

NCERT DISCRETE

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Question 10.5.3.5: The first term of an AP is 5, the last term is 45 and the sum is 400. Find the number of terms and the common difference.

solution:

Given AP is 5, ..., 45.

x_1	x_n	S_n	n	d	x_0
5	45	400	?	?	$x_1 - d$

TABLE I
PARAMETERS

$$x_n = x_0 + nd \quad (1)$$

$$40 = (n - 1)d \quad (2)$$

$$S_n = \frac{n}{2}[2x_0 + (n + 1)d] \quad (3)$$

$$400 = \frac{n}{2}[10 + 40] \quad (4)$$

$$n = 16 \quad (5)$$

by substituting the value of n in the equation 2, we get

$$40 = 15d \quad (6)$$

$$d = \frac{8}{3} \quad (7)$$