MATHS

BOOKS - UNIQUE MATHS (HINGLISH)

ARITHMETIC PROGRESSION

Practice Set 3 1

1. Which of the following squences are A.P.? If they are A.P. find the common difference.

2,4,6,8,...

▶ **Watch Video Solution**

2. Which of the following sequences is an A.P.? If they are A.P., find the common difference. $2, \dfrac{5}{2}, 3, \dfrac{7}{2} \ldots$

3. Which of the following seqences are $A.P.$? If they are $A.P.$ find the common difference.

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

4. Which of the following seqences are $A.P.$? If they are $A.P.$ find the common difference.

$0.3, 0.33, 0.333,\ldots\ldots$

5. Which of the following seqences are $A.P.$? If they are $A.P.$ find the common difference.

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

6. Which of the following squences are A.P.? If they are A.P. find the common difference.

2,4,6,8,...

> ▶ **Watch Video Solution**

7. Which of the following squences are A.P.? If they are A.P. find the common difference

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

> ▶ **Watch Video Solution**

8. Which of the following squences are A.P.? If they are A.P. find the common difference

127, 132, 137, ...

> ▶ **Watch Video Solution**

9. write an A.P. whose first term is a and common difference d in each of the following.

a= 10 , d=5

10. Write an $A.P$ whose first term is a and common difference is d in each of the following :

$a = -3, d = 0$

11. Write an $A.P$ whose first term is a and common difference is d in each of the following :

$a = -7, d = \dfrac{1}{2}$

12. Write an $A.P$ whose first term is a and common difference is d of the following :

$$a = -1.25, d = 3$$

13. write an A.P. whose first term is a and common difference d in each of the following.

a =6, d = -3

14. Write an $A.P$ whose first term is a and common difference is d in each of the following :

$$a = -19, d = -4$$

15. Find the first term and common difference for each of the A.P.

5,1,-3,-7

> ▶ Watch Video Solution

16. Find the first term and common difference for each of the A.P.

0.6,0.9,1.2,1.5,.....

> ▶ Watch Video Solution

17. Find the first term and common difference for each of the A.P.

127,135,143,151,....

> ▶ Watch Video Solution

18. Find the first term and common difference for each of the A.P.
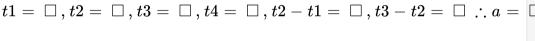
$$\frac{1}{4}, \frac{3}{4}, \frac{5}{4}, \frac{7}{4}, ...$$

> ▶ Watch Video Solution

1. Write the corect number in the given boxes from the following $A.\ P.$

1, 8, 15, 22, ... Here,

$t1 = \Box\ , t2 = \Box\ , t3 = \Box\ , t4 = \Box\ , t2 - t1 = \Box\ , t3 - t2 = \Box\ \therefore a = \Box$

> ▶ **Watch Video Solution**

2. Write the correct number in the given boxes from the following A.P.

3,6,9,12,.......

Here

$t_1 = \Box\ , t_2 = \Box\ , t_3 = \Box\ , t_4 = \Box\ , t_2 - t_1 = \Box\ , t_3 - t_2 = \Box\ \therefore d = \Box$

> ▶ **Watch Video Solution**

3. Write the correct number in the given boxes from the following A.P.

$-3, \ -8, \ -13, \ -18,.....$

Here,

$t_1 = \ \square \, , t_2 = \ \square \, , t_3 = \ \square \, , t_4 = \ \square \, , t_2 - t_1 = \ \square \, , t_3 - t_2 = \ \square \ \therefore a = \ \square$

▶ **Watch Video Solution**

---

4. Write the correct number in the given boxes from the following A.P.

$70, \ 60, \ 50, \ 40,..........$

Here, $t_1 = \ \square \, , t_2 = \ \square \, , t_3 = \ \square \,_{......} \ \therefore a = \ \square \, , d = \ \square$

▶ **Watch Video Solution**

---

5. Decide whether following sequence is an A.P., if so find 20th term of the progression.

-12,-5,2,9,16,23,30, ...

▶ **Watch Video Solution**

6. Given Arithmetic Progression 12,16,20,24, ... Find the 24th term of this progression.

7. Find the 19th term of the following A.P.

7, 13, 19, 25, ...

8. Find the 27th term of the following $A.\,P.\,\,9,\,4,\,-1,\,-6,\,-11,\,....$

9. Find how many three digit natural numbers are divisible by 5.

10. The 11th term and the 21st term of an A.P. are 16 and 29 respectively, then find the 41st term of that A.P.

▶ **Watch Video Solution**

11. 11,8,5,2, ... In this A.P. which term is number -151?

▶ **Watch Video Solution**

12. In the natural numbers from 10 to 250, how many are divisible by 4?

▶ **Watch Video Solution**

13. In an A.P. 17th term is 7 more than 10th term. Find the common difference?

▶ **Watch Video Solution**

1. First term and common difference of an A.P. are 6 and 3 respectively :

Find S_{27}

▶ Watch Video Solution

2. Find the sum of first 123 even natural number.

▶ Watch Video Solution

3. Find the sum of all even number between 1 to 350.

▶ Watch Video Solution

4. In an A.P. 19th term is 52 and 38th term is 128, Find sum of first 56 terms.

▶ Watch Video Solution

5. Complete the following activity to find the sum of natural numbers between 1 to 140 which are divisible by 4.

> ▶ Watch Video Solution

6. Sum of first 55 terms in an A.P.is 3300,find its 28th term.

> ▶ Watch Video Solution

7. In an A.P. sum of three consecutive terms is 27 and their product is 504, find the terms. (Assume that three consecutive terms in A.P. are a -d, a, a+d)

> ▶ Watch Video Solution

8. Find four consecutive terms in an A.P. whose sum is 12 and the sum of 3rd and 4th term is 14.

(Let four consecutive terms be a -d ,a,a+d, a+2d)

> ▶ **Watch Video Solution**

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

> ▶ **Watch Video Solution**

Practice Set 3 4

1. On $1st$ Jan 2016, Sanika decides to save $Rs10$, $Rs11$ on second day , $Rs12$ on third day. If she decide to save like this, then on 31st Dec 2016 What would be her total saving?

> ▶ **Watch Video Solution**

2. A man Borrows Rs. 8000 and agrees to repay with a total interest of Rs. 1360 in 12 monthly instalments. Each instalment being less than the preceding one by Rs. 40. Find the amount of the first and last instalments.

▶ **Watch Video Solution**

3. Sachin invested Rs. 5000 for the 1st year, Rs. 7000 for the 2nd year, Rs. 9000 in the 3rd year in National Savings Certificate scheme. How much amount did he invest in 12 yearsgt

▶ **Watch Video Solution**

4. There is an auditorium with 27 rows of seats. There are seats in the first row, 22 seats in the second row, 24 seats in the third row and so on. Find the number of seats in 15th row and also find how many total seats are there in the auditorium?

▶ Watch Video Solution

5. Kargil's temperature was recorded in a week from Monday to Saturday. All readings were in A.P. The sum of temperatures of Monday and Saturday was $5 \circ$ C more than sum of temeratures of Tuesday and Saturday. If temperature of Wednesday was $-30 \circ$ C Then find the temperature on the other five days.

Problem Set 3

1. Choose the correct alternative answer for each of the following subquestions:

(1) The sequence $-10, \ -6, \ -2, 2, \ldots \ldots$

   A. is an $A. \, P. \,$, Reason $d = \ -16$

   B. is an $A. \, P. \,$, Reason $d = 4$

C. is an $A.P.$, Reason $d = -4$

D. is not an $A.P.$

Answer:

▶ Watch Video Solution

---

2. The first four terms of an Ap 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:

▶ Watch Video Solution

3. What is the sum of the first 30 natural numbers?

A. 464

B. 465

C. 462

D. 461

Answer:

▶ **Watch Video Solution**

4. For an A.P. if $t_7 = 4. d = -4.$then $a = \ldots$.

A. 6

B. 7

C. 20

D. 28

Answer:

5. For an A.P. if $a = 3.5, d = 0, n = 101,$ then $t_n = \ldots.$

A. 0

B. 3.5

C. 103.5

D. 104.5

Answer:

6. In an $A.P.$ first two terms are $-3, 4$ then 21st term is..........

A. -143

B. 143

C. 137

D. 17

Answer:

---

7. If for an A.P.,$d = 5,$ then $t_{18} - t_{13} = \ldots.$

A. 5

B. 20

C. 25

D. 30

Answer:

8. Sum of first five multiples of 3 is.........

A. 45

B. 55

C. 15

D. 75

Answer:

▶ Watch Video Solution

9. 15, 10, 5.....In this $A.P.$ sum of first 10 terms is....

A. -75

B. -125

C. 75

D. 125

Answer:

10. In an A.P., 1st terms is 1 and the last term is 20. The sum of all terms is 399 then n = ...

   A. 42

   B. 38

   C. 21

   D. 19

Answer:

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

12. In an A.P. 10th term is 46, sum of 5th and 7th term is 52. find the A.P.

13. The A.P. in which 4th term -15 and 9th term is -30. Find the sum of first 10 numbers.

14. Two A.P's are given 9,7,5..and 24,21,18,....If n^{th} term of both the progressions are equal then find the value of n and n^{th} term

15. If sum of 3rd and 8th terms of an A.P. is 7 and sum of 7th and 14th terms is -3 then find 10th term.

16. In an A.P., first term is -5 and last term is 45. If sum of all the numbers in the A.P. is 120, then how many terms are there? What is the common difference.

17. Sum of 1 to n natural numbers is 36, then find the value of n.

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

19. 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.

20. Show that the sum of an A.P. whose first term is a, the second term is b and the last term is c, is equal to `((a+c)(b+c−2a))/(2(b−a))

21. The sum of first P terms of an A.P. is equal to the sum of its first Q terms. Show that the sum of its first (P+Q) terms is zero.

22. If m times the mth term of an A.P. is equal to n times its nth term, show that the $(m+n)^{th}$ term of the A.P. is zero.

23. Rs. 1000 is deposited at 10 per cent simple interest. Check if the interest amount at the end of every year is in A.P. If this is A.P. then find amount of the interest after 20 years. For this complete the following activity.

Hots Solved

1. Swati was given her pocket money on jan 1st 2008. She puts $Rs1$ on day $1 Rs2$ on day 2, $Rs3$ on day 3 and continued doing so till the end of the month. From this money into her piggy bank she also spent $Rs204$ of her pocket money and found that at the end of the month she still had $Rs100$ with her. How much was her pocket money for the month?

2. A man arranges to pay a debt of Rs 3600 in 40 monthly installments which are in AP When 30 installments are paid he dies leaving one third of the debt unpaid Find the value of the first installment

3. If p^{th}, q^{th}, r^{th} term of an $A.P$ is x, y and z respectively. Show that

$$x(q-r) + y(r-p) + z(p-q) = 0$$

4. Find the sum of all 3 digit numbers which leave remainder 3 when divided by 5.

5. Find the sum of all natural numbers amongest first one thousand numbers which are neither divisbile by 2 or by 5.

Unique Practice Session

1. The sequence $2, 4, 8, 16, \ldots$.

   A. is an $A.\,P.$, Reason $d = 4$

   B. is an $A.\,P.$, Reason $d = -4$

   C. is not an $A.\,P.$

   D. is an $A.\,P.$ with variable d

Answer:

2. In an $A.P.$ I term is 0 and the last term is 40. Then sum of all terms is

$= \ldots\ldots\ldots$ when $n = 20$.

    A. 800

    B. 60

    C. 20

    D. 400

Answer:

▶ **Watch Video Solution**

---

3. Arjun thought of adding all the multiples of 5 he learnt in class. So would you help him to get the answer to first 10 multiples of 5. According to you $S_{10} = \ldots\ldots$

    A. 275

    B. 500

C. 50

D. 550

Answer:

▶ **Watch Video Solution**

---

4. If $\dfrac{1}{2}\pi, 1\pi, \dfrac{3}{2}\pi$,........is an $A.\,P.\ \ d = \ldots\ldots\ldots$

A. $\dfrac{1}{2}\pi$

B. 2π

C. $\dfrac{\pi}{2}$

D. π

Answer:

▶ **Watch Video Solution**

5. Find first four terms of an $A.\,P.$, whose first term is -6 and common difference is $+6$.

    A. $-6,\,+6,\,-12,\,+24$

    B. $-6,\,-12,\,-18,\,-24$

    C. $-6,\,+6,\,+12,\,+18$

    D. $-6,\,0,\,6,\,12$

Answer:

▶ **Watch Video Solution**

6. In an auditorium , if there are 20 seats in 1st row, 25 in 2nd row then there are .... Seats in 10^(th)` row.

    A. 65

    B. 45

    C. 55

D. 75

Answer:

▶ **Watch Video Solution**

---

7. What is the sum of the first 10 even numbers starting with 0.

A. 100

B. 90

C. 20

D. 80

Answer:

▶ **Watch Video Solution**

---

8. What is the sum of first 10 natural numbers.

A. 195

B. 100

C. 30

D. 85

Answer:

9. Mother asked Jheel to eat one fruit on the first day, two on the second day, and so on Jheel was very happy. But started crying because on the tenth day she had to eat.............fruits.

A. 9

B. 10

C. 55

D. 12

Answer:

---

10. Smith asked daddy to give $Rs100$ on first day and go on decreasing by $Rs10$ daily. How much money has he collected in 10 days?

   A. 550

   B. 1000

   C. 480

   D. 320

Answer:

---

11. $-10, +10, -10, +10,$.............Is the sequence an $A.P.$? If so, find the common difference.

12. $-4, \ -3, \ -2,$..............Is the sequence an $A.\,P.$? If so find the common difference.

13. Find a and d of an $A.\,P.$ 5, 12, 19, 26.

14. Find a and d of an $A.\,P.$ $2, \ -2, \ -6, -10`,$.........

15. $108, \ 108, \ 108, \ \ldots\ldots\ldots\ldots$ is an $A.\,P.$ find $a \& d$.

16. Find the nth term of an $A.P.$ given $a = 5 \& d = -2.$

> ▶ Watch Video Solution

17. Find the nth term of an $A.P.$ given $a = -3$ and d=4`.

> ▶ Watch Video Solution

18. Find the nth term of an $A.P.$ Whose first term is 200 and common difference is 7.

> ▶ Watch Video Solution

19. If first term is -1 and common difference is $\dfrac{-1}{2}$ find the nth term.

> ▶ Watch Video Solution

20. If $a = 3\sqrt{3}$ and $d = 4\sqrt{3}$ for an $A.P.$ find t_n.

▶ Watch Video Solution

21. Find the next term of an $A.P. \; -3, 1, 5, 9, \ldots$.

▶ Watch Video Solution

22. Given $t_n = 4n - 12$ find t_{10}

▶ Watch Video Solution

23. Write the correct number in the given boxes from the following $A.P.$

$2, 11, 20, 29, \ldots$. Here $a = \square$, $t1 = \square$, $t2 = \square$, $t3 = \square$

▶ Watch Video Solution

24. Find the next two terms of an $A.P. -7, -4, -1, 2,............$

25. Find the next two terms of an $A.P. \dfrac{6}{7}, 1, \dfrac{8}{7} ....$

26. Which term of the A.P. 2,11,20,29,... is 560 ?

27. Check whether 41 is in the sequence. $2, 5, 8, ...$

28. How many two digit numbers are divisible by 4?

29. Find t_n for following A.P., and then find 30th term of A.P.

3,8,13, 18,…….

30. Find t_n for the following $A.\,P.$ and then find 45th term of the $A.\,P.$

$6,\ \dfrac{11}{2},\ 5,\ \ldots\ldots\ .$

31. Find the first four terms of an $A.\,P.$ whose first term is -3 and common difference -4, and also find t_n.

32. Find the sum of first n natural numbers Hence find S_{150}.

> ▶ **Watch Video Solution**

33. Find the sum of all odd numbers from 1 to 150.

> ▶ **Watch Video Solution**

34. Which of the following sequences are $A.P.$? If it is an $A.P.$, find next two terms.

$5, 12, 19, 26, \ldots\ldots$

> ▶ **Watch Video Solution**

35. Which of the following sequences are $A.P.$? If it is an $A.P.$, find next two terms.

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

36. Which of the following sequences are $A.\,P.$? If it is an $A.\,P.$, find next two terms.

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

37. Which of the following sequences are $A.\,P.$? If it is an $A.\,P.$, find next two terms.

$\dfrac{3}{2}, \dfrac{1}{2}, -\dfrac{1}{2}, \ldots\ldots\ldots\ldots$

38. The first term a and common difference d are given. Find first four terms of A.P.

(i) $a = -3, d = 4,$

(ii) $a = 200, d = 7$

(iii) $a = -1, d = -\dfrac{1}{2}$,

(iv) $a = 8, d = -5$

39. The first term a and common difference d are given. Find first four terms of $A. P.$

$a = 200, d = 7$

40. The first term a and common difference d are given. Find first four terms of $A. P.$

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

41. The first term a and common difference d are given. Find first four terms of $A.\,P.$

$a = 8, d = -5$

▶ Watch Video Solution

42. Find the sum of first n natural numbers.

▶ Watch Video Solution

43. Find the sum of first n even natural numbers.

▶ Watch Video Solution

44. Find the sum of first n odd natural numbers.

▶ Watch Video Solution

45. In an $A.P.$ sum of three consecutive terms is 36 and their product is -5184, find the terms.

46. First term and common difference of an AP are 10 and -4 respectively find S_n and hence find S_{25}.

47. In an AP 18th term is 180 and 36th term is 360 find the sum of first 53 terms.

48. Find four consecutive terms in an $A.P.$ whose sum is -8 and sum of third and fourth term is 8.

49. In a certain A.P. the $24th$ term is twice the $10th$ term. Prove that the $72nd$ term is twice the $34th$ term.

50. In the year 2015, Mrs. Shaikh got a job with salary Rs. 1,80, 000 per year. Her employer agreed to give Rs 10,000 per year as increment. Then in how many years will her annual salary be Rs 2,50,000?

51. Determine the AP whose third term is 15 and differnce of $5th$ from 8th is 21.

52. An A.P. consists of 40 terms . If the first and the last terms are -4 and 269 respectively find the 23rd term.

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

54. The first term (a) and common difference (d) are given (i) Find first four terms of A.P. (ii) Find 60th term and (iii) Find sum of all 100 terms.

For $a = -1, d = \dfrac{-1}{2}$

55. A village has 4000 literate people in the year 2010 and this number increases by 400 per year. How many literate people will be there till year 2020?

> ▶ Watch Video Solution

56. Find t_n for following A.P., and then find 30th term of A.P.

3,8,13, 18,.......

> ▶ Watch Video Solution

57. Which term of the following A.P. is 560? 2,11,20,29.......

> ▶ Watch Video Solution

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

> ▶ Watch Video Solution

59. Find the sum,

$(i)4 - \dfrac{1}{n} + 4 - \dfrac{2}{n} + 4 - \dfrac{3}{n}$ ....upto n terms

$(ii)1 + (-2) + (-5) + \ldots + (-236).$

▶ **Watch Video Solution**

---

60. Ajay sharma repays the borrowed amount of Rs 3,25,000 by paying Rs 30500 in the first month and then decreases the payment by Rs 1500 every month. How long will it take to clear his amount?

▶ **Watch Video Solution**

---

61. The 19th term of an AP is equal to 3 times its 6th term. If its 9th term is 19, find the AP.

▶ **Watch Video Solution**

62. Find the sum of first 45 terms of an A.P. whose 8th term is 41 and 13th term is 61.

63. A man has saved $Rs640$ during the 1st month, $Rs720$ in the 2nd month $Rs800$ in $3rd$ month. If he continues like this sequence 1 what will be his saving in the 25th month?

64. How many two digit number are divisible by 13 ? Also find their sum.

65. For an A.P. show that $t_{m+n} + t(m - n) = 2t_m$

66. Check wether 301 is a term of the list of numbers 5, 11, 17, 23, ...

67. The 10th term and the 18th term of an A.P. are 25 and 41 respectively, then find 38th term of that A.P. Similarly if nth term is 99, find the value of n.

68. How many two digit numbers are divisible by 4?

69. A mixer manufacturing company manufactured 600 mixers in 3rd year and in 7th year they manufactured 700 mixer. If every year there is same growth in the production of mixers then find (i) production in the first

year (ii) production in 10th year (iii) total production in first seven years.

70. Anvar saves some amount every month. In first three months he saves Rs 200, Rs 250 and Rs 300 respectively. In which month will he save Rs. 1000? Find the totla amount saved.
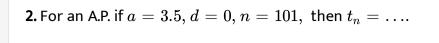
Assignment Iii

1. $-4, \ -3, \ -2,$..............Is the sequence an $A.\,P.$? If so find the common difference.

2. For an A.P. if $a = 3.5, d = 0, n = 101,$ then $t_n = \ldots$

A. 0

B. 3.5

C. 103.5

D. 104.5

Answer:

▶ **Watch Video Solution**

3. Find the 19th term of the following A.P.

7, 13, 19, 25, ...

▶ **Watch Video Solution**

4. Complete the following activity to find the sum of natural numbers

between 1 to 140 which are divisible by 4.

5. Decide whether following sequence is an A.P., if so find 20th term of the progression.

-12,-5,2,9,16,23,30, ...

6. On 1st Jan 2018, Sanikadecides to save Rupees 10,Rupees 11 on the second day, Rupees 12 on the third day . She decides to save like this . What would be her total savings at the end of the year ?

7. Find how many three digit natural numbers are divisible by 5.

8. A man arranges to pay a debt of Rs 3600 in 40 monthly installments which are in AP When 30 installments are paid he dies leaving one third of the debt unpaid Find the value of the first installment

▶ Watch Video Solution

9. The sum of first P terms of an A.P. is equal to the sum of its first Q terms. Show that the sum of its first (P+Q) terms is zero.

▶ Watch Video Solution