Progression - Solved Examples

Q 1 - Locate the ninth term and sixteenth term of the A.P. 5,8,11, 14, 17...

A - 40

B - 50

C - 60

D - 70

Answer - B

Explanation

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In the given A.P. we have a=5, d= (8-5) = 3
∴ Tn= a+ (n-1) d= 5+ (n-1)3 = 3n+2
T16= (3*16+2) = 50
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Q 2 - Which term of the A.P. 4,9,14, 19 ... is 109?

A - 22nd

B - 23rd

C - 24th

D - 25th

Answer - A

Explanation

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We have a =4 and d= (9-4) = 5
Let the nth term 109. At that point
(a+ (n-1) d= 109 ⇒ 4+ (n-1)*5 =109
(n-1)*5= 105 ⇒ (n-1) = 21 ⇒ n= 22
∴ 22nd term is 109.
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Q 3 - What numbers of term arrive in the A.P. 7, 13, 19, 25... 205?

A - 34

B - 35

C - 36

D - 37

Answer - A

Explanation

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Let the given A.P contain A.P. contain n terms. At that point,
A=7, d = (13-7)= 6 and Tn = 205
∴ a+ (n-1) d =205 ⇒ 7+ (n-1)*6 = 198 ⇒ (n-1) =33 ⇒ n = 34
Given A.P contains 34 terms.
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Q 4 - The sixth term of an A.P. is 12 and its eighth term is 22. Locate its first term, normal contrast and sixteenth term.

A - 61

B - 62

C - 63

D - 64

Answer - B

Explanation

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Let, first term = a and normal contrast =d.
T6 = 12 ⇒ a+5d= 12 …. (i)
T8= 22 ⇒ a+7d = 22 … (ii)
On subtracting (i) from (ii), we get 2d = 10 ⇒ d = 5
Putting d= 5 in (i), we get a+5*5 = 12 ⇒ a= (12-25) =-13
∴ First term = - 13, normal distinction = 5.
T16= a+ 15d = - 13+15*5 = (75-13) = 62
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Q 5 - Discover the whole of initial 17 terms of the A.P. 5, 9, 13, 17...

A - 627

B - 628

C - 629

D - 630

Answer - C

Explanation

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Here a =5, d= (9-5) = 4 and n = 17
Sn = n/2[2a+ (n-1) d]
S17 = 17/2 [2*5+ (17-1)*4] = (17/2*74) = 629
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Q 6 - Discover the sum of the arrangement = 2+5+8+...+182.

A - 5612

B - 5712

C - 5812

D - 5912

Answer - A

Explanation

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Here a = 2, d = (5-2) = 3 and Tn = 182.
Tn = 182 ⇒ a+ (n-1) d = 182 ⇒ 2+ (n-1)*3 = 182 ⇒ 3n = 183 ⇒ n= 61.
Sn = n/2[2a+ (n-1) d]
=61/2 {2*2+(61-1)*3} = (61/2* 184) = (61*92) = 5612.
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Q 7 - Discover three numbers in A.P. whose sum is 15 and item is 80.

A - 1,4 and 9 or 9,4, and 1

B - 3,5 and 9 or 9,5, and 3

C - 3,6 and 9 or 9,6, and 3

D - 2,5 and 8 or 8,5, and 2

Answer - D

Explanation

Let the numbers be (a-d), an and (a+d). At that point,
(a-d) +a+ (a+d) = 15 ⇒ 3a = 15 ⇒ a = 5
(a-d)*a*(a+d) = 80 ⇒ (5-d)*5 * (5+d) = 80
⇒ $(25-d^2) = 16 = d^2 = 9 \Rightarrow d = 3$
Numbers are 2, 5, 8 or 8, 5, 2.

Q 8 - Locate the ninth term and the nth term of the G.P. 3,6,12, 24 ...

A - 738, 4^{n-1}

B - 748, 5^{n-1}

C - 758, 6^{n-1}

D - 768, 6^{n-1}

Answer - D

Explanation

Given numbers are in G.P in which a= 3 and r =6/3 = 2.
∴ $Tn = ar^{n-1} \Rightarrow T9 = 3*2^8 = (3*256) = 768$
$Tn = 3*2^{n-1} = 6^{n-1}$

Q 9 - On the off chance that the fourth and ninth terms of A G.P. are 54 and 13122 individually, locate the first term, regular proportion and its sixth term.

A - 476

B - 486

C - 496

D - 506

Answer - B

Explanation

Let A be the first term and r be the basic proportion. At that point,
T4 = 54 ⇒ ar^3 =54 ... (i)
T4 = 13122 ⇒ ar^8 = 13122 ...(ii)
On isolating (ii) by (i) , we get r^5 = 13122/54 = 243 =$(3)^5$ ⇒ r =3
Putting r =3 in (i), we get a*27 =54 ⇒ a = 2
∴ First term =2 and common ratio =3.
T6= ar^5 = 2*3^5= 486. Hence, 6th term = 486.