. 9

C. 10

D. 12

Answer: C

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4. Amit has a packet of Candies .It consists of 288 candies .He arranges the candies in a way that first row contains 3 candies ,second row has 5 and third row has 7 and so on .

If Amit want to make 12 rows ,then how many total candies will be placed by him with same arrangement .

A. 148

B. 140

C. 146

D. 145

Answer: A

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5. Amit has a packet of Candies .It consists of 288 candies .He arranges the candies in a way that first row contains 3 candies ,second row

has 5 and third row has 7 and so on .

Is there any row which contains 28 candies ?

A. No

B. Yes

C. data insufficient

D. Not possible

Answer: D

 Watch Video Solution

6. In a potato race, a bucket is placed at the starting point, which is 5 m from the first potato, and the other potatoes are placed 3 m apart in a straight line. There are ten potatoes in the line (see Figure). A competitor starts from the bucket, pi

A. 8 m

B. 10 m

C. 12 m

D. 9 m

Answer: B

Watch Video Solution

7. In a potato race, a bucket is placed at the starting point, which is 5 m from the first potato, and the other potatoes are placed 3 m apart in a straight line. There are ten potatoes in the line (see Figure). A competitor starts from the bucket, pi

A. 12 m

B. 15 m

C. 16 m

D. 14 m

Answer: C

Watch Video Solution

8. In a potato race, a bucket is placed at the starting point, which is 5 m from the first potato, and the other potatoes are placed 3 m apart in a straight line. There are ten potatoes

in the line (see Figure). A competitor starts from the bucket, pi

A. 22 m

B. 18 m

C. 21 m

D. 15 m

Answer: A

Watch Video Solution

9. In a potato race, a bucket is placed at the starting point, which is 5 m from the first potato, and the other potatoes are placed 3 m apart in a straight line. There are ten potatoes in the line (see Figure). A competitor starts from the bucket, pi

A. 26 m

B. 30 m

C. 25 m

D. 28 m

Answer: D

Watch Video Solution

10. In a potato race, a bucket is placed at the starting point, which is 5 m from the first potato, and the other potatoes are placed 3 m apart in a straight line. There are ten potatoes in the line (see Figure). A competitor starts from the bucket, pi

A. 370 m

B. 350 m

C. 355 m

D. 375 m

Answer: A

Watch Video Solution

11. A manufacture of TV set 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 first year

(ii) the production in the 10th year.

(iii) the total production in first 7 years.

A. 500

B. 650

C. 600

D. 550

Answer: D

Watch Video Solution

12. 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 t

A. 770

B. 875

C. 675

D. 775

Answer: D

Watch Video Solution

13. A manufacture of TV set 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 first year

(ii) the production in the 10th year.

(iii) the total production in first 7 years.

A. 4375

B. 4350

C. 4385

D. 4390

Answer: A

Watch Video Solution

14. A manufacture of TV set 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 first year

(ii) the production in the 10th year.

(iii) the total production in first 7 years.

A. 24

B. 25

C. 28

D. 30

Answer: B

Watch Video Solution

15. A manufacture of TV set 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 first year

(ii) the production in the 10th year.

(iii) the total production in first 7 years.

A. 2019

B. 2025

C. 2027

D. 2028

Answer: C

 Watch Video Solution

Multiple Choice Questions

1. The first three terms of A.P. are (3y - 1), (3y + 5) and (5y + 1). Then y equals:

A. -3

B. 4

C. 5

D. 2

Answer: C

View Text Solution

2. If k, 2k - 1 and 2k +1 are three consecutive terms of an A.P., then the value of k is:

A. 2

B. 3

C. -3

D. 5

Answer: B

View Text Solution

3. The next term of the A.P. $\sqrt{7}, \sqrt{28}, \sqrt{63}$, ...

Will be:

A. $\sqrt{70}$

B. $\sqrt{84}$

C. $\sqrt{97}$

D. $\sqrt{112}$

Answer: D

View Text Solution

4. The sum of first 20 odd natural numbers is:

A. 100

B. 210

C. 400

D. 420

Answer: C

View Text Solution

5. If the n^{th} term of an A.P. is (2n + 1), then the sum of its first three terms is:

A. 6

B. 15

C. 12

D. 21

Answer: B

View Text Solution

6. The value of $t_{30} - t_{20}$ for the A.P. 2, 7, 12, 17, ... is:

A. 100

B. 10

C. 50

D. 20

Answer: C

View Text Solution

7. The first term of an A.P. is p and its common difference is q. Find the 10^{th} term.

A. $p + 9q$

B. $p + 11q$

C. $p + 10q$

D. $p + q$

Answer: A

View Text Solution

8. If the sum of first p terms of A.P. is $ap^2 + bp$, find its common difference.

A. $\frac{2b}{p-1} + 2a$

B. $\frac{2a}{p-1} + 2b$

C. $\frac{2b}{a-1}+2p$

D. $\frac{2a}{b-1}+2p$

Answer: A

View Text Solution

9. The common difference of the A.P.

$\frac{1}{2q}, \frac{1-2q}{2q}, \frac{1-4q}{2q}$ ..... is :

A. -1

B. 1

C. q

D. 2q

Answer: A

View Text Solution

10. The n^{th} term of the A.P. a, 3a, 5a, ... is:

A. na

B. $(2n-1)a$

C. $(2n+1)a$

D. $2na$

Answer: B

View Text Solution

11. The sum of first five multiples of 3 is:

A. 45

B. 55

C. 65

D. 75

Answer: A

View Text Solution

12. 11^{th} term of the A.P.: $-3, \ -\frac{1}{2}, 2, \ldots\ldots$ is:

A. 28

B. 22

C. -38

D. $-48, \ \frac{1}{2}$

Answer: B

View Text Solution

13. In an A.P., if $d = -4, n = 7, a_n = 4$, then a is:

A. 6

B. 7

C. 20

D. 28

Answer: D

View Text Solution

14. If $S_n = 2n^2 - 7n$, then the n^{th} term is .....

A. $4n + 9$

B. $2n + 3$

C. $4n - 9$

D. $9 - 4n$

Answer: C

View Text Solution

15. If $S_{n+1} = n^2 + 9n$, then the second term of the A.P. is .....

A. 12

B. 8

C. -10

D. 10

Answer: D

View Text Solution

16. If the sum of three consecutive terms of an increasing A.P. is 51 and the product of the first and third of these terms is 273, then the third term is:

A. 13

B. 9

C. 21

D. 17

Answer: C

View Text Solution

17. If four numbers in A.P. are such that their sum is 50 and the greatest number is 4 times the least, then the numbers are:

A. 5, 10, 15, 20

B. 4, 10, 16, 22

C. 3,7, 11, 15

D. none of these

Answer: A

View Text Solution

18. The 9th term of an A.P. is 449 and 449th term is 9. The term which is equal to zero is:

A. 50th

B. 502nd

C. 508th

D. none of these

Answer: D

View Text Solution

19. If the first term of an A.P. is a and nth term is b, then its common difference is:

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

B. $\frac{b-a}{n-1}$

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

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

Answer: B

View Text Solution

20. Two A.P.'s have the same common difference. The first term of one of these is 8 and that of the other is 3. The difference between their 30th term is:

A. 11

B. 3

C. 8

D. 5

Answer: D

View Text Solution

21. If 18th and 11th term of an A.P. are in the ratio 3:2, then its 21st and 5th terms are in the ratio:

A. $3:2$

B. $3:1$

C. $1:3$

D. $2:3$

Answer: B

View Text Solution

22. The first three terms of an A.P. respectively are 3y – 1,3y + 5 and 5y + 1. Then, y equals:

A. -3

B. 4

C. 5

D. 2

Answer: C

View Text Solution

23. The list of numbers – 10, -6, -2, 2, ... is:

A. an A.P. with d = -16

B. an A.P. with d = 4

C. an A.P. with d = -4

D. not an A.P.

Answer: B

View Text Solution

24. The 15th term from the last of the A.P. 7 ,10 , 13 .....130 is :

A. 49

B. 85

C. 88

D. 110

Answer: C

View Text Solution

25. In an A.P., if $a_{18} - a_{14} = 32$, then the common difference is:

A. 8

B. -8

C. -4

D. 4

Answer: A

View Text Solution

26. In an A.P., if a = 3.5, d = 0, n = 101, the a_n will be :

A. 0

B. 3.5

C. 103.5

D. 104.5

Answer: B

View Text Solution

27. Which term of the A.P.21, 42, 63, 84, ... is 210?

A. 9th

B. 10th

C. 11th

D. 12th

Answer: B

View Text Solution

28. If the last term of the A.P.5,3,1,-1, ... is - 41, then the A.P. consists of:

A. 46 terms

B. 25 terms

C. 24 terms

D. 23 terms

Answer: C

View Text Solution

29. The 21st term of an A.P., whose first two terms are - 3 and 4, is:

A. 17

B. 137

C. 143

D. -143

Answer: B

View Text Solution

30. If the 2nd term of an A.P. is 13 and the 5th term is 25, then its 7th term is:

A. 30

B. 33

C. 37

D. 38

Answer: B

View Text Solution

31. If the first term of an A.P.is - 5 and the common difference is 2, then the sum of its first 6 terms is :

A. 0

B. 5

C. 6

D. 15

Answer: A

View Text Solution

32. The number of two-digit numbers which are divisible by 3, is:

A. 33

B. 31

C. 30

D. 29

Answer: C

View Text Solution

33. The sum of first n natural number is:

A. 0.5n(n + 1)

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

C. n+2

D. 0.5+ (n + 1)

Answer: A

View Text Solution

34. What is the sum of first n odd natural numbers?

A. $n^2 - 1$

B. n^2

C. $n^2 - 2$

D. None of these

Answer: B

View Text Solution

35. If $t_n = n(n+3)$, then difference of its 5^{th} term and 2^{nd} term is:

A. 20

B. 30

C. -30

D. 10

Answer: B

View Text Solution

36. The n^{th} term of an A.P.

$\frac{1}{m}, \frac{m+1}{m}, \frac{2m+1}{m}$..... is :

A. $\frac{m+1-mn}{m}$

B. $\frac{mn-m+1}{m}$

C. $\frac{mn-m-n}{m}$

D. $\frac{mn+m-n}{m}$

Answer: B

View Text Solution

37. If the k^{th} term of the arithmetic progression 25, 50, 75, 100, ... is 1000, then k is .....

A. 20

B. 30

C. 40

D. 50

Answer: C

View Text Solution

38. A man saves Rs 320 during the first month, Rs 360 in the second month, Rs 400 in the third month. If he continues his savings in this sequence, in how many months will he save Rs 20,000?

A. 28

B. 25

C. 22

D. 20

Answer: B

View Text Solution

39. If t_n is the n^{th} term of an A.P., then $t_{2n} - t_n$ is:

A. (n + 1)d

B. nd

C. (n – 1)d

D. none of these

Answer: B

View Text Solution

40. The common difference of a constant A.P. is:

A. 1

B. 2

C. 0

D. none of these

Answer: C

View Text Solution

41. If a and l, are first and last terms of an A.P., then number of terms:

A. $\left(\frac{l-a}{d}\right)+1$

B. $\left(\frac{l-a}{d}\right)-1$

C. $\left(\frac{l+a}{d}\right)+1$

D. none of these

Answer: A

View Text Solution

42. A mother divides Rs 207 into three parts such that the amounts are in A.P. and gives it to her three children. The product of the two least amounts that the children had Rs 4623. Find the amount received by each child.

A. Rs 66, Rs 68 and Rs 70

B. Rs 67, Rs 69 and Rs 71

C. Rs 60, Rs 64 and Rs 68

D. Rs 57, Rs 59 and Rs 61

Answer: B

View Text Solution

43. If every term of an A.P. is multiplied by 3 then , the common difference of the new A.P., is:

A. same

B. increase by three

C. 3 times of the previous A.P.

D. none of these

Answer: C

View Text Solution

44. If x, 10 , y , 24 , z are in A.P. then value of x, y and z are

A. $3, 17, 31$

B. $31, 17, 3$

C. $3, 17, 30$

D. none of these

Answer: A

View Text Solution

45. The sum of the series 0.40 + 0.43 + 0.46 + ... + 1 is :

A. 14.7

B. 1.47

C. 7.41

D. none of these

Answer: A

View Text Solution

Very Short Answer Type Questions

1. Find the 9^{th} term from the end (towards the first term) of the A.P.5,9, 13...., 185.

View Text Solution

2. For what value of p are 2p+1, 13, 5p-3 the three consecutive terms of an A.P.?

View Text Solution

3. Find the common difference of the arithmetic progression (A.P.)

View Text Solution

4. What is the common difference of an A.P. in which $a_{21} - a_7 = 84$?

View Text Solution

5. The first and the last terms of an A.P. are 5 and 45 respectively. If the sum of all the terms is 400, find the common difference.

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6. Find the number of natural numbers between 101 and 999 which are divisible by both 2 and 5.

View Text Solution

7. The sum of the first n terms of an A.P. is $3n^2 + 6n$. Find the n^{th} term of this A.P.

View Text Solution

8. Find the sum of all three-digit natural numbers which are multiples of 11.

View Text Solution

9. Find an A.P. whose fourth term is 9 and the sum of its sixth term and thirteenth term is 40.

View Text Solution

10. Find whether - 150 is a term of the A.P. 17,12,7, 2, ... ?

View Text Solution

11. Which term of the A.P. 5,9 , 13,17 , ... is 81 ?

Also find the sum.

View Text Solution

12. Which term of the A.P. 3,15 , 27,39 , ... Will be 120 more than its 21^{st} term ?

View Text Solution

13. Find the value of the middle term of the following A.P., 10, 7, 4, ... (-62).

View Text Solution

14. For what value of n, are the nth terms of two A.P's. 63, 65, 67 .....and 3, 10, 17,..... equal?

View Text Solution

15. Which term of the A.P.3, 8, 13, 18, ... will be 55 more than its 20^{th} term?

View Text Solution

16. Find the 6^{th} term from the end of the A.P. 17,14, 11, ..., -40.

View Text Solution

17. Find the 21^{st} term of the A.P.

$-4\frac{1}{2}, 3, \ -1\frac{1}{2}, \ldots$

View Text Solution

18. Write the value of x for which (x + 2), 2x and (2x + 3) are three consecutive terms of an A.P.

View Text Solution

19. Find the sum of 25 + 28 +31 + ... + 100.

View Text Solution

20. If the n^{th} term of an A.P. is 2n + 1, find the sum of the first n terms of an A.P.

View Text Solution

21. How many terms of the A.P. 65, 60, 55,.... be taken so that their sum is zero?

View Text Solution

22. Find the sum of the first hundred even natural numbers, which are divisible by 5.

View Text Solution

23. The first and last terms of an A.P. are 4 and 81 respectively. If its common difference is 7, how many terms are there and what is their sum?

View Text Solution

24. Which term of the progression 20, $19\frac{1}{4}, 18\frac{1}{2}, 17\frac{3}{4}$ ..... is the first negative term?

View Text Solution

25. The n^{th} term of an A.P. is (7 - 4n). Find its common difference.

View Text Solution

26. Write the next term of the A.P. $\sqrt{8}, \sqrt{18}, \sqrt{32}, \ldots\ldots$

View Text Solution

27. Which term of the A.P.21, 18,.15, ... is zero?

View Text Solution

28. Find the number of all three-digit natural number disivible by 9.

View Text Solution

29. Find the middle term of the A.P. 6,13,20,....., 216.

View Text Solution

30. Find the A.P. whose n^{th} term is 7-3k. Also find the 20^{th} term.

View Text Solution

31. The angles of a triangle are in A.P., the least being half the greatest. Find the angles.

View Text Solution

32. Which term of the progression 4, 9, 14, 19, ... is 109?

View Text Solution

33. How many natural numbers are there between 200 and 500, which are divisible by 7?

View Text Solution

34. The sum of the 5th and the 9th terms of an A.P. is 30. If its 25th term is three times its 8th term find the A.P.

View Text Solution

35. If p^{th}, q^{th} and p^{th} terms of an A.P. are a, b, c respectively, then show that (a - b)r + (b - c)p+ (c - a)q = 0.

View Text Solution

Short Answer Type Questions

1. If the 8^{th} term of an A.P. is 31 and the 15^{th} term is 16 more than the 11th term, find the A.P.

View Text Solution

2. Which term of the A.P. 8, 14, 20, ... will be 72 more than the 41^{st} term?

View Text Solution

3. The sum of the 5^{th} and the 9^{th} term of an A.P. is 30. If its 25^{th} term is three times the 8^{th} term, find the A.P.

View Text Solution

4. The sum of the first three terms of an A.P. is 48. If the product of the first and the second term. exceeds four times the third term by 12 find the A.P

View Text Solution

5. The sum of the three numbers in A.P. is 21 and their product is 231. Find the numbers.

View Text Solution

6. Find the sum of all two-digit odd positive numbers.

View Text Solution

7. How many terms of the A.P.3,5,7,9, ... must be added to get the sum of 120 ?

View Text Solution

8. If the sum of the first n terms of an A.P. is given by $S_n = \frac{n}{2}(3n + 5)$, then find its 25^{th} term.

View Text Solution

9. The sum of the first 7 terms of an A.P. is 49 and the sum of the first 17 terms is 289. Find the sum of first n terms.

View Text Solution

10. If the sum of first n terms of an A.P. is n^2 , then find its 10^{th} term.

View Text Solution

11. The digits of a positive number of three digits are in A.P. and their sum is 15. The number obtained by reversing the digits is 594 less than the original number. Find the number.

View Text Solution

12. Pradeep repays the total loan of Rs 1,18,000 by paying every month starting with the first instalment of Rs 1000. He increases the instalment by Rs 100 every month. What amount will he pay as the last instalment of loan?

View Text Solution

13. Saurav gets pocket money from his father every day. Out of the pocket money, he saves

Rs 2.75 on first day and on each succeeding day he increases his saving by 25 paise. Find: the amount saved by Saurav on 14th day.

View Text Solution

14. Saurav gets pocket money from his father every day. Out of the pocket money, he saves Rs 2.75 on first day and on each succeeding day he increases his saving by 25 paise. Find: the amount saved by Saurav on 25th day.

View Text Solution

15. Saurav gets pocket money from his father every day. Out of the pocket money, he saves Rs 2.75 on first day and on each succeeding day he increases his saving by 25 paise. Find: the total amount saved by Saurav in 30 days.

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16. In a school, students thought of planting trees in and 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?

View Text Solution

17. In a potato race, a bucket is placed at the starting point, which is 5 m from the first

potato and the other potatoes are placed 3 m apart in a straight line. There are ten potatoes in the line.

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

View Text Solution

18. Shyam was late by 5 minutes in joining his duty on the first working day. On the second day, he was late by 10 minutes, on third day by 15 minutes and so on. After 25 working days he was shunted out of the job. Find the total working time avoided by Shyam.

View Text Solution

19. If in an A.P., $S_5 + S_7 = 167$ and $S_{10} = 235$, then find the A.P., where S_n denotes the sum of its first n terms.

View Text Solution

Long Answer Type Questions

1. In an A.P. of 50 terms, the sum of the first 10 terms is 210 and the sum of the last 15 terms is 2565. Find the A.P.

View Text Solution

2. Find the sum of the middlemost terms of the A.P.

$$-\frac{4}{3}, -1, -\frac{2}{5}, \ldots\ldots, 4\frac{1}{3}$$

View Text Solution

3. Find the common difference of an A.P. whose first term is 5 and the sum of the first 4 terms is half of the sum of the next four terms.

View Text Solution

4. The sum of the 4^{th} and 8^{th} terms of an A.P. is 24 and the sum of the 6^{th} and 10^{th} terms is 44. Find the first three terms of the A.P.

View Text Solution

5. The sum of the first 6 terms of an A.P. is 42. If its 10^{th} and 30^{th} terms are in the ratio 1:3, find the 1^{st} and 13^{th} terms.

View Text Solution

6. If the ratio of the sum of the first n terms of two A.Ps. is (7n +1):(41 + 27), then find the ratio of their 9th terms.

View Text Solution

7. Find the sum of the following:

$$\left(1-\frac{1}{n}\right)+\left(1-\frac{2}{n}\right)+\left(1-\frac{3}{n}\right)+ \quad \ldots\ldots$$

Upto n terms.

View Text Solution

8. If mth term of an A.P. is $\frac{1}{n}$ and nth term is $\frac{1}{m}$ then find the sum of its first mn terms.

View Text Solution

9. In an A.P., the sum of the first 10 terms is -150 and the sum of the next ten terms is – 550. Find the A.P.

View Text Solution

10. The sum of first n terms of an A.P. is $5n^2$ + 3n. If m^{th} term is 168, find the value of m and also the 20^{th} term.

View Text Solution

11. A thief runs with a uniform speed of 100 m/minute. After one minute, a policeman runs after the thief to catch him. He goes with a speed of 100 m/minute in the first minute and increases his speed by 10 m/minute every

succeeding minute. After how many minutes the policeman will catch the thief?

View Text Solution

Assertion And Reasoning Based Questions

1. Assertion: If the sum of n terms of a series is $2n^2 + 3n + 1$ then series is in A.P. with common difference 4.

Reason: If sum of n terms of an A.P is

quadratic expression, then common difference is twice of the coefficient of quadratic term.

A. Both the Assertion and the Reason are correct and the Reason is the correct explanation of the Assertion.

B. The Assertion and the Reason are correct but the Reason is not the correct explanation of the Assertion.

C. Assertion is true but the Reason is false.

D. Assertion is false but the Reason is true.

Answer: A

View Text Solution

2. Assertion: If sum of n terms of two arithmetic progressions are in the ratio (3n + 8): (7n + 15) then ratio of their n^{th} term is 3:16

Reason: If S_n is quadratic expression, then $t_n = S_n - S_{n-1}$

A. Both the Assertion and the Reason are correct and the Reason is the correct

explanation of the Assertion.

B. The Assertion and the Reason are correct but the Reason is not the correct explanation of the Assertion.

C. Assertion is true but the Reason is false.

D. Assertion is false but the Reason is true.

Answer: D

View Text Solution

Case Based Questions

1. The production of TV sets in a factory increases uniformly by a fixed number every year. It produced 16000 sets in 6th year and 22600 in 9th year.

What is the production during first year?

A. 5000

B. 2200

C. 10000

D. none of these

Answer: A

View Text Solution

2. The production of TV sets in a factory increases uniformly by a fixed number every year. It produced 16000 sets in 6th year and

22600 in 9th year.

Find the production during 8th year.

A. 7200

B. 22000

C. 20400

D. None of these

Answer: C

View Text Solution

3. The production of TV sets in a factory increases uniformly by a fixed number every year. It produced 16000 sets in 6th year and 22600 in 9th year.

Find the production during first 3 years is :

A. 21600

B. 22000

C. 20400

D. none of these

Answer: A

View Text Solution

4. The production of TV sets in a factory increases uniformly by a fixed number every year. It produced 16000 sets in 6th year and

22600 in 9th year.

In which year, the production is 29,200.

A. 10

B. 11

C. 12

D. 13

Answer: C

View Text Solution

5. The production of TV sets in a factory increases uniformly by a fixed number every year. It produced 16000 sets in 6th year and 22600 in 9th year.

Find the difference of the production during 7th A year and 4th year is:

A. 5000

B. 2200

C. 10000

D. none of these

Answer: D

View Text Solution

6. Amit was playing a number card game. In the game, some number cards (having both +ve or -ve numbers) are arranged in a row

such that they are following an arithmetic progression. On his first turn, Amit picks up 6th and 14th A card and finds their sum to be -76. On the second turn he picks up 8th and 16th card and - finds their sum to be - 96.

Based on the above information, answer the following questions:

What is the difference between the numbers on any two consecutive cards?

A. 7

B. -5

C. 11

D. -3

Answer: B

View Text Solution

7. Amit was playing a number card game. In the game, some number cards (having both +ve or -ve numbers) are arranged in a row such that they are following an arithmetic progression. On his first turn, Amit picks up 6th and 14th A card and finds their sum to be -76. On the second turn he picks up 8th and 16th card and - finds their sum to be - 96.

Based on the above information, answer the following questions:

The number on first card is :

A. 12

B. 3

C. 5

D. 7

Answer: D

View Text Solution

8. Amit was playing a number card game. In the game, some number cards (having both +ve or -ve numbers) are arranged in a row such that they are following an arithmetic progression. On his first turn, Amit picks up 6th and 14th A card and finds their sum to be -76. On the second turn he picks up 8th and 16th card and - finds their sum to be - 96.

Based on the above information, answer the following questions:

What is the number on the 19th card?

A. -88

B. -83

C. -92

D. -102

Answer: B

View Text Solution

9. Amit was playing a number card game. In the game, some number cards (having both +ve or -ve numbers) are arranged in a row such that they are following an arithmetic progression. On his first turn, Amit picks up 6th and 14th A card and finds their sum to be -76. On the second turn he picks up 8th and 16th card and - finds their sum to be - 96.

Based on the above information, answer the following questions:

What is the number on the 23rd card?

A. -103

B. -122

C. -108

D. -117

Answer: A

View Text Solution

10. Amit was playing a number card game. In the game, some number cards (having both +ve or -ve numbers) are arranged in a row such that they are following an arithmetic progression. On his first turn, Amit picks up 6th and 14th A card and finds their sum to be -76. On the second turn he picks up 8th and 16th card and - finds their sum to be - 96.

Based on the above information, answer the following questions:

What is the sum of 9th and 15th card ?

A. -129

B. -122

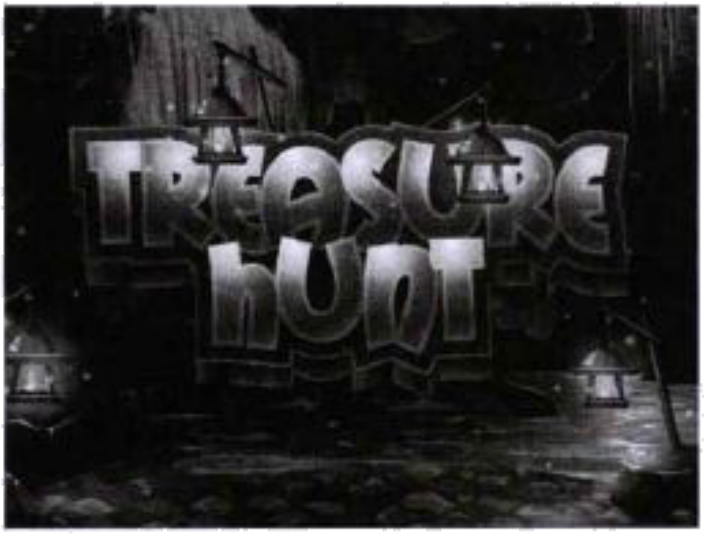
C. -180

D. -171

Answer: A

View Text Solution

11. While playing a treasure hunt game, some clues (numbers) are hidden in various spots collectively forms an AP. If the number of the nth spot is 20 + 4n, then answer the following questions to help the player in spotting the clues.



Which number is on the first spot?

A. 20

B. 24

C. 16

D. 18

Answer: B

View Text Solution

12. While playing a treasure hunt game, some clues (numbers) are hidden in various spots collectively forms an AP. If the number of the nth spot is 20 + 4n, then answer the following questions to help the player in spotting the clues.

Which number is on the $(n-2)^{th}$ spot?

A. 16 + 4n

B. 24 + 4n

C. 12 + 4n

D. 28 + 4n

Answer: C

View Text Solution

13. While playing a treasure hunt game, some clues (numbers) are hidden in various spots collectively forms an AP. If the number of the nth spot is 20 + 4n, then answer the following questions to help the player in spotting the clues.

Which number is on the 34th Spot ?

A. 156

B. 116

C. 120

D. 160

Answer: A

View Text Solution

14. While playing a treasure hunt game, some clues (numbers) are hidden in various spots collectively forms an AP. If the number of the nth spot is 20 + 4n, then answer the following questions to help the player in spotting the clues.

Which spot is numbered as 116?

A. 5th

B. 8th

C. 9th

D. 24th

Answer: D

View Text Solution

15. Your friend Veer wants to participate in a 200 m race. He can currently run that distance in 51 seconds and with each day of practice it takes him 2 seconds less. He wants to do in 31 seconds to win it.

Which of the following terms are in A.P for the given situation.

A. $51, 53, 55. \ldots$

B. $51, 49, 47. \ldots$

C. $-51, \ -53, \ -55. \ldots$

D. $51, 55, 59. \ldots$

Answer: B

View Text Solution

16. Your friend Veer wants to participate in a 200 m race. He can currently run that distance in 51 seconds and with each day of practice it takes him 2 seconds less. He wants to do in 31 seconds to win it.

What is the minimum number of days he needs to practice till his goal is achieved.

A. 10

B. 12

C. 11

D. 9

Answer: C

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17. Your friend Veer wants to participate in a 200 m race. He can currently run that distance in 51 seconds and with each day of practice it takes him 2 seconds less. He wants to do in 31 seconds to win it.

Which of the following term is not in the A.P. of the above given situation.

A. 41

B. 30

C. 37

D. 39

Answer: B

View Text Solution

18. Your friend Veer wants to participate in a 200 m race. He can currently run that distance in 51 seconds and with each day of practice it takes him 2 seconds less. He wants to do in 31 seconds to win it.

If n^{th} term of an A.P. is given by $a_n = 2n + 3$, then common difference of an AP.

A. 2

B. 3

C. 5

D. 1

Answer: A

View Text Solution

19. Your friend Veer wants to participate in a 200 m race. He can currently run that distance in 51 seconds and with each day of practice it takes him 2 seconds less. He wants to do in 31 seconds to win it.

The value of x, for which 2x, x + 10, 3x + 2 are three consecutive terms of an AP.

A. 6

B. -6

C. 18

D. -18

Answer: A

View Text Solution

20. Aadita is celebrating her birthday. She invited her friends. She bought a packet of toffees/ candies. She arranged the candies such that in the first row there are 3 candies, in second there are 5 candies, in third there are 7 candies and so on.

Find the first term and common difference of A.P.

A. $a = 2, d = 3$

B. $a = 3, d = 2$

C. $a = 2, d = -3$

D. $a = 3, d = -2$

Answer: B

View Text Solution

21. Jack is much worried about his upcoming assessment on Arithmetic Progression. He was vigorously practicing for the exams but unable to solve some questions. One of these question is given below:

If the 3^{rd} and 9^{th} term of an A.P. are 4 and - 8 respectively, then help Jack in solving problem:

What is the common difference of the AP?

A. 2

B. -1

C. -2

D. 4

Answer: C

View Text Solution

22. Jack is much worried about his upcoming assessment on Arithmetic Progression. He was vigorously practicing for the exams but unable to solve some questions. One of these question is given below:

If the 3^{rd} and 9^{th} term of an A.P. are 4 and - 8 respectively, then help Jack in solving problem:

What is the first term of the A.P.?

A. 6

B. 2

C. -2

D. 8

Answer: D

View Text Solution

23. Jack is much worried about his upcoming assessment on Arithmetic Progression. He was vigorously practicing for the exams but unable to solve some questions. One of these question is given below:

If the 3^{rd} and 9^{th} term of an A.P. are 4 and - 8 respectively, then help Jack in solving problem: Which term of the A.P. is – 160?

A. 80^{th}

B. 85^{th}

C. 81^{th}

D. 84^{th}

Answer: B

View Text Solution

24. Jack is much worried about his upcoming assessment on Arithmetic Progression. He was vigorously practicing for the exams but unable to solve some questions. One of these question is given below:

If the 3^{rd} and 9^{th} term of an A.P. are 4 and - 8 respectively, then help Jack in solving problem: Which of the following is not the term of an A.P.

A. -123

B. -100

C. 0

D. -200

Answer: A

View Text Solution

25. Jack is much worried about his upcoming assessment on Arithmetic Progression. He was vigorously practicing for the exams but unable to solve some questions. One of these question is given below:

If the 3^{rd} and 9^{th} term of an A.P. are 4 and - 8 respectively, then help Jack in solving problem: Which is the 75^{th} term of an A.P. ?

A. -140

B. -102

C. -150

D. -158

Answer: A

View Text Solution

Passage Based Questions

1. A man took a loan of Rs 325,000 for his business. He repays it in instalments. In the first month he paid Rs 2000, in the second month he paid Rs 3500, in the third month he paid Rs 5000, and so on.

Based on the given information, answer the

following questions:

How long will it take to clear the loan?

View Text Solution

2. A man took a loan of Rs 325,000 for his business. He repays it in instalments. In the first month he paid Rs 2000, in the second month he paid Rs 3500, in the third month he paid Rs 5000, and so on.

Based on the given information, answer the following questions:

What amount he has to pay for his last instalment?

View Text Solution

3. 325 logs are stacked in the manner that there are 27 logs in the bottom row, 26 - next row 25 logs in the row next to it and so on.

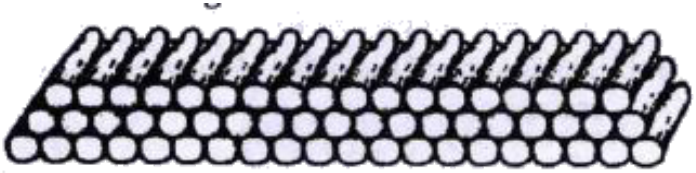
Base on the given information, answer the

following questions:

In how many rows are the 325 logs placed?

View Text Solution

4. 325 logs are stacked in the manner that there are 27 logs in the bottom row, 26 - next row 25 logs in the row next to it and so on.



Base on the given information, answer the

following questions:

How many logs are in the top row?

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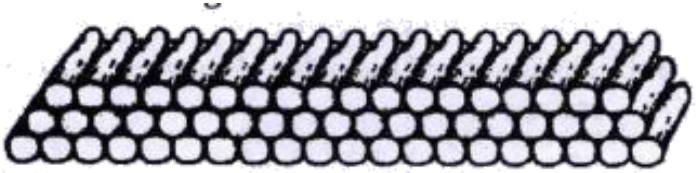
5. 325 logs are stacked in the manner that there are 27 logs in the bottom row, 26 - next row 25 logs in the row next to it and so on.



Base on the given information, answer the

following questions:

which row is the middle row?

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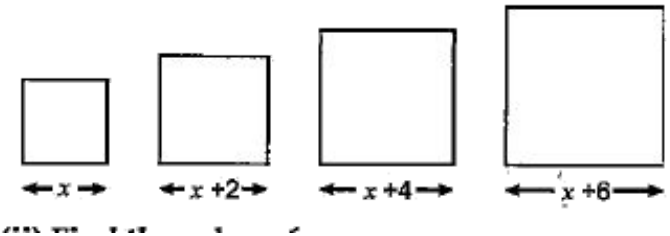
6. The diagram shows a sequence of square wire frames. The lengths of the side of these frames are x cm, (x + 2) cm, (x + 4) cm ..... respectively. The sum of the areas of the first three squares is 440 sq. cm.

Based on the following information answer the following questions:

Express the length of side of the nth frame in terms of x and n.

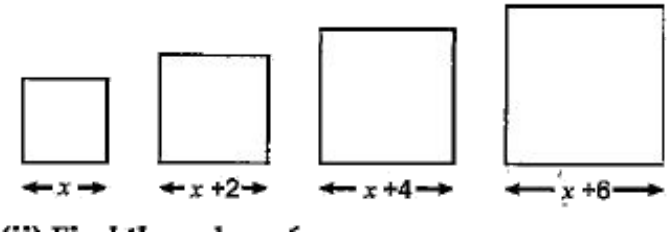


View Text Solution

7. The diagram shows a sequence of square wire frames. The lengths of the side of these frames are x cm, (x + 2) cm, (x + 4) cm ..... respectively. The sum of the areas of the first three squares is 440 sq. cm.

Based on the following information answer the following questions:

Find the value of x.



View Text Solution

8. Read the following passage and answer the questions that follows:

Ravi started to give home tuitions from the month of January. He charges Rs 1000 from

each student. He spends Rs 1200 on rent, Rs 2700 on his food Rs 980 on taxi fare and Rs 1700 on electricity. In the first month he had 20 students and in each subsequent month, the number of students increases by 2.

Do his savings form an arithmetic progression? If so, write the first three terms of this A.P.

View Text Solution

9. Read the following passage and answer the questions that follows:

Ravi started to give home tuitions from the month of January. He charges Rs 1000 from each student. He spends Rs 1200 on rent, Rs 2700 on his food Rs 980 on taxi fare and Rs 1700 on electricity. In the first month he had 20 students and in each subsequent month, the number of students increases by 2.

How much did Ravi save till 11^{th} month?

View Text Solution

10. Read the following passage and answer the questions that follows:

Ravi started to give home tuitions from the month of January. He charges Rs 1000 from each student. He spends Rs 1200 on rent, Rs 2700 on his food Rs 980 on taxi fare and Rs 1700 on electricity. In the first month he had 20 students and in each subsequent month, the number of students increases by 2.

How much did he save in the month of July?

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Self Assessment

1. A sum of Rs 1000 is invested at 8% S.I. per annum. Calculate the rate of interest at the end of 1,2,3, ... years. Is the sequence of the interests an A.P.? Find the interest at the end of 30 years.

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2. In a flower bed, there are 23 rose plants in the first row, 21 in the second row. 19 in the

third row and so on. There are five plants in the last row. How many rows are there in the flower bed?

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3. A person started working in 1995 at a salary of Rs5000 per month with a yearly increment of Rs 200. In which year did his salary reach Rs 7000 per month?

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4. A housewife saved Rs 5 in the first week of the year and thereafter increased her weekly savings by Rs 1.75. After how many weeks will her weekly savings be Rs 20.75?

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5. Find the 12^{th} term from the end of the following arithmetic progression :3,8, 13,..., 253.

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6. The sum of the 4^{th} and 8^{th} terms of an A.P. is 24 and the sum of the 6^{th} and 10^{th} term is 34. Find the first term and the common difference of the A.P.

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7. Find the A.P. whose third term is 16 and the seventh term exceeds its fifth term by 12.

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8. Two A.P.s 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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9. A manufacturer of TV sets produced 600 units in the 3^{rd} year and 700 units in the 7^{th} year. Assuming that the production increases uniformly by a fixed number every year, find

the production in

the first year,

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10. A manufacturer of TV sets produced 600 units in the 3^{rd} year and 700 units in the 7^{th} year. Assuming that the production increases uniformly by a fixed number every year, find the production in

the 10^{th} year.

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11. The contract of a construction job specifies a penalty for delay of completion beyond a certain date as follows :Rs 200 for the first day, Rs 250 for the second day, Rs 300 for the third day and so on. How much does a delay of 30 days cost the contractor?

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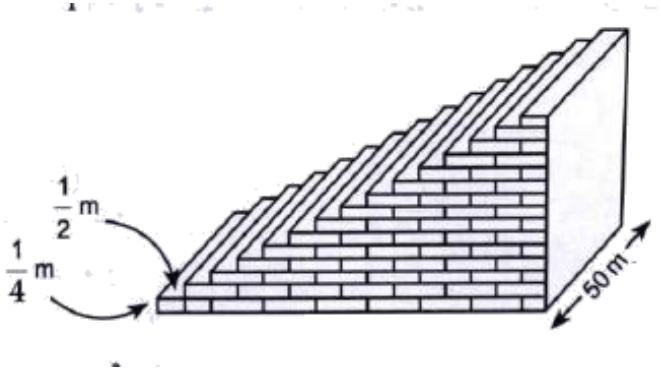
12. A small terrace at a football ground comprises of 15 steps each of which is 50 m

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.



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13. How many terms of the A.P. 9, 17, 25, ... must be taken so that their sum is 636?

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14. Find the sum of the first 15 terms of the series where $t_n = 9 - 5n$.

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15. Find the sum of the first 51 terms of an A.P. whose 2^{nd} and 3^{rd} terms are 14 and 18 respectively.

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16. The first term of an A.P. is 5, the last term is 45 and the sum is 400. Find the number of terms and the common difference.

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17. Find the n^{th} term and the last term of an A.P. whose first term is 2, the common difference is 8 and the sum of all the terms is 90.

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18. If the sum of the first n terms of an A.P. is $4n - n^2$, find the first term, second term and sum of the first two terms.

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

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20. The sum of n terms of an A.P. is $5n - n^2$.

Find nth term of this A.P.

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21. The sum of first n terms of an A.P. is $3n^2 + 4n$. Find the 25th term of this A.P.

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22. The n^{th} term of an A.P. is 6n + 2 Find the common difference.

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