NUMBER PATTERNS 6: QUIZ SOLUTIONS

Question 1

What is the sum of an arithmetic series with 10 terms whose first term is a and common difference d?

A. $S_{10} = 5(2a + 9d)$ B. $S_{10} = 5(a + 9d)$ C. $S_{10} = 10(2a + 10d)$

D. $S_{10} = 10(a + 10d)$

Solutions

. $S_{10} = \frac{1}{2} \times 10[2a + (10 - 1)d]$

$= 5(2a + 9d)$

So, the correct answer is A

Question 2

An arithmetic series with 12 terms is $a + b + c + \ldots + k$. What is the sum of the series?

A. $S_{12} = 6(2a + 11k)$ B. $S_{12} = 6(a + k)$ C. $S_{12} = 12(a + k)$

D. $S_{12} = 12(2a + 11k)$

Solution

$S_{12} = \frac{1}{2} \times 12(a + k) = 6(a + k)$

So, the correct answer is B.

Question 3

What is the sum of the arithmetic series $1 + 2 + 3 + \ldots + k$?

A. $\frac{1}{2}n(n + 1)$ B. $\sum_{k=1}^{n} k$ C. $\sum_{r=1}^{n} r$ D. $\frac{1}{2}k(k + 1)$

Solutions

$S_n = \frac{1}{2} \times k[2(1) + (k - 1)(1)] = \frac{1}{2}k(k + 1)$

So, the correct answer is D.

Question 4

An arithmetic series is 1+ +2 + 3 + ... What is the sum of the 20th to 40th terms, inclusive?

A. 590 B. 610 C. 630 D. 671

Solution

Sum from T_{20} to T_{40}, inclusive $= S_{40} - S_{19}$

$= \frac{1}{2} \times 40[2(1) + (40-1)(1)] - \frac{1}{2} \times 19[2(1) + (19-1)(1)]$

$= 20(41) - \frac{1}{2} \times 19(20)$

$= 820 - 190$

$= 630$

So, the correct answer is C.

Question 5

What is the value of $\sum_{m=1}^{k} 1$?

A. k B. m C. 1 D. $k + m$

Solution

$$\sum_{m=1}^{k} 1 = \underbrace{1+1+1+.+.+.+1}_{k \text{ terms}}$$

$= k$

So, the correct answer is A.