EXERCISE 9.1 - Question No. 1

Write the first five terms of the sequence whose n^{th} terms are :

$a_n = n(n+2)$

EXERCISE 9.1 - Question No. 2

Write the first five terms of the sequence whose n^{th} terms are :

$a_n = \frac{n}{n+1}$

EXERCISE 9.1 - Question No. 3

Write the first five terms of the sequence whose n^{th} terms are :

$a_n = 2^n$

EXERCISE 9.1 - Question No. 4

Write the first five terms of the sequence whose n^{th} terms are :

$a_n = \frac{2n - 3}{6}$

EXERCISE 9.1 - Question No. 5

Write the first five terms of the sequence whose n^{th} terms are :

$a_n = (-1)^{n-1} 5^{n+1}$

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EXERCISE 9.1 - Question No. 6

Write the first five terms of the sequence whose n^{th} terms are :

$a_n = n\frac{n^2+5}{4}$

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EXERCISE 9.1 - Question No. 7

Find the indicated terms of the sequence whose n^{th} terms are :

$a_n = 4n - 3; a_{17}, a_{24}$

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EXERCISE 9.1 - Question No. 8

Find the indicated terms of the sequence whose n^{th} terms are :

$a_n = \frac{n^2}{2^n}; a_7$

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EXERCISE 9.1 - Question No. 9

Find the indicated terms of the sequence whose n^{th} terms are :

$a_n = (-1)^{n-1} n^3; a_9$

EXERCISE 9.1 - Question No. 10

Find the indicated terms of the sequence whose n^{th} terms are :

$a_n = \frac{n(n-2)}{n+3}$; a_{20}

EXERCISE 9.1 - Question No. 11

Write the first five terms of the sequence and obtain the

corresponding series : $a_1 = 3, a_n = 3a_{n-1} + 2$ for all $n > 1$

EXERCISE 9.1 - Question No. 12

Write the first five terms of the sequence and obtain the corresponding series : $a_1 = -1, a_n = \frac{a_{n-1}}{n}, n \geq 2$

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EXERCISE 9.1 - Question No. 13

Write the first five terms of the sequence and obtain the corresponding series : $a_1 = a_2 = 2, a_n = a_{n-1} - 1, n > 2$.

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EXERCISE 9.1 - Question No. 14

The Fibonacci sequence is defined by

$1 = a_1 = a_2($ and $a)_n = a_{n-1} + a_{n-2}, n > 2$. Find $\frac{a_{n+1}}{a_n}$, for n = 1,

2, 3, 4, 5.

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EXERCISE 9.2 - Question No. 1

Find the sum of odd integers from 1 to 2001.

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EXERCISE 9.2 - Question No. 2

Find the sum of all natural numbers lying between 100 and 1000, which are multiples of 5.

EXERCISE 9.2 - Question No. 3

In an A.P., the first term is 2 and the sum of the first five terms is one-fourth of the next five terms. Show that 20th term is 112 .

EXERCISE 9.2 - Question No. 4

How many terms of the A.P. $6, -\frac{11}{2}, -5, \ldots$ are needed to give the sum 25 ?

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EXERCISE 9.2 - Question No. 5

In an A.P., if p^{th} term is $\frac{1}{q}$ and q^{th} term is $\frac{1}{p}$, prove that the sum of first pq terms is $\frac{1}{2}(pq + 1)$, where $p \neq q$.

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EXERCISE 9.2 - Question No. 6

If the sum of a certain number of terms of the A.P. 25, 22, 19.... is 116. Find the last term.

EXERCISE 9.2 - Question No. 7

Find the sum to n terms of the A.P., whose k^{th} term is $5k + 1$.

EXERCISE 9.2 - Question No. 8

If the sum of n terms of an A.P. is $\left(pn + qn^2\right)$, where p and q are constants, find the common difference.

EXERCISE 9.2 - Question No. 9

The sums of n terms of two arithmetic progressions are in the ratio $5n + 4 : 9n + 6$. Find the ratio of their 18^{th} terms.

EXERCISE 9.2 - Question No. 10

If the sum of first p terms of an A.P. is equal to the sum of the first q terms, then find the sum of the first (p + q) terms.

EXERCISE 9.2 - Question No. 11

Sum of the first p, q and r terms of an A.P are a, b and c, respectively. Prove that $\frac{a}{p}(q - r) + \frac{b}{q}(r - p) + \frac{c}{r}(p - q) = 0$

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EXERCISE 9.2 - Question No. 12

The ratio of the sums of m and n terms of an A.P. is $m^2 : n^2$ .Show that the ratio of m^{th} and n^{th} term is $(2m - 1) : (2n - 1)$.

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EXERCISE 9.2 - Question No. 13

If the sum of n terms of an A.P. is $3n^2 + 5$ and its m^{th} term is 164, find the value of m.

EXERCISE 9.2 - Question No. 14

Insert five numbers between 8 and 26 such that the resulting sequence is an A.P.

EXERCISE 9.2 - Question No. 15

If $\frac{a^n + b^n}{a^{n-1} + b^{n-1}}$ is the A.M. between a and b, then find the value of n.

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EXERCISE 9.2 - Question No. 16

Between 1 and 31, m numbers have been inserted in such a way that the resulting sequence is an A. P. and the ratio of 7^{th} and $(m-1)^{th}$ numbers is 5 : 9. Find the value of m.

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EXERCISE 9.2 - Question No. 17

A mail starts repaying a loan as first instalment of Rs. 100. If he increases the instalment by Rs 5 every month, what amount he will pay in the 30^{th} instalment?

EXERCISE 9.2 - Question No. 18

The difference between any two consecutive interior angles of a polygon is $5o$. If the smallest angle is $120o$, find the number of the sides of the polygon.

EXERCISE 9.3 - Question No. 1

Find the 20^{th} and n^{th} terms of the G.P. $\frac{5}{2}, \frac{5}{4}, \frac{5}{8}, \ldots$

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EXERCISE 9.3 - Question No. 2

Find the 12^{th} term of a G.P. whose 8th term is 192 and the common ratio is 2.

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EXERCISE 9.3 - Question No. 3

The 5^{th} , 8^{th} and 11^{th} terms of a G.P. are p, q and s, respectively. Show that $q^2 = ps$.

EXERCISE 9.3 - Question No. 4

The 4^{th} term of a G.P. is square of its second term, and the first term is 3 . Determine its 7^{th} term.

EXERCISE 9.3 - Question No. 5

Which term of the following sequences: (a) $2, 2\sqrt{2}, 4, \ldots$ is 128? (b) $\sqrt{3}, 3, 3\sqrt{3}, \ldots$ is 729? (c) $\frac{1}{3}, \frac{1}{9}, \frac{1}{27}, \ldots$ is $\frac{1}{19683}$?

EXERCISE 9.3 - Question No. 6

For what value of x, the number $-\frac{2}{7}, x, -\frac{2}{7}$ are in G.P.?

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EXERCISE 9.3 - Question No. 7

Find the sum to indicated number of terms in each of the geometric progressions : 0.15, 0.015, 0.0015, . . . , 20 terms.

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EXERCISE 9.3 - Question No. 8

Find the sum to indicated number of terms in each of the geometric progressions : $\sqrt{7}, \sqrt{21}, 73, \ldots$ n terms.

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EXERCISE 9.3 - Question No. 9

Find the sum to indicated number of terms in each of the geometric progressions : $1, -a, a^2 - a^3, n$ terms (if $a \neq -1$)

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EXERCISE 9.3 - Question No. 10

Find the sum to indicated number of terms in each of the geometric progressions : x^3, x^5, x^7, n terms (if $x \neq \pm 1$) .

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EXERCISE 9.3 - Question No. 11

Evaluate $\sum_{k=1}^{11} \left(2 + 3^k\right)$

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EXERCISE 9.3 - Question No. 12

The sum of first three terms of a G.P. is $\frac{39}{10}$ and their product is 1.

Find the common ratio and the terms.

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EXERCISE 9.3 - Question No. 13

How many terms of G.P. $3, 3^2, 3^3, \cdots$ are needed to give the sum 120?

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EXERCISE 9.3 - Question No. 14

The sum of first three terms of a G.P. is 16 and the sum of the next three terms is 128. Determine the first term, the common ratio and the sum to n terms of the GP.

EXERCISE 9.3 - Question No. 15

Given a G.P. with a = 729 and 7^{th} term 64, determine S_7 .

EXERCISE 9.3 - Question No. 16

Find a G.P. for which sum of the first two terms is -4 and the fifth term is 4 times the third term.

EXERCISE 9.3 - Question No. 17

If the 4^{th} , 10^{th} and 16^{th} terms of a G.P. are x, y and z, respectively. Prove that x, y, z are in G.P.

EXERCISE 9.3 - Question No. 18

Find the sum to n terms of the sequence, 8, 88, 888, 8888 . . . .

EXERCISE 9.3 - Question No. 19

Find the sum of the products of the corresponding terms of the sequences 2,4, 8, 16, 32 and 128, 32, 8, 2, $\frac{1}{2}$.

EXERCISE 9.3 - Question No. 20

Show that the products of the corresponding terms of the sequences

$a, ar, ar^2, \ldots, ar^{n-1}$ and $A, AR, AR^2, \ldots, AR^{n-1}$, form a G.P, and find the common ratio.

EXERCISE 9.3 - Question No. 21

Find four numbers forming a geometric progression in which the third term is greater than the first term by 9, and the second term is greater than the 4^{th} by 18.

EXERCISE 9.3 - Question No. 22

If the p^{th} ,q^{th} and r^{th} terms of a GP are a, b and c, respectively.

Prove that $a^{q-r}b^{r-p}c^{p-q} = 1$.

EXERCISE 9.3 - Question No. 23

If the first and the n^{th} term of a GP are a and b, respectively, and if P is the product of n terms, prove that $P^2 = (ab)^n$.

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EXERCISE 9.3 - Question No. 24

Show that the ratio of the sum of first n terms of a G.P. to the sum of terms from $(n + 1)^{th}$ to $(2n)^{th}$ term is $\frac{1}{r^n}$

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EXERCISE 9.3 - Question No. 25

If a, b, c and d are in G.P. show that

$$\left(a^2+b^2+c^2\right)\left(b^2+c^2+d^2\right)=(ab+bc+cd)^2 .$$

EXERCISE 9.3 - Question No. 26

Insert two number between 3 and 81 so that the resulting sequence is G.P.

EXERCISE 9.3 - Question No. 27

Find the value of n so that $\frac{a^{n+1}+b^{n+1}}{a^n+b^n}$ may be the geometric mean between a and b.

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EXERCISE 9.3 - Question No. 28

The sum of two numbers is 6 times their geometric means, show that numbers are in the ratio $\left(3+2\sqrt{2}\right):\left(3-2\sqrt{2}\right)$.

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EXERCISE 9.3 - Question No. 29

If A and G be A.M. and GM., respectively between two positive numbers, prove that the numbers are $A \pm \sqrt{(A+G)(A-G)}$.

EXERCISE 9.3 - Question No. 30

The number of bacteria in a certain culture doubles every hour. If there were 30 bacteria present in the culture originally, how many bacteria will be present at the end of 2nd hour, 4th hour and nth hour?

EXERCISE 9.3 - Question No. 31

What will Rs 500 amounts to in 10 years after its deposit in a bank which pays annual interest rate of 10% compounded annually?

EXERCISE 9.3 - Question No. 32

If A.M. and GM. of roots of a quadratic equation are 8 and 5, respectively, then obtain the quadratic equation.

EXERCISE 9.4 - Question No. 1

Find the sum to n terms of the series :

$1 \times 2 + 2 \times 3 + 3 \times 4 + 4 \times 5 + \ldots\ldots$

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EXERCISE 9.4 - Question No. 2

Find the sum to n terms of the series :

$1 \times 2 \times 3 + 2 \times 3 \times 4 + 3 \times 4 \times 5 + \ldots$

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EXERCISE 9.4 - Question No. 3

Find the sum to n terms of the series : $3 \times a^2 + 5 \times 2^2 + 7 \times 3^2 + \ldots$

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EXERCISE 9.4 - Question No. 4

Find the sum to n terms of the series : $\frac{1}{1 \times 2} + \frac{1}{2 \times 3} + \frac{1}{3 \times 4} + \ldots$

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EXERCISE 9.4 - Question No. 5

Find the sum to n terms of the series : $5^2 + 6^2 + 7^2 + \ldots + 20^2$

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EXERCISE 9.4 - Question No. 6

Find the sum to n terms of the series : $3 \times 8 + 6 \times 11 + 9 \times 14 + \ldots$

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EXERCISE 9.4 - Question No. 7

Find the sum to n terms of the series :

$$1^2 + \left(1^2 + 2^2\right) + \left(1^2 + 2^2 + 3^2\right) + \ldots$$

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EXERCISE 9.4 - Question No. 8

Find the sum to n terms of the series, whose n^{th} terms is given by :

$n(n+1)(n+4)$

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EXERCISE 9.4 - Question No. 9

Find the sum to n terms of the series, whose n^{th} terms is given by :

$n^2 + 2^n$

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EXERCISE 9.4 - Question No. 10

Find the sum to n terms of the series, whose n^{th} terms is given by :

$(2n - 1)^2$

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EXERCISE 9.5 - Question No. 1

Find the sum to infinity of the following Geometric Progression:

$1, \frac{1}{3}, \frac{1}{9}, \ldots$

EXERCISE 9.5 - Question No. 2

Find the sum to infinity of the following Geometric Progression:

6, 1. 2, 0. 24, ...

EXERCISE 9.5 - Question No. 3

Find the sum to infinity of the following Geometric Progression:

$5, \frac{20}{7}, \frac{80}{49}, \ldots$

EXERCISE 9.5 - Question No. 4

Find the sum to infinity of the following Geometric Progression:

$\frac{-3}{4}, \frac{3}{16}, \frac{-3}{64}, \ldots$

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EXERCISE 9.5 - Question No. 5

Prove that: $3^{\frac{1}{2}} \times 3^{\frac{1}{4}} \times 3^{\frac{1}{8}} \times \ldots = 3$

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EXERCISE 9.5 - Question No. 6

Let $x = 1 + a + a^2 + \ldots$ and $y = 1 + b + b^2 + \ldots$, where $|a| < 1$ and $|b| < 1$. Prove that $1 + ab + a^2b^2 + \ldots = \frac{xy}{x + y - 1}$

MISCELLANEOUS EXERCISE - Question No. 1

Show that the sum of $(m + n)^{th}$ and $(m - n)^{th}$ terms of an A.P. is equal to twice the m^{th} term.

MISCELLANEOUS EXERCISE - Question No. 2

If the sum of three numbers in A.P., is 24 and their product is 440, find the numbers.

MISCELLANEOUS EXERCISE - Question No. 3

Let the sum of n, 2n, 3n terms of an A.P. be S_1, S_2 and S_3 , respectively, show that $S_3 = 3\left(S_2 - S_1\right)$.

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MISCELLANEOUS EXERCISE - Question No. 4

Find the sum of all numbers between 200 and 400 which are divisible by 7.

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MISCELLANEOUS EXERCISE - Question No. 5

Find the sum of integers from 1 to 100 that are divisible by 2 or 5.

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MISCELLANEOUS EXERCISE - Question No. 6

Find the sum of all two digit numbers which when divided by 4,

yields 1 as remainder.

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MISCELLANEOUS EXERCISE - Question No. 7

If f is a function satisfying $f(x+y) = f(x)f(y)$ for all $x, y \in X$ such that $f(1) = 3$ and $\sum_{x=1}^{n} f(x) = 120$, find the value of n.

MISCELLANEOUS EXERCISE - Question No. 8

The sum of some terms of 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.

MISCELLANEOUS EXERCISE - Question No. 9

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 G.P.

MISCELLANEOUS EXERCISE - Question No. 10

The sum of three numbers m GP is 56. If we subtract 1.7,21 from these numbers in that order, we obtain an arithmetic progression. Find the numbers.

MISCELLANEOUS EXERCISE - Question No. 11

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.

MISCELLANEOUS EXERCISE - Question No. 12

The sum of the first four terms of an A.P. is 56. The sum of the last four terms is 112. If its first term is 11, then find the number of terms.

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MISCELLANEOUS EXERCISE - Question No. 13

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

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MISCELLANEOUS EXERCISE - Question No. 14

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

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MISCELLANEOUS EXERCISE - Question No. 15

The p^{th}, q^{th} and r^{th} terms of an A.P. are a, b, c, respectively. Show that $(q - r)a + (r - p)b + (p - q)c = 0$.

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MISCELLANEOUS EXERCISE - Question No. 16

If a $\left(\frac{1}{b}+\frac{1}{c}\right), b\left(\frac{1}{c}+\frac{1}{a}\right), c\left(\frac{1}{a}+\frac{1}{b}\right)$ are in A.P., prove that a, b, c are in A.P.

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MISCELLANEOUS EXERCISE - Question No. 17

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

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MISCELLANEOUS EXERCISE - Question No. 18

If a and b are the roots of $x^2 - 3x + p = 0$ and c, d are roots of

$x^2 - 12x + q = 0$, where a, b, c, d form a GP. Prove that

$(q + p) : (q - p) = 17 : 15$.

MISCELLANEOUS EXERCISE - Question No. 19

The ratio of the A.M. and G.M. of two positive numbers a and b, is

m : n. Show that a : b = $\left(m + \sqrt{m^2 - n^2}\right) : \left(m - \sqrt{m^2 - n^2}\right)$.

MISCELLANEOUS EXERCISE - Question No. 20

If a, b, c are in A.P., b, c, d are in G.P. and $\frac{1}{c}, \frac{1}{d}, \frac{1}{e}$ are in A.P. prove that a, c, e are in G.P.

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MISCELLANEOUS EXERCISE - Question No. 21

Find the sum of the following series up to n terms: (i)

$5 + 55 + 555 + \ldots$. (ii) $.6 + .66 + .666 + \ldots$.

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MISCELLANEOUS EXERCISE - Question No. 22

Find the 20^{th} term of the series $2 \times 4 + 4 \times 6 + 6 \times 8 + \ldots$ to n terms.

MISCELLANEOUS EXERCISE - Question No. 23

Find the sum of the first n terms of the series :

$3 + 7 + 13 + 21 + 31 + \ldots$

MISCELLANEOUS EXERCISE - Question No. 24

If S_1, S_2, S_3 are the sum of first n natural numbers, their squares and their cubes, respectively, show that $9S_2^2 = S_3\left(1 + 8S_1\right)$.

MISCELLANEOUS EXERCISE - Question No. 25

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

$$\frac{1^3}{1}+\frac{1^3+2^2}{1+3}+\frac{1^3+2^3+3^3}{1+3+5}+\ldots$$

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MISCELLANEOUS EXERCISE - Question No. 26

Show that $\dfrac{1\times 2^2+2\times 3^2+\ldots+n\times(n+1)^2}{1^2\times 2+2^2\times 3+\ldots+n^2\times(n+1)}=\dfrac{3n+5}{3n+1}$.

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MISCELLANEOUS EXERCISE - Question No. 27

A fanner 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?

MISCELLANEOUS EXERCISE - Question No. 28

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?

MISCELLANEOUS EXERCISE - Question No. 29

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 postage when 8th set of letter is mailed.

MISCELLANEOUS EXERCISE - Question No. 30

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

MISCELLANEOUS EXERCISE - Question No. 31

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.

MISCELLANEOUS EXERCISE - Question No. 32

In a factory, 150 workers were engaged to finish a piece of work in a certain number of days. However, if 4 workers are dropped everyday, except the first day, it will take 8 more days to finish the work. Find the number of days in which the work was to be completed.

SOLVED EXAMPLES - Question No. 1

Write the first three terms in each of the following sequences defined by the following: (i) $a_n = 2n + 5$ (ii) $a_n = \frac{n - 3}{4}$

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SOLVED EXAMPLES - Question No. 2

What is the 20^{th} term of the sequence defined by

$a_n = (n - 1)(2 - n)(3 + n)$?

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SOLVED EXAMPLES - Question No. 3

Let the sequence a_n be defined as follows : $a_1 = 1, a_n = a_{n-1} + 2$

for $n \geq 2$. Find first five terms and write corresponding series.

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SOLVED EXAMPLES - Question No. 4

In an A.P. if m^{th} term is n and the n^{th} term is m, where $m \neq n$, find the pth term.

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SOLVED EXAMPLES - Question No. 5

If the sum of n terms of an A.P. is $nP + \frac{1}{2}n(n - 1)Q,$ where P and Q are constants, find the common difference.

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SOLVED EXAMPLES - Question No. 6

The sum of n terms of two arithmetic progressions are in the ratio $(3n + 8) : (7n + 15)$. Find the ratio of their 12^{th} terms.

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SOLVED EXAMPLES - Question No. 7

The income of a person is Rs. 3, 00,000, m the first year and he receives an increase of Rs. 10.000 to his income per year for the next 19 years. Find the total amount, he received m 20 years.

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SOLVED EXAMPLES - Question No. 8

Insert 6 numbers between 3 and 24 such that the resulting sequence is an A. P.

SOLVED EXAMPLES - Question No. 9

Find the 10^{th} and n^{th} terms of the G.P. 5, 25, 125, . . .

SOLVED EXAMPLES - Question No. 10

Which term of the G.P., 2, 8, 32, . . . up to n terms in 131072?

SOLVED EXAMPLES - Question No. 11

In a G.P., the 3^{rd} term is 24 and the 6^{th} term is 192. Find the 10^{th} term.

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SOLVED EXAMPLES - Question No. 12

Find the sum of first n terms and the sum of first 5 terms of the geometric series $1+\frac{2}{3}+\frac{4}{9}+\ldots$

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SOLVED EXAMPLES - Question No. 13

How many terms of the G.P. 3, $\frac{3}{2}, \frac{3}{4}, \ldots$ are needed to give the sum $\frac{3069}{512}$?

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SOLVED EXAMPLES - Question No. 14

The sum of first three terms of a G.P. is $\frac{13}{12}$ and their product is 1 .

Find the common ratio and the terms.

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SOLVED EXAMPLES - Question No. 15

Find the sum of the sequence 7, 77, 777, 7777, . . . to n terms.

SOLVED EXAMPLES - Question No. 16

A person has 2 parents, 4 grandparents, 8 great grandparents, and so on. Find the number of his ancestors during the ten generations preceding his own.

SOLVED EXAMPLES - Question No. 17

Insert three numbers between 1 and 256 so that the resulting sequence is a G.P.

SOLVED EXAMPLES - Question No. 18

If A.M. and GM. of two positive numbers a and b are 10 and 8, respectively find the numbers.

SOLVED EXAMPLES - Question No. 19

Find the sum to n terms of the series : $5 + 11 + 19 + 29 + 41$.

SOLVED EXAMPLES - Question No. 20

Find the sum to n terms of the series whose n^{th} term is $n(n+3)$.

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SOLVED EXAMPLES - Question No. 21

If p^{th} , q^{th} , r^{th} and s^{th} terms of an A.P. are in G.P. then show that

$(p-q)$, $(q-r)$, $(r-s)$ are also in G.P.

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SOLVED EXAMPLES - Question No. 22

If a, b, c are in G.P. and $a^{\frac{1}{x}} = b^{\frac{1}{y}} = c^{\frac{1}{z}}$, prove that x, y, z are in A.P.

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SOLVED EXAMPLES - Question No. 23

If a, b, c, d and p are different real numbers such that

$\left(a^2+b^2+c^2\right)p^2 - 2(ab+bc+cd)p + \left(b^2+c^2+d^2\right) \leq 0$, then

show that a, b, c and d are in G.P.

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SOLVED EXAMPLES - Question No. 24

If p, q, r are in G.P. and the equations, $px^2 + 2qx + r = 0$ and

$dx^2 + 2ex + f = 0$ have a common root, then show that $\frac{d}{p}, \frac{e}{q}, \frac{f}{r}$ are

in A.P.

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