DAV PUBLIC SCHOOL UNIT-VIII, BHUBANESWAR
SUB-MATHEMATICS, CLASS-X
CHAPTER- (ARITHMETIC PROGRESSION)
WORSHEET (BASIC)

Max. Marks: 20 **Time : 45min.**

Choose the correct option **[2× 1 = 2]**

1. The common difference of the A.P $-2, -5, -8, ...$ is
   (a) 3 (b) -3 (c) 7 (d) -7
2. The 15^{th} term of the AP 13, 17, 21, 25,… is
   (a) 102 (b) 104 (c) 69 (d) 108

Fill in the blanks **[2× 1 = 2]**

3. The sum of first 16^{th} terms of the AP 10, 6, 2, ….is _____.
4. In an AP if $d = -4,\ n = 7, a_n = 4$, then $a =$ _____.

Very short answer type questions **[2× 1 = 2]**

5. Write first four terms of an AP whose first term is -2 and common difference is -2.
6. Write next two terms of the AP: $\sqrt{2}, \sqrt{8}, \sqrt{18}, ...$

Short answer type question-I **[2× 2 = 4]**

7. Which term of the AP: 3,8,13,18… is 78?
8. Find 31^{st} term of the AP whose 11^{th} term is 38 and 16^{th} term is 73.

Short answer type question-II **[2× 3 = 6]**

9. How many three digit numbers are there divisible by 7?
10. Find the sum of first 15 multiples of 8.

Long answer type question **[1× 4 = 4]**

11. 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.

DAV PUBLIC SCHOOL UNIT-VIII, BHUBANESWAR
SUB-MATHEMATICS, CLASS-X
CHAPTER- (ARITHMETIC PROGRESSION)
WORSHEET (STANDARD)

Max. Marks: 20 **Time : 45min.**

Choose the correct option **[2× 1 = 2]**

1. If the common difference of an AP is 5, then $a_{18} - a_{13}$ is equal to
   (a) 5 (b) 20 (c) 30 (d) 25
2. In an AP , if $a = -7.2,\ d = 3.6,\ a_n = 7.2$, then n is equal to
   (a) 1 (b) 3 (c) 4 (d) 5

Fill in the blanks **[2× 1 = 2]**

3. The 11^{th} term of an AP: $-5, -\frac{5}{2},\ 0, \frac{5}{2}$, ... is _____.
4. If $\frac{6}{5}, a$, 4 are in AP, then the value of a is _____.

Very short answer type questions **[2× 1 = 2]**

5. If the n^{th} term of an AP is $\frac{3+n}{4}$, then find its third term.
6. For what value of k , $2k, k + 10\ and\ 3k + 2$ are in AP?

Short answer type question-I **[2× 2 = 4]**

7. Find the 9^{th} term from the last term of the AP: 5, 9, 13, ……, 185.
8. How many terms of the AP 18,16,14, … be taken so that their sum is zero.

Short answer type question-II **[2× 3 = 6]**

9. Find the value of the middle most term(s) of the AP $-11, -7, -3, \ldots, 49$.
10. For what value of the n , the n^{th} term of the following two Aps are same
    (i) 1,7,13,19,… (ii) 69, 68,67,……

Long answer type question **[1× 4 = 4]**

11. A manufacturer of wire produced 1400m wire in the 5^{th} year and 1600m wire in 9^{th} year. Assuming the production increases uniformly by a fixed numer every year, find
    (i) The production in the 12^{th} year.
    (ii) The total production in 9 year.

DAV PUBLIC SCHOOL UNIT-VIII, BHUBANESWAR
SUB-MATHEMATICS, CLASS-X
CHAPTER- (ARITHMETIC PROGRESSION)
WORSHEET (ADVANCED)

Max. Marks: 20 **Time : 45min.**

Choose the correct option **[2× 1 = 2]**

1. The p^{th} term of an AP is q and q^{th} term of an AP is p. Its r^{th} term is
   (a) $p+q+r$ (b) $p-q-r$ (c) $p+q-r$ (d) $p-q+r$
2. If the first, second and last term of an AP are $a, b \; and \; 2a$ respectively, its sum is
   (a) $\frac{ab}{2(b-a)}$ (b) $\frac{ab}{b-a}$ (c) $\frac{3ab}{2(b-a)}$ (d) none of these

Fill in the blanks **[2× 1 = 2]**

3. If the sum of n terms of an AP is $S_n = 3n^2 + 5n$, then the common difference of the AP is _____.
4. If the sum of three consecutive terms of increasing AP is 51 and the product of first and third terms of the AP is 273, then the third term is _____.

Very short answer type questions **[2× 1 = 2]**

5. Two Aps have same common difference. The first term of one of these is -1 and other is -8. What is the difference between the 4th term.
6. In an AP if $a = 1, a_n = 20 \; and \; S_n = 399$, then find the value of n.

Short answer type question-I **[2× 2 = 4]**

7. Find the sum of all 11 terms of an AP whose middle most term is 30.
8. If the ratio of sum of first m and n terms of an AP is $m^2 : n^2$. Prove that ratio of its m^{th} & n^{th} terms is $(2m-1) : (2n-1)$.

Short answer type question-II **[2× 3 = 6]**

9. The sum of first three terms of an AP is 33. If the product of first and third term exceeds the second term by 29, find the AP
10. Solve the equation
    $1 + 4 + 7 + 10 + \cdots + x = 287$

Long answer type question **[1× 4 = 4]**

11. If m^{th} term of an AP is $\frac{1}{n} \; and \; n^{th}$ term is $\frac{1}{m}$, then prove that its $(mn)^{th}$ term is 1.

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SUB-MATHEMATICS, CLASS-X
CHAPTER- (ARITHMETIC PROGRESSION)
WORSHEET (HOTS)

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1. If a^2, b^2, c^2 are in AP , then prove that $\frac{a}{b+c}, \frac{b}{c+a}, \frac{c}{a+b}$ are in AP.
2. Two cars start together in the same direction from the same place. First car goes with uniform speed of 10 km/hr. Second car goes at a speed of 8 km/hr in the first hour and increases the speed by ½ km in each succeeding hours. After how many hours will the second car overtake the first, if both car go non-stop?
3. A man is employed to count Rs 10710. He counts at the rate of Rs 180 per minute for half an hour. After this he count at the rate of Rs 3 less every minute than the preceding minute. Find the time taken by him to count the entire amount.
4. The houses of a row are numbered consecutively from 1 to 49, so that there is a value of x such that the sum of numbers of houses preceding the house number x is equal to the sum of number of houses following it. Find the value of x.
5. The sum of four consecutive terms of an AP is 32 and the ratio of their product of first and last terms to the product of two middle terms is 7:15. Find the terms of the AP.
6. Find the sum of integers from 1 to 500 which are multiple of 2 or 5.
7. If S_n denotes the sum of first n terms of an AP, then prove that $S_{12} = 3(S_8 - S_4)$
8. If there are (2n+1) terms in an AP, then prove that the ratio of the sum of odd terms and sum of even terms is (n+1):n
9. The sum of first p,q,r terms of an AP are a,b,c respectively. Prove that $\frac{a}{p}(q-r) + \frac{b}{q}(r-p) + \frac{c}{r}(p-q) = 0$.

10. If the sum of m terms of an AP is same as sum of its n terms. Prove that the sum of its (m+n) terms is 0.

Cont..

11. 150 workers were enaged to finish a piece of work in certain number of days. Four workers dropped the second day, four more workers dropped the third day and so on. It takes 8 more days to finish the work now. Find the number of days in which the work wascompleted.

12. How many terms of the AP -15,-13,-11,… are needed to make the sum -55? Explain the reason for double answer.

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

14. Solve the equation :

$(-4) + (-1) + 2 + \cdots + x = 437$

15. Let S_n denotes sum of n terms of an AP whose first term is a and common difference is d, such that $d = S_n - kS_{n-1} + S_{n-2}$. Find the value of k.