NCERT Solutions Class 11 Maths
Chapter 8: Sequences and Series
Miscellaneous Exercise on Chapter 8

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Complete Solutions

Question 1

QUESTION

If f is a function satisfying f(x + y) = f(x) f(y) for all x, y \in \mathbbN such that f(1) = 3 and \displaystyle \sum_x = 1^n f(x) = 120, find the value of n.

ANSWER

4

Question 2

QUESTION

The sum of some terms of a G.P. is 315 whose first term and the common ratio are 5 and 2, respectively. Find the last term and the number of terms.

ANSWER

160; 6

Question 3

QUESTION

The first term of a G.P. is 1. The sum of the third term and fifth term is 90. Find the common ratio of the G.P.

ANSWER

± 3

Question 4

QUESTION

The sum of three numbers in G.P. is 56. If we subtract 1, 7, 21 from these numbers in that order, we obtain an arithmetic progression. Find the numbers.

ANSWER

8, 16, 32

Question 5

QUESTION

A G.P. consists of an even number of terms. If the sum of all the terms is 5 times the sum of terms occupying odd places, then find its common ratio.

ANSWER

4

Question 6

QUESTION

If $(a + bx)/(a - bx) = (b + cx)/(b - cx) = (c + dx)/(c - dx)$ $(x \neq 0)$, then show that a, b, c and d are in G.P.

Question 7

QUESTION

Let S be the sum, P the product and R the sum of reciprocals of n terms in a G.P. Prove that P^2 R^n = S^n.

Question 8

QUESTION

If a, b, c, d are in G.P., prove that (a^n + b^n), (b^n + c^n), (c^n + d^n) are in G.P.

Question 9

QUESTION

If a and b are the roots of x^2 - 3x + p = 0 and c and d are roots of x^2 - 12x + q = 0, where a, b, c, d form a G.P., prove that (q + p) : (q - p) = 17 : 15.

Question 10

QUESTION

The ratio of the A.M. and G.M. of two positive numbers a and b is m : n. Show that

a : b = \bigl(m + √m^2 - n^2\bigr) : \bigl(m - √m^2 - n^2\bigr).

Question 11

QUESTION

Find the sum of the following series up to n terms:

(i) 5 + 55 + 555 + ...

(ii) 0.6 + 0.66 + 0.666 + ...

ANSWER

(i) (50)/(81)(10^n - 1) - (5n)/(9)

(ii) (2n)/(3) - (2)/(27)(1 - 10^-n)

Question 12

QUESTION

Find the 20th term of the series 2 × 4 + 4 × 6 + 6 × 8 + ... n terms.

ANSWER

1680

Question 13

QUESTION

A farmer buys a used tractor for Rs 12000. He pays Rs 6000 cash and agrees to pay the balance in annual instalments of Rs 500 plus 12% interest on the unpaid amount. How much will the tractor cost him?

ANSWER

Rs 16680

Question 14

QUESTION

Shamshad Ali buys a scooter for Rs 22000. He pays Rs 4000 cash and agrees to pay the balance in annual instalment of Rs 1000 plus 10% interest on the unpaid amount. How much will the scooter cost him?

ANSWER

Rs 39100

Question 15

QUESTION

A person writes a letter to four of his friends. He asks each one of them to copy the letter and mail to four different persons with instruction that they move the chain similarly. Assuming that the chain is not broken and that it costs 50 paise to mail one letter, find the amount spent on the postage when 8th set of letter is mailed.

ANSWER

Rs 43690

Question 16

QUESTION

A man deposited Rs 10000 in a bank at the rate of 5% simple interest annually. Find the amount in 15th year since he deposited the amount and also calculate the total amount after 20 years.

ANSWER

Rs 17000; 20,000

Question 17

QUESTION

A manufacturer reckons that the value of a machine, which costs him Rs 15625, will depreciate each year by 20%. Find the estimated value at the end of 5 years.

ANSWER

Rs 5120

Question 18

QUESTION

150 workers were engaged to finish a job in a certain number of days. 4 workers dropped out on the second day, 4 more workers dropped out on the third day and so on. It took 8 more days to finish the work. Find the number of days in which the work was completed.

ANSWER

25 days

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EXERCISE 8.2 →

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