

ARITHMETIC PROGRESSIONS

1. Write first 5 terms of an A.P. whose
 - (i) first term is -100 and common difference 30
 - (ii) first term is 1 and common difference $-1/4$
2. Find the 105th term of the AP
$$4, 4\frac{1}{2}, 5, 5\frac{1}{2}, 6, \dots$$
3. Which term of the AP 2, 7, 12, 17,...is 87?
4. How many terms are there in the AP
$$q, q + 90, q + 180, \dots, q + 9090?$$
5. For what value of x are the terms 2x, (x + 10) and (3x + 2) in AP?
6. Which term of the AP 24, 21, 18, 15, ...is the first negative term?
7. If the nth term of an AP is (5n-2), find its (i) first term (ii) 19th term (iii) common difference.
8. If the nth term of an AP is $1/m$ and mth term be $1/n$, then show that its (mn)th term is 1.
9. If the pth, qth and rth terms of an AP are a, b, c respectively, show that
$$a(q - r) + b(r - p) + c(p - q) = 0$$
10. If the nth term of a progression is $an + b$, prove that this progression is an AP.
11. If the n sum of n terms of an AP is $S_n = 3n^2 + 2n$, find its (i) nth term (ii) first term (iii) common difference.
12. The ages of all boys in a group are in A.P. with a common difference of 3 months, if the youngest boy in the group is 12 years old and sum of the ages of all the boys in the group is 238 years, find the number of boys in the group.
13. Beena has to pay Rs.975 for a calculator. She pays it in monthly instalments. The amount of first instalment is Rs.100 and then each further instalment is less than the previous by Rs.5. In what time does she pay the entire amount?
14. Find the common difference of the AP whose 11th term is 5 and 13th term is 79.
15. Which term of the AP 3, 15, 27,... will be 132 more than its 54th term?

ANSWERS

1. (i) -100, -70, -40, -10, 20
(ii) 1, 0.75, 0.50, 0.25, 0
2. 56
3. 18
4. 101
5. $x = 6$
6. $n = 10$
7. 3, 93, 5
- 8.
- 9.
- 10.
11. $(6n - 1)$, 5, 6
12. 17
13. 15 months
14. 37
15. 65th term

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