12. Sequence, Series and Progression

1. What is the least number that must be added to so that the resulting number is divisible by ?

Answer:

* Units places
* , So, units place of is
* Solution:

1. What is the least number that must be subtracted from to get a multiple of ?

Answer:

* Same as question 1
* Solution:

1. What is the remainder when is divided by ?

Answer:

* Since is one of the factors for , must be completely divisible by
* Solution:

1. The first two terms of a sequence are and . The successive terms are formed by adding to the previous term and multiplying the resulting sum by . What is the absolute value of the difference between the 70th and the 101st terms?

Answer:

* The sequence is:
* So, all odd number terms are 6 and all even number terms are

1. In the sequence , , , , … where is the first term, which of the following is an expression for the term

Answer:

* Substitute in all options and check if you get
* Solution:

1. The consecutive multiples of from to , , are added together. If the total is , what is ?

Answer:

* Note that the first term is divisible by
* So, the series is an AP with , and
* Using formula for the sum of an AP
* Last term

1. Find the sum of the first terms of the series . , .

Answer:

* The series is an AP with and
* Use AP sum formula with
* Solution:

1. Find the sum of the first terms of the series whose term is .

Answer:

* Write the first few terms:
* The series is an AP with ,
* Use AP sum formula with
* Alternate Solution
* Solution:

1. Sum of three numbers in an A.P. is and their product is . Find the first number.

Answer:

* Let the numbers be , ,
* ,
* ,
* First number is

1. Sum of three numbers in a G.P. is and their product is . Find the first number.

Answer:

* Let the numbers be , ,
* ,
* Substitute value of , solve quadratic to get value of
* First Number:

1. In an A.P., the first term is , the last term is , and sum of the terms is . Find the common difference.

Answer:

* ,

1. The sum of terms of an A.P. is and the common difference is . Find the first term.

Answer:

* Use AP sum formula with , and find

1. An A.P. has terms. Sum of the middle three terms is and the sum of the last three terms is . What is the term?

Answer:

* Let the AP be , , , …
* Middle Terms is 12th term
* Similarly, for last terms:
* ,
* term:

1. Find the sum of the series upto terms.

Answer:

* Series is an AP with ,
* Solution:

1. Find the sum of the first six terms of the series

Answer:

* The series is GP with ,
* Use sum of GP formula with
* Solution:

1. Find the sum of the infinite series

Answer:

* The series is GP with ,
* Use sum of infinite GP formula
* Solution:

1. Find the term of the series

Answer:

* The series is GP with ,
* Use term of GP formula with
* Solution:

1. The sum of the three numbers in an A.P. is . If the numbers be decreased by respectively, they form a G.P. Find the first term of the A.P.

Answer:

* Let the numbers be , ,
* ,
* This series is in GP:
* first term

1. The first term of a GP is . The sum of the third and the fifth term is . What is the common ratio of the GP?

Answer:

* Substitute option and check which satisfies the equation
* Solution:

1. How many terms of the A.P. are needed to give the sum ?

Answer:

* , ,
* Find using sum of AP formula
* Solution:

1. For A.P. if , find .

Answer:

* Let ,

1. Find the value of up to the term.

Answer:

* Series is an AP with ,
* Use sum of AP formula with
* Solution:

1. Find the term of the G.P. whose fifth term is and the eighth term is .

Answer:

* ,
* term