

## Aptitude - Basic Arithmetic Examples

**Q 1 - Which of the following is the 16<sup>th</sup> term of A.P. 5, 8, 11, 14, 17, ...?**

A - 50

B - 51

C - 52

D - 53

**Answer - A**

**Explanation**

Here  $a = 5$ ,  $d = 8 - 5 = 3$ ,  $n = 16$

Using formula  $T_n = a + (n - 1)d$

$$T_{16} = 5 + (16 - 1) \times 3$$

$$= 50$$

**Q 2 - Which of the following term of A.P. 4, 9, 14, 19, 24, ... is 109?**

A - 20<sup>th</sup>

B - 21<sup>st</sup>

C - 22<sup>nd</sup>

D - 23<sup>rd</sup>

**Answer - C**

**Explanation**

Here  $a = 4$ ,  $d = 9 - 4 = 5$

Using formula  $T_n = a + (n - 1)d$

$T_n = 4 + (n - 1) \times 5 = 109$  where 109 is the  $n^{\text{th}}$  term.

$\Rightarrow 4 + 5n - 5 = 109$

$\Rightarrow 5n = 109 + 1$

$\Rightarrow n = 110 / 5$

$= 22$

**Q 3 - How many terms are present in the A.P. 7, 13, 19, ... 205?**

A - 31

B - 32

C - 33

D - 34

**Answer - D**

**Explanation**

Here  $a = 7$ ,  $d = 13 - 7 = 6$ ,  $T_n = 205$

Using formula  $T_n = a + (n - 1)d$

$T_n = 7 + (n - 1) \times 6 = 205$  where 205 is the  $n^{\text{th}}$  term.

$\Rightarrow 7 + 6n - 6 = 205$

$\Rightarrow 6n = 205 - 1$

$\Rightarrow n = 204 / 6$

$= 34$

**Q 4 - Which of the following is the first term of A.P. if 6<sup>th</sup> term is 12 and 8<sup>th</sup> term is 22?**

A - -13

B - 13

C - 2

D - 1

**Answer - A**

**Explanation**

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Using formula  $T_n = a + (n - 1)d$   
 $T_6 = a + (6 - 1)d = 12 \quad \dots(i)$   
 $T_8 = a + (8 - 1)d = 22 \quad \dots(ii)$   
Subtract (i) from (ii)  
 $\Rightarrow 2d = 10$   
 $\Rightarrow d = 5$   
Using (i)  
 $a = 12 - 5d$   
 $= 12 - 25$   
 $= -13$ 
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**Q 5 - Which of the following is the common difference of A.P. if 6<sup>th</sup> term is 12 and 8<sup>th</sup> term is 22?**

A - 4

B - 5

C - 6

D - 7

**Answer - B**

**Explanation**

Using formula  $T_n = a + (n - 1)d$

$$T_6 = a + (6 - 1)d = 12 \quad \dots(i)$$

$$T_8 = a + (8 - 1)d = 22 \quad \dots(ii)$$

Subtract (i) from (ii)

$$\Rightarrow 2d = 10$$

$$\Rightarrow d = 5$$

**Q 6 - Which of the following is the 16<sup>th</sup> term of A.P. if 6<sup>th</sup> term is 12 and 8<sup>th</sup> term is 22?**

A - 60

B - 61

C - 62

D - 63

**Answer - C**

**Explanation**

Using formula  $T_n = a + (n - 1)d$

$$T_6 = a + (6 - 1)d = 12 \quad \dots(i)$$

$$T_8 = a + (8 - 1)d = 22 \quad \dots(ii)$$

Subtract (i) from (ii)

$$\Rightarrow 2d = 10$$

$$\Rightarrow d = 5$$

Using (i)

$$a = 12 - 5d$$

$$\begin{aligned} &= 12 - 25 \\ &= -13 \\ \therefore T_{16} &= -13 + (16 - 1) \times 5 \\ &= 75 - 13 \\ &= 62 \end{aligned}$$

**Q 7 - Which of the following is the sum of first 17 term of A.P. 5, 9, 13, 17, ...?**

A - 626

B - 627

C - 628

D - 629

**Answer - D**

**Explanation**

$$\begin{aligned} \text{Here } a &= 5, d = 9 - 5 = 4, n = 17 \\ \text{Using formula } S_n &= (n/2)[2a + (n - 1)d] \\ S_{17} &= (17/2)[2 \times 5 + (17 - 1) \times 4] \\ &= (17/2)(10 + 64) \\ &= 17 \times 74 / 2 \\ &= 629 \end{aligned}$$

**Q 8 - Which of the following is the sum of the series 2, 5, 8, ..., 182?**

A - 5612

B - 5613

C - 5614

D - 5615

**Answer - A**

**Explanation**

Here  $a = 2$ ,  $d = 5 - 2 = 3$ ,  $T^n = 182$

Using formula  $T_n = a + (n - 1)d$

$a + (n - 1)d = 182$

$\Rightarrow 2 + (n - 1) \times 3 = 182$

$\Rightarrow 3n = 183$

$\Rightarrow n = 61.$

Using formula  $S_n = (n/2)[2a + (n - 1)d]$

$S_{61} = (61/2)[2 \times 2 + (61 - 1) \times 3]$

$= (61/2)(4 + 180)$

$= 61 \times 184 / 2$

$= 5612$

**Q 9 - What are the three numbers in A.P. if their sum is 15 and product is 80?**

A - 5, 7, 3

B - 2, 5, 8

C - 6, 7, 2

D - 5, 5, 5

**Answer - B**

**Explanation**

Let's numbers are  $a - d$ ,  $a$  and  $a + d$

Then  $a - d + a + a + d = 15$

$\Rightarrow 3a = 15$

$$\Rightarrow a = 5$$

$$\text{Now } (a - d)a(a + d) = 80$$

$$\Rightarrow (5 - d) \times 5 \times (5 + d) = 80$$

$$\Rightarrow 25 - d^2 = 16$$

$$\Rightarrow d^2 = 9$$

$$\Rightarrow d = +3 \text{ or } -3$$

$\therefore$  numbers are either 2, 5, 8 or 8, 5, 2.

**Q 10 - Which of the following is the 9<sup>th</sup> term of G.P. 3, 6 , 12, 18...?**

A - 766

B - 768

C - 772

D - 774

**Answer - B**

**Explanation**

$$\text{Here } a = 3, r = 6 / 3 = 2, T_9 = ?$$

$$\text{Using formula } T_n = ar^{(n - 1)}$$

$$T_9 = 3 \times 2^{(9 - 1)}$$

$$= 3 \times 2^8$$

$$= 3 \times 256$$

$$= 768$$

**Q 11 - Which of the following is the first term of G.P. if 4<sup>th</sup> term is 54 and 9<sup>th</sup> term is 13122?**

A - 2

B - 3

C - 4

D - 6

**Answer - A**

**Explanation**

Using formula  $T_n = ar^{(n - 1)}$

$$T_4 = ar^{(4 - 1)} = 54$$

$$\Rightarrow ar^3 = 54 \quad \dots(i)$$

$$T_9 = ar^{(9 - 1)} = 13122$$

$$\Rightarrow ar^8 = 13122 \quad \dots(ii)$$

Dividing (ii) by (i)

$$\Rightarrow r^5 = 13122 / 54 = 243 = (3)^5$$

$$\Rightarrow r = 3$$

Using (i)

$$a \times 27 = 54$$

$$\Rightarrow a = 2$$

**Q 12 - Which of the following is the common ratio of G.P. if 4<sup>th</sup> term is 54 and 9<sup>th</sup> term is 13122?**

A - 2

B - 3

C - 4

D - 6

**Answer - B**

**Explanation**



Using formula  $T_n = ar^{(n-1)}$   
 $T_4 = ar^{(4-1)} = 54$   
 $\Rightarrow ar^3 = 54 \quad \dots(i)$   
 $T_9 = ar^{(9-1)} = 13122$   
 $\Rightarrow ar^8 = 13122 \quad \dots(ii)$   
Dividing (ii) by (i)  
 $\Rightarrow r^5 = 13122 / 54 = 243 = (3)^5$   
 $\Rightarrow r = 3$

**Q 13 - Which of the following is the 6<sup>th</sup> term of G.P. if 4<sup>th</sup> term is 54 and 9<sup>th</sup> term is 13122?**

A - 484

B - 485

C - 486

D - 487

**Answer - C**

**Explanation**

Using formula  $T_n = ar^{(n-1)}$   
 $T_4 = ar^{(4-1)} = 54$   
 $\Rightarrow ar^3 = 54 \quad \dots(i)$   
 $T_9 = ar^{(9-1)} = 13122$   
 $\Rightarrow ar^8 = 13122 \quad \dots(ii)$   
Dividing (ii) by (i)  
 $\Rightarrow r^5 = 13122 / 54 = 243 = (3)^5$   
 $\Rightarrow r = 3$   
Using (i)  
 $a \times 27 = 54$   
 $\Rightarrow a = 2$

$$\begin{aligned}\therefore T_6 &= ar^{(6-1)} = 2 \times (3)^5 \\ &= 2 \times 243 \\ &= 486\end{aligned}$$

**Q 14 - Sum of two numbers is 80. If three times of first number is same as five times of the second number, what are the numbers?**

A - 50, 30

B - 60, 20

C - 70, 10

D - 65, 15

**Answer - A**

**Explanation**

Let the numbers are  $y$  and  $80 - y$ .  
Then  $3y = 5(80 - y)$   
 $\Rightarrow 8y = 400$   
 $\therefore y = 50$   
and second number =  $80 - 50 = 30$ .

**Q 15 - What is the number if its third is greater than its fifth by 16?**

A - 150

B - 120

C - 180

D - 210

**Answer - B****Explanation**

Let the number be  $y$ .  
Then  $(y / 3) - (y / 5) = 16$   
 $\Rightarrow 5y - 3y = 16 \times 15 = 240$   
 $\Rightarrow 2y = 240$   
 $\therefore y = 120$

**Q 16 - What is the largest number among the three consecutive multiples of 3 if their sum is 90?**

A - 21

B - 30

C - 33

D - 36

**Answer - C****Explanation**

Let the numbers be  $3y$ ,  $3y + 3$ ,  $3y + 6$   
Now  $3y + 3y + 3 + 3y + 6 = 90$   
 $\Rightarrow 9y = 81$   
 $\Rightarrow y = 9$   
 $\Rightarrow \text{largest number} = 3y + 6 = 3 \times 9 + 6$   
 $= 33$

**Q 17 - Find the positive integer if fifteen times of it is less than its square by 16.**

A - 13

B - 14

C - 15

D - 16

**Answer - D**

**Explanation**

Let the positive integer by  $y$ .

Then  $y^2 - 15y = 16$

$\Rightarrow y^2 - 15y - 16 = 0$

$\Rightarrow y^2 - 16y + y - 16 = 0$

$\Rightarrow y(y-16) + (y-16) = 0$

$\Rightarrow (y+1)(y-16) = 0$

$\therefore y = 16$ . as  $-1$  is not a positive integer.

**Q 18 - Find is the positive integer if twenty-three times of it is more than its square by 63.**

A - 7

B - 8

C - 9

D - 10

**Answer - A**

**Explanation**

Let the positive integer by  $y$ .

Then  $23y - 2y^2 = 63$

$\Rightarrow 23y - 2y^2 - 63 = 0$

$$\begin{aligned} \Rightarrow 2y^2 - 23y + 63 &= 0 \\ \Rightarrow 2y^2 - 14y - 9y + 63 &= 0 \\ \Rightarrow 2y(y-7) - 9(y-7) &= 0 \\ \Rightarrow (2y-9)(y-7) &= 0 \\ \therefore y &= 7. \text{ as } 9/2 \text{ is not an integer.} \end{aligned}$$

**Q 19 - Find the smallest of three numbers if numbers are in ratio of 3:2:5 and sum of their squares is 1862.**

A - 13

B - 14

C - 12

D - 11

**Answer - B**

**Explanation**

$$\begin{aligned} \text{Let's number as } 3y, 2y \text{ and } 5y. \\ \text{Then } 9y^2 + 4y^2 + 25y^2 &= 1862. \\ \Rightarrow 38y^2 &= 1862 \\ \Rightarrow y^2 &= 1862 / 38 = 49 \\ \Rightarrow y &= 7 \\ \therefore \text{smallest number} &= 2y = 2 \times 7 = 14. \end{aligned}$$

**Q 20 - Sum of digits of a two digit number is 10. If digits are interchanged, obtained number is 54 less than original number. What is the number?**

A - 46

B - 64

C - 82

D - 28

**Answer - C**

**Explanation**

Let the ten's digit is  $x$  and unit digit of number is  $y$ .

Then  $x + y = 10$  ...(i)

$(10x + y) - (10y - x) = 54$

$\Rightarrow 9x - 9y = 54$

$\Rightarrow x - y = 6$  ...(ii)

Adding (i) and (ii)

$2x = 16$

$\Rightarrow x = 8$

Using (i)

$y = 10 - x = 2$

$\therefore$  number is 82.