

Arithmetic Progressions Case Study Questions

Case Study 1

Jack is very worried about his upcoming assessment on A.P. He was vigorously practicing for the exam but was unable to solve some questions. One of these questions is shown below. **If the 3rd and the 9th terms of an A.P. are 4 and -8 respectively**, then help Jack in solving the problem.



- (i) What is the common difference?
(a) 2 (b) -1 (c) -2 (d) 4
- (ii) What is the first term?
(a) 6 (b) 2 (c) -2 (d) 8
- (iii) Which term of the A.P. is -160?
(a) 80th (b) 85th (c) 81th (d) 84th
- (iv) What is the 75th term of the A.P.?
(a) -140 (b) -102 (c) -150 (d) -158

Case Study 2

Anuj gets pocket money from his father every day. Out of pocket money, he saves Rs 2.75 on the first day, Rs 3 on the second day, Rs 3.25 on the third day, and so on.

Based on the above information, answer the following questions.

- (i) What is the amount saved by Anuj on the 14th day?
- (ii) What is the total amount saved by Anuj in 8 days?
- (iii) What is the total amount saved by him in June, if he starts savings from 1st June?
- (iv) On which day, did he save tens of times as much as he saved on day 1?



Case Study 3

In a class the teacher asks every student to write an example of A.P. Two friends Geeta and Madhuri write their progressions as -5, -2, 1, 4, ... and 187, 184, 181, respectively. Now, the teacher asks various students of the class the following questions on these two progressions. Help students to find the answers to the questions.

- (i) Find the 34th term of the progression written by Madhuri.
- (ii) Find the sum of the common difference between the two progressions.
- (iii) Find the 19th term of the progression written by Geeta.
- (iv) Find the sum of the first 10 terms of the progression written by Geeta.
- (v) Which term of the two progressions will have the same value?



Case Study 4

Aditya is celebrating his birthday. He invited his friends. He bought a packet of toffees/candies which contains 120 candies. He arranges the candies such that in the first row there are 3 candies, in the second there are 5 candies, in the third, there are 7 candies, and so on.

Based on the above information, answer any four of the following questions:

- (i) Find the total number of rows of candies.
- (ii) Find the difference in a number of candies placed in the 7th and 3rd rows.



Case Study 5

Your elder brother wants to buy a car and plans to take a loan from a bank for his car. He repays his total loan of Rs 1,18,000 by paying every month starting with the first installment of Rs 1000. If he increases the installment by Rs 100 every month, answer the following:

- (1) The amount paid by him in the 30th installment is
(a) 3900 (b) 3500 (c) 3700 (d) 3600
- (2) The amount paid by him in the 30 installments is
(a) 37000 (b) 73500 (c) 75300 (d) 75000
- (3) What amount does he still have to pay after the 30th installment?
(a) 45500 (b) 49000 (c) 44500 (d) 54000
- (4) If the total installments are 40 then the amount paid in the last installment?
(a) 4900 (b) 3900 (c) 5900 (d) 9400
- (5) The ratio of the 1st installment to the last installment is
(a) 1:49 (b) 10:49 (c) 10:39 (d) 39:10



Case Study 6:

India is a competitive manufacturing location due to the low cost of manpower and strong technical and engineering capabilities contributing to higher quality production runs. The production of TV sets in a factory increases uniformly by a fixed number every year. It produced 16,000 sets in the 6th year and 22,600 in the 9th year.

- 1.) In which year, the production is Rs 29,200.
- 2.) Find the production during the first year.
- 3.) Find the difference in the production during the 7th year and 4th year.
- 4.) Find the production during the first 3 years.
- 5.) Find the production during the 8th year.

