

Arithmetic Progressions Ex 9.3 Q29 Answer:

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In this problem, we need to find out how many multiples of 4 lie between 10 and 250. So, we know that the first multiple of 4 after 10 is 12 and the last multiple of 4 before 250 is 248. Also, all the terms which are divisible by 4 will form an A.P. with the common difference of 4. So here,
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First term (a) = 12
Last term (a_n) = 248
Common difference (d) = 4
So, let us take the number of terms as n
Now, as we know,
a_n = a + (n-1)d
So, for the last term,
   248 = 12 + (n-1)4
   248 = 12 + 4n - 4
   248 = 8 + 4n
248 - 8 = 4n
Further simplifying,
240 = 4n
n = \frac{240}{}
n = 60
Therefore, the number of multiples of 4 that lie between 10 and 250 is \boxed{60}
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Arithmetic Progressions Ex 9.3 Q30 Answer:

In this problem, we need to find out how many numbers of three digits are divisible by 7. So, we know that the first three digit number that is divisible by 7 is 105 and the last three digit number divisible by 7 is 994. Also, all the terms which are divisible by 7 will form an A.P. with the common difference of 7.

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So here,
First term (a) = 105
Last term (a_n) = 994
Common difference (d) = 7
So, let us take the number of terms as n
Now, as we know,
a_n = a + (n-1)d
So, for the last term,
    994 = 105 + (n-1)7
    994 = 105 + 7n - 7
    994 = 98 + 7n
994 - 98 = 7n
Further simplifying,
896 = 7n
n = \frac{896}{}
     7
n = 128
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Therefore, the number of three digit terms divisible by 7 is $\fbox{128}$

Arithmetic Progressions Ex 9.3 Q31

Answer:

In the given problem, let us first find the 41^{st} term of the given A.P. A.P. is 8, 14, 20, 26 ...

Here,

First term (a) = 8

Common difference of the A.P. (d) = 14 - 8 = 6

Now, as we know,

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

So, for 41^{st} term (n = 41),

$$a_{41} = 8 + (41 - 1)(6)$$

$$=8+40(6)$$

$$= 8 + 240$$

$$= 248$$

Let us take the term which is 72 more than the 41^{st} term as a_n . So,

$$a_n = 72 + a_{41}$$

$$=72 + 248$$

$$= 320$$

Also,
$$a_n = a + (n-1)d$$

$$320 = 8 + (n-1)6$$

$$320 = 8 + 6n - 6$$

$$320 = 2 + 6n$$

$$320 - 2 = 6n$$

Further simplifying, we get,

$$318 = 6n$$

$$n = \frac{318}{6}$$

$$n = 53$$

Therefore, the $\boxed{53^{\text{rd}}\,\text{term}}$ of the given A.P. is 72 more than the 41st term.

Arithmetic Progressions Ex 9.3 Q32

Answer:

In the given problem, let us first find the 36st term of the given A.P. A.P. is 9, 12, 15, 18 ...

Here,

First term (a) = 9

Common difference of the A.P. (d) = 12 - 9 = 3

Now, as we know,

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

So, for 36^{th} term (n = 36),

$$a_{36} = 9 + (36 - 1)(3)$$

$$=9+35(3)$$

$$=9+105$$

Let us take the term which is 39 more than the 36^{th} term as a_n . So,

$$a_n = 39 + a_{36}$$

$$=39+114$$

Also,
$$a_n = a + (n-1)d$$

 $153 = 9 + (n-1)3$
 $153 = 9 + 3n - 3$
 $153 = 6 + 3n$
 $153 - 6 = 3n$
Further simplifying, we get,
 $147 = 3n$
 $n = \frac{147}{3}$
 $n = 49$

Therefore, the 49^{th} term of the given A.P. is 39 more than the 36^{th} term

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