MATHS

BOOKS - PREMIERS PUBLISHERS

NUMBERS AND SEQUENCES

Exercise 2 1

1. Find all positive integers which when divided by 3 leaves remainder 2.

Watch Video Solution

2. A man has 532 flower pots. He wants to arrange them the rows such that each row contains 21 flowers pots. Find the number of completed rows and how many flower pots are left over.

Watch Video Solution

3. Prove that the product of two consecutive positive integers is divisible by 2.

Watch Video Solution

4. When the positive integers be a, b and c divided by 13, the respective remainders are 9, 7 and 10. Show that $a+b+c$ is divided by 13.

Watch Video Solution

5. Prove that the square of any integer leaves the remainder either 0 or 1 when divided by 4.

Watch Video Solution

6. Use Euclid Division Algorithm to find the Highest Common Factor (H.C.F) of

340 and 412

Watch Video Solution

7. Use Euclid Division Algorithm to find the Highest Common Factor (H.C.F) of

867 and 255

Watch Video Solution

8. Use Euclid Division Algorithm to find the Highest Common Factor (H.C.F) of

10224 and 9648

Watch Video Solution

9. Use Euclid Division Algorithm to find the Highest Common Factor (H.C.F) of

84, 90 and 120

Watch Video Solution

10. Find th largest number which divides 1230 and 1926 leaving remainder 12 in each case.

Watch Video Solution

11. If d is the Highest Common Factor of 32 and 60, find x and y satisfying $d = 32x + 60y$.

Watch Video Solution

12. A positive integer when divided by 88 gives the remainder 61. What will be the remainder when the same number is divided by 11?

Watch Video Solution

13. Prove that two consecutive positive integers are always coprime.

Watch Video Solution

Exercise 2 2

1. For what values of natural number n, 4^n can end with the digit 6?

Watch Video Solution

2. If m, n are natural numbers, for what values of m, does $2^n \times 5^m$ ends in 5?

Watch Video Solution

3. Find the H.C.F of 252525 and 363636.

Watch Video Solution

4. If $13824 = 2^a \times 3^b$ then find a and b.

Watch Video Solution

5. If $p_1^{x_1} \times p_2^{x_2} \times p_3^{x_3} \times p_4^{x_4} = 11340$ where p_1, p_2, p_3, p_4 are primes in ascending order and x_1, x_2, x_3, x_4 are integers, find the value of p_1, p_2, p_3, p_4 and x_1, x_2, x_3, x_4.

Watch Video Solution

6. Find the L.C.M. and H.C.F. of 408 and 170 by applying the fundamental theoram of arithmetic.

Watch Video Solution

7. Find the greatest number consisting of 6 digits which is exactly divisible by 24, 15, 36?

Watch Video Solution

8. What is the smallest number that when divided by three numbers such as 35, 56 and 51 leaves remainder 7 in each case?

Watch Video Solution

9. Find the least number that is divisible by the first ten natural numbers.

Watch Video Solution

Exercise 2 3

1. Find the least positive value of x such that

$71 = x(\text{mod } 8)$`

Watch Video Solution

2. Find the least positive value of x such that

$78 + x = 3(\text{mod } 5)$

Watch Video Solution

3. Find the least positive value of x such that

$89 \equiv (x + 3) \pmod 4$

Watch Video Solution

4. Find the least positive value of x such that

$96 = \frac{x}{7} \pmod 5$

Watch Video Solution

5. Find the least positive value of x such that

$5x = 4 \pmod 6$

Watch Video Solution

6. If x s congruent to 13 modulo 17 then $7x - 3$ is congruent to which number modulo 17?

Watch Video Solution

7. Solve $5x = 4 \pmod 6$

Watch Video Solution

8. Solve $3x - 2 = 0 \pmod{11}$

Watch Video Solution

9. What is the time 100 hours after 7 a.m.?

Watch Video Solution

10. What is the time 15 hours before 11 p.m.?

Watch Video Solution

11. Today is Tuesday. My uncle will come after 45 days. In which day my uncle will be coming?

Watch Video Solution

12. Prove the $2^n + 6 \times 9^n$ is always divisible by 7 for any positive integer n.

Watch Video Solution

13. Find the remainder when 2^{81} is divided by 17.

Watch Video Solution

14. The duration of flight travel from Chennai to London through British Airlines is approximately 11 hours. The airplanes begin its journey on Sunday at 23:30 hours. If the time at Chennai is four and half hours ahead to that of London's time, then find the time at London,when will the flight lands at London Airport.

Watch Video Solution

Exercise 2 4

1. Find the next terms of the following sequence.

8, 24, 72, ...

Watch Video Solution

2. Find the next terms of the following sequence.

5, 1, -3, ...

Watch Video Solution

3. Find the next terms of the following sequence.

$\frac{1}{4}, \frac{2}{9}, \frac{3}{16}, \ldots$

Watch Video Solution

4. Find the first four terms of the sequences whose nth terms are given by

$a_n = n^3 - 2$

Watch Video Solution

5. Find the first four terms of the sequences whose n^{th} terms are given by

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

Watch Video Solution

6. Find the first four terms of the sequences whose nth terms are given by

$a_n = 2n^2 - 6$

Watch Video Solution

7. Find the nth terms of the following sequences

2, 5, 10, 17, ...

Watch Video Solution

8. Find the nth terms of the following sequences

$0, \frac{1}{2}, \frac{2}{3}, \ldots$

Watch Video Solution

9. Find the nth terms of the following sequences

$3, 8, 13, 18, \ldots$

Watch Video Solution

10. Find the indicated terms of the sequences whose nth terms are given by

$a_n = \frac{5n}{n+2}, a_6 \text{ and } a_{13}$

Watch Video Solution

11. Find the indicated terms of the sequences whose nth terms are given by

$a_n = -\left(n^2 - 4\right), a_4 \text{ and } a_{11}$

Watch Video Solution

12. Find the a_8 and a_{15} whose nth term is

$a_n = \begin{cases} \frac{n^2-1}{n+3}, \text{ n is even}, n \in N \\ \frac{n^2}{2n+1}, \text{ n is odd}, n \in N \end{cases}$

Watch Video Solution

13. If $a_1 = 1, a_2 = 1$ and $a_n = 2a_{n-1} + a_{n-2}, n \geq 3, n \in N$, then find the first six terms of the sequence.

Watch Video Solution

Exercise 2 5

1. Check whether the following sequences are in A.P.

$a - 3, a - 5, a - 7, \ldots$

Watch Video Solution

2. Check whether the following sequences are in A.P.

$\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}, \cdots$

Watch Video Solution

3. Check whether the following sequences are in A.P.

$9, 13, 17, 21, 25, \ldots$

Watch Video Solution

4. Check whether the following sequences are in A.P.

$\frac{-1}{3}, 0, \frac{1}{3}, \frac{2}{3}, \ldots$

Watch Video Solution

5. Check whether the following sequences are in A.P.

$1, -1, 1, -1, -1, \ldots$

Watch Video Solution

6. First term a and common difference d are given below. Find the corresponding A.P.,

$a = 5, d = 6$

Watch Video Solution

7. First term a and common difference d are given below. Find the corresponding A.P.,

$a = 7, d = -5$

Watch Video Solution

8. First term a and common difference d are given below. Find the corresponding A.P.,

$a = \frac{3}{4}, d = \frac{1}{2}$

Watch Video Solution

9. Find the first term and common difference of the Arithmetic Progressions whose nth terms are given below

$t_n = -3 + 2n$

Watch Video Solution

10. Find the first term and common difference of the Arithmetic Progressions whose nth terms are given below

$t_n = 4 - 7n$

Watch Video Solution

11. Find the 9th term of A.P. $-11, \ -15, \ -19, \ldots$

Watch Video Solution

12. Which term of an A.P. $16, 11, 6, 1, \ldots.$ is -54?

Watch Video Solution

13. Find the middle term(s) of an A.P. $9, 15, 21, 27, \ldots, 183$

Watch Video Solution

14. If nine times ninth term is equal to the fifeen times fifteenth term, show that six times twenty fourth is zero.

Watch Video Solution

15. If $3+k, 18-k, 5k+1$ are in A.P. then find k,

Watch Video Solution

16. Find the x, y, and z, given that the number x, 10, y, 24, z are in A.P.

Watch Video Solution

17. In a threatre, there are 20 seats in the front row and 30 rows were alloted. Each successive row contains two additional seats than its front row. How many seats are there in the last row?

Watch Video Solution

18. The sum of the three consecutive terms that are in A.P. is 27 and their product is 288. Find the three terms.

Watch Video Solution

19. The ratio of 6th and 8th term of an A.P. is 7.9. Find the ratio of 9th to 13th term.

Watch Video Solution

20. In a winter season let us take the temperature of Ooty from Monday to Friday to be in A.P. The sum of temperature from Monday to Wednesday is $0^\circ C$ and the sum of the temperature from Wednesday to Friday is $18^\circ C$. Find the temperature on each of the five days.

Watch Video Solution

21. Priya earned ₹15,000 in the first month. Therefore her salary inceased by ₹1500 per year. Her expenses are ₹13,000 during the first year and the expenses inceases by ₹900 per year. How long will it take for her to save ₹20,000 per month.

Watch Video Solution

Exercise 2 6

1. Find the sum of the following

$3, 7, 11, \ldots$ upto to 40 terms.

Watch Video Solution

2. Find the sum of the following

$102, 97, 92, \ldots$ upto to 27 terms.

Watch Video Solution

3. Find the sum of the following

$6 + 13 + 20 + \ldots + 97$

Watch Video Solution

4. How many consecutive odd integers beginning with 5 will sum to 480?

Watch Video Solution

5. Find the sum of the first 28 terms of an A.P. whose nth term is 4n-3.

Watch Video Solution

6. The sum of first n terms of a certain series is given as $2n^2 - 3n$. Show that the series is an A.P.

Watch Video Solution

7. The 104th term and 4th term of an A.P. are 125 and 0. Find the sum of first 35 terms.

Watch Video Solution

8. Find the sum of all odd integers less than 450.

Watch Video Solution

9. Find the sum of all natural numbers between 602 and 902 which are not divisible by 4.

Watch Video Solution

10. Raghu wish to buy a laptop. He can buy it by paying ₹40,000 cash or by giving it in 10 installments as ₹4800 in the first month, ₹4750 in the second month, ₹4700 in the third month and so on. If he pays the money inn this fashion, find

total amount paid in 10 installments.

Watch Video Solution

11. Raghu wish to buy a laptop. He can buy it by paying ₹40,000 cash or by giving it in 10 installments as ₹4800 in the first month, ₹4750 in the second month, ₹4700 in the third month and so on. If he pays the money inn this fashion, find

how much extra amount that he has to pay than the cost?

Watch Video Solution

12. A man repays a loan of ₹65,000 by paying ₹400 in the first month and then inceasing the payment by ₹300 every month. How long will it take for him to clear the loan?

Watch Video Solution

13. A brick staircase has a total of 30 steps. The bottom step requires 100 bricks. Each successive step requires two bricks less than the previous step.

How many bricks are required for the top most step?

Watch Video Solution

14. A brick staircase has a total of 30 steps. The bottom step requires 100 bricks. Each successive step requires two bricks less than the previous step.

How many bricks are required to build the stair case?

Watch Video Solution

15. If $S_1, S_2, S_3, \ldots, S_m$ are the sums of n terms of m A.P.'s whose first terms are 1, 2, 4, ..., m and whose common differences are 1, 3, 5, ..., (2m-1) repectively, then show that

$$S_1 + S_2 + S_3 + \ldots + S_n = \frac{1}{2}mn(mn+1)$$

Watch Video Solution

16. Find the sum

$$\left[\frac{a-b}{a+b} + \frac{3a-2b}{a+b} + \frac{5a-3b}{a+b} + \ldots + \text{to 12 terms}\right]$$

Watch Video Solution

Exercise 2 7

1. Which of following sequences are in G.P.

$3, 9, 27, 81, \ldots,$

Watch Video Solution

2. Which of following sequences are in G.P.

$4, 44, 444, 4444, \ldots$

Watch Video Solution

3. Which of following sequences are in G.P.

$0.5, 0.05, 0.005, \ldots$

Watch Video Solution

4. Which of following sequences are in G.P.

$\frac{1}{3}, \frac{1}{6}, \frac{1}{12}, \ldots,$

Watch Video Solution

5. Which of following sequences are in G.P.

$1, -5, 25, -125, \ldots$

Watch Video Solution

6. Which of following sequences are in G.P.

$120, 60, 30, 18, \ldots$

Watch Video Solution

7. Which of following sequences are in G.P.

$16, 4, 1, \frac{1}{4}, \ldots$

Watch Video Solution

8. Write the first three terms of the G.P. whose first term and the common ratio are given below.

$a = 6, r = 3$

Watch Video Solution

9. Write the first three terms of the G.P. whose first term and the common ratio are given below.

$a = \sqrt{2}, r = \sqrt{2}$

Watch Video Solution

10. Write the first three terms of the G.P. whose first term and the common ratio are given below.

$a = 1000, r = \frac{2}{5}$

Watch Video Solution

11. In a G.P. 729, 243, 81, ... find t_7

Watch Video Solution

12. Find x so that $x + 6, x + 12$ and $x + 15$ are consecutive terms of Geometric Progressions.

Watch Video Solution

13. Find the number of terms in the following G.P.

$4, 8, 16, \ldots, 8192$

Watch Video Solution

14. Find the number of terms in the following G.P.

$\frac{1}{3}, \frac{1}{9}, \frac{1}{27}, \ldots, \frac{1}{2187}$

Watch Video Solution

15. In a G.P. the 9th term is 32805 and 6th term is 1215. Find the 12th term.

Watch Video Solution

16. Find the 10th term of G.P. whose 8th term is 768 and the common ratio is 2.

Watch Video Solution

17. If a, b, c are in A.P. then show that 3^a, 3^b, 3^c are in G.P.

Watch Video Solution

18. In a G.P. the product of three consecutive term is 27 and the sum of the product of two terms taken at a time is $\frac{57}{2}$. Find the three terms.

Watch Video Solution

19. A man joined a company as Assistant Manager. The company gave him a starting salary of ₹60,000 and agreed to incease his salary 5% annually. What will be his salary after 5 years.

Watch Video Solution

20. Sivamani is attending an interview for a job and the company gave two offers to him Offer A: ₹20,000 to start with followed by a guaranted annual increase of 6% for the first 5 years.

Offer B: ₹22,000 to start with followed by a guaranteed annual increase of 3% for the first 5 years.

what is this salary in the 4th year with respect to the Offer A and B?

Watch Video Solution

21. If a, b, c are three consecutive terms of an A.P. and x, y, z are three consecutive terms of a G.P. then prove that $x^{b-c} \times y^{c-a} \times z^{a-b} = 1$

Watch Video Solution

Exercise 2 8

1. Find the sum of first n terms of the G.P.

$5, -3, \frac{9}{5}, -\frac{27}{25}, \ldots$

Watch Video Solution

2. Find the sum of first n terms of the G.P.

$256, 64, 16, \ldots$

Watch Video Solution

3. Find the sum of first six terms of the G.P. 5, 15, 45, ...

Watch Video Solution

4. Find the first term of the G.P. whose common ratio 5 and whose sum to the 6 terms is 46872.

Watch Video Solution

5. Find the sum of infinity of

$9 + 3 + 1 + \ldots$

Watch Video Solution

6. Find the sum of infinity of

$21 + 14 + \frac{28}{3} + \ldots$

Watch Video Solution

7. If the first term of an infinite G.P. is 8 and its sum to infinity is $\frac{32}{3}$ then find the common ratio.

Watch Video Solution

8. Find the sum to n terms of the series

$0.4 + 0.44 + 0.444 + \ldots$.to n terms.

Watch Video Solution

9. Find the sum to n terms of the series

$3 + 33 + 333 + \ldots$ to n terms.

Watch Video Solution

10. Find the sum of the Geometric series $3 + 6 + 12 + \ldots 1536$.

Watch Video Solution

11. Kumar 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 the instruction that they continue the process similarly. Assuming that the process is unaltered and it costs ₹2 to mail one letter, find the amount spent on postage when 8th set of letters is mailed.

Watch Video Solution

12. Find the rational form of the number $\overline{0.123}$.

Watch Video Solution

13. If

$$S_n = (x+y) + \left(x^2 + xy + y^2\right) + \left(x^3 + x^2y + y^2x + y^3\right) + \ldots n$$

terms then prove that

$$(x-y)S_n = \left[\frac{x^2(x^n-1)}{x-1} - \frac{y^2y^n - 1}{y-1}\right].$$

Watch Video Solution

Exercise 2 9

1. Find the sum of the following series

$1 + 2 + 3 + \ldots + 60$

Watch Video Solution

2. Find the sum of the following series

$3 + 6 + 9 + \ldots + 96$

Watch Video Solution

3. Find the sum of the following series

$51 + 52 + 53 + \ldots + 92$

Watch Video Solution

4. Find the sum of the following series

$1 + 4 + 9 + 16 + \ldots + 225$

Watch Video Solution

5. Find the sum of the following series

$6^2 + 7^2 + 8^2 + \ldots + 21^2$

Watch Video Solution

6. Find the sum of the following series

$10^3 + 11^3 + 12^3 + \ldots + 20^3$

Watch Video Solution

7. Find the sum of the following series

$1 + 3 + 5 + \ldots + 71$

Watch Video Solution

8. If $1 + 2 + 3 + \ldots + k = 325$, then find $1^3 + 2^3 + 3^3 + \ldots + k^3$.

Watch Video Solution

9. If $1^3 + 2^3 + 3^3 + \ldots + k^3 = 44100$ then find $1 + 2 + 3 + \ldots + k$.

Watch Video Solution

10. How many terms of the series $1^3 + 2^3 + 3^3 + \ldots$ should be taken to get the sum 14400?

Watch Video Solution

11. The sum of the squares of the first n natural numbers is 285, while the sum of their cubes is 2025. Find the values of n.

Watch Video Solution

12. Rakha has 15 square colour papers of sizes 10cm, 11cm, 12cm... 24 cm. How much area can be decorated with these colour papers?

Watch Video Solution

13. Find the sum of the series

$(2^3 - 1) + (4^3 - 3^3) + (6^3 - 15^3) + \ldots$ to 8 terms

Watch Video Solution

14. Find the sum of the series

$(2^3 - 1) + (4^3 - 3^3) + (6^3 - 15^3) + \ldots$ to 8 terms

Watch Video Solution

Exercise 2 10

1. Euclid's division lemma states that for positive integers a and b, there exist unique integers q and r such that $a = bq + r$, where r must satisfy.

A. $1 < r < b$

B. $0 < r < b$

C. $0 \leq r < b$

D. $0 < r \leq b$

Answer: C

Watch Video Solution

2. Using Euclid's division lemma, if the cube of any positive integers is divided by 9 then the possible remainders are ___.

A. $0, 1, 8$

B. $1, 4, 8$

C. $0, 1, 3$

D. $1, 3, 5$

Answer: A

Watch Video Solution

3. If the H.C.F. of 65 and 117 is expressible in the form of $65m - 117$, then the value of m is

A. 4

B. 2

C. 1

D. 3

Answer: B

Watch Video Solution

4. The sum of the exponents of the prime factors in the prime factorization of 1729 is :

A. 1

B. 2

C. 3

D. 4

Answer: C

Watch Video Solution

5. The least number that is divisible by all the numbers from 1 to 10 (both inclusive) is

A. 2025

B. 5220

C. 5025

D. 2520

Answer: D

Watch Video Solution

6. $7^{4k} =\_\ \_ \pmod{100}$

A. 1

B. 2

C. 3

D. 4

Answer: A

Watch Video Solution

7. Given $F_1 = 1, F_2 = 3$ and $F_n = F_{n-1} + F_{n-2}$ then F_5 is

A. 3

B. 5

C. 8

D. 11

Answer: D

Watch Video Solution

8. The first term of an arithmetic progressions is unity and the common difference is 4. Which of the following will be a term of this A.P.

A. 4551

B. 10091

C. 7881

D. 13531

Answer: C

Watch Video Solution

9. If 6 times of 6th term of an A.P. is equal to 7 times term, then the 13th term of the A.P. is

A. 0

B. 6

C. 7

D. 13

Answer: A

 Watch Video Solution

10. An A.P. consists of 31 terms. If its 16th terms is m, then the sum of all the terms of this A.P. is

A. 16m

B. 62 m

C. 31 m

D. $\frac{31}{2}$ m

Answer: C

Watch Video Solution

11. In an A.P., the first terms is 1 and the the common difference is 4. How many terms of the A.P. must be taken for their sum to be equal to 120?

A. 6

B. 7

C. 8

D. 9

Answer: C

Watch Video Solution

12. If $A = 2^{65}$ and $B = 2^{64} + 2^{63} + 2^{62} + \ldots + 2^{0}$ which of the following is true?

A. B is 2^{64} more than A

B. A and B are equal

C. B is larger than A by 1

D. A is larger than B by 1

Answer: D

Watch Video Solution

13. The next term of the sequences $\frac{3}{16}, \frac{1}{8}, \frac{1}{12}, \frac{1}{18}, \ldots$

A. $\frac{1}{24}$

B. $\frac{1}{27}$

C. $\frac{2}{3}$

D. $\frac{1}{81}$

Answer: B

Watch Video Solution

14. If the sequence $t_1, t_2, t_3, \ldots$ are in A.P. then the sequence $t_6, t_{12}, t_{18}, \ldots$ is

A. a Geometric Progression

B. an Arithmetic Progression

C. neither an Arithmetic Progression nor a Geometric Progression

D. a constant sequence

Answer: B

Watch Video Solution

15. The value of $\left(1^3+2^3+3^3+\ldots+15^3\right)-(1+2+3+\ldots+15)$ is

A. 14400

B. 14200

C. 14280

D. 14520

Answer: C

Watch Video Solution

Unit Exercise

1. Prove that $n^2 - n$ divisible by 2 for every positive integer n.

Watch Video Solution

2. A milk man has 175 litres of cow's milk and 105 litres of buffalow's milk. He wishes to sell the milk by filling the two type of milk is cans of equal capacity. Calculate the following

Capacity of a can.

Watch Video Solution

3. A milk man has 175 litres of cow's milk and 105 litres of buffalow's milk. He wishes to sell the milk by filling the two type of milk is cans of equal capacity. Calculate the following

Number of cans of cow's milk.

Watch Video Solution

4. A milk man has 175 litres of cow's milk and 105 litres of buffalow's milk. He wishes to sell the milk by filling the two type of milk is cans of equal capacity. Calculate the following

Number of cans of buffalow's milk.

Watch Video Solution

5. When the positive integer a, b, c and are divided by 13 the respective remainders are 9, 7 and 10. Find the remainder when $a + 2b + 3c$ is divided by 13.

Watch Video Solution

6. Show that 107 is of the form 4q+3 for any integer q.

Watch Video Solution

7. If (m+1)th term of an A.P. is twice the (n+1)th term, then prove that (3m+1)th term is twice the (m+n+1)th term

Watch Video Solution

8. Find the 12th term from the last term of the $A.P. -2, -4, -6, \ldots, -100.$

Watch Video Solution

9. Two A.P.'s have the same common difference. The first term of one A.P. is 2 and that of the other is 7. Show that the difference between their 10th terms is the same as the difference between their 21th terms, which is the same as the difference between any two corresponding terms.

Watch Video Solution

10. A man saved ₹16500 in ten years. In each year after the first he saved ₹100 more than he did in the preceeding year. How

much did he save in the first year?

Watch Video Solution

11. Find the G.P. in which the 2nd term is $\sqrt{6}$ and the 6th term is $9\sqrt{6}$?

Watch Video Solution

12. The value of a motor cycle depreciates at the rate of 15% per year. What will be the value of the motor cycle 3 year hence, which is now purchased for ₹45,000?

Watch Video Solution

Thinking Corner

1. When a positive integer is divided by 3

What are the possible remainders?

Watch Video Solution

2. When a positive integer is divided by 3

In which form can it be written ?

Watch Video Solution

3. Is 1 a prime number ?

Watch Video Solution

4. Can you think of positive integers a, b such that $a^b = b^a$?

Watch Video Solution

5. How many integers exist which leave a remainder of 2 when divided by 3 ?

Watch Video Solution

6. If t_n is the n^{th} term of an A.P. then the value of $t_{n+1} - t_{n-1}$ is .....

Watch Video Solution

7. The value of n must be positive . Why ?

Watch Video Solution

8. What is the sum of first n odd natural numbers ?

Watch Video Solution

9. What is the sum of first n even natural numbers ?

Watch Video Solution

10. Is the sequence $2, 2^2 2^{2^2} 2^{2^{2^2}}$, ... is a G.P. ?

Watch Video Solution

11. Split 64 into three parts such that the numbers are in G.P.

Watch Video Solution

12. If a , b, c, ... are in G.P. then $2a, 2b, 2c, \ldots$ are in ....

Watch Video Solution

13. If $3, x, 6, 7.5$ are in G.P. then x is ___.

Watch Video Solution

Progress Check

1. Find q and r for the following pairs of integers a and b satisfying $a = bq + r$.

$a = 13, b = 3$

Watch Video Solution

2. Find q and r for the following pairs of integers a and b satisfying $a = bq + r$.

$a = 18, b = 4$

Watch Video Solution

3. Find q and r for the following pairs of integers a and b satisfying $a = bq + r$.

$a = 21, b = -4$

Watch Video Solution

4. Find q and r for the following pairs of integers a and b satisfying $a = bq + r$.

$a = -32, b = -12$

Watch Video Solution

5. Find q and r for the following pairs of integers a and b satisfying $a = bq + r$.

$a = -31, b = 7$

Watch Video Solution

6. Euclid's division algorithm is a repeated application of division lemma until we get remainder as :

Watch Video Solution

7. The H.C.F of two equal positive integers k, k is :

Watch Video Solution

8. Every natural number except ..... can be expressed as .....

Watch Video Solution

9. In how many ways a composite number can be written as product of power of primes ?

Watch Video Solution

10. The number of divisors of any prime number is .....

Watch Video Solution

11. Let m divides n . Then G.C.D and L.C.M. of m,n are ..... and .....

Watch Video Solution

12. The HCF of numbers of the form 2^m and 3^n is ____.

Watch Video Solution

13. Two integers a and b are congruent modulo n if .....

Watch Video Solution

14. The set of all positive integers which leave remainder 5 when divided by 7 are .....

Watch Video Solution

15. The positive values of k such that $(k-3) \equiv 5 \pmod{11}$ are ....

Watch Video Solution

16. If $59 \equiv 3 \pmod 7$, $46 \equiv 4 \pmod 7$ then $105 \equiv$ .... $\pmod 7$), $13 \equiv \ldots . \pmod 7$, $413 \equiv \ldots \ldots . \pmod 7$, $368 \equiv \ldots . . \pmod 7$.

Watch Video Solution

17. The remainder when $7 \times 13 \times 19 \times 23 \times 31$ is divided by 6 is ....

Watch Video Solution

18. Fill in the blanks for the following sequences

$7, 13, 19, \ldots$

Watch Video Solution

19. Fill in the blanks for the following sequences

$2, \ldots . , 10, 17, 26, . \ldots\ldots$

Watch Video Solution

20. Fill in the blanks for the following sequences

$1000, 100, 10, 1, \ldots\ldots,\ldots\ldots$

Watch Video Solution

21. A sequence is a function defined on the set of___.

Watch Video Solution

22. The n^{th} term of the sequence $0, 2, 6, 12, 20, ...$ Can be expressed as .....

Watch Video Solution

23. Say True or False

All sequences are functions .

Watch Video Solution

24. Say True or False

All functions are sequences.

Watch Video Solution

25. The difference between any two consecutive terms of an A.P. is ....

Watch Video Solution

26. If a and d are the first term and common difference of an A.P. then the 8^{th} term is .....

Watch Video Solution

27. If $t_n \text{ is the } n^{th}$ term of an A.P., then $t_{2n} - t_n$ is .....

Watch Video Solution

28. The common difference of a constant A.P. is .....

Watch Video Solution

29. If a and l are first and last terms of an A.P. then the number of terms is ....

Watch Video Solution

30. If every term of an A.P. is multiplied by 3, then the common difference of the new A.P. is .....

Watch Video Solution

31. Three numbers a, b and c will be in A.P. if and only if ____.

Watch Video Solution

32. The sum of terms of a sequence is called .....

Watch Video Solution

33. A series have finite number of terms then it is called .....

Watch Video Solution

34. A series whose terms are in ..... is called Arithmetic series.

Watch Video Solution

35. If the first and last terms of an A.P. are given, then the formula to find the sum is .....

Watch Video Solution

36. A G.P. is obtained by multiplying ..... to the preceding term.

Watch Video Solution

37. The ratio between any two consecutive terms of the G.P. is .....

and it is called .....

Watch Video Solution

38. Fill in the blanks, if the term are in G.P. $\frac{1}{8}, \frac{3}{4}, \frac{9}{2}, \ldots$

Watch Video Solution

39. Fill in the blanks if the following are in G.P.

$7, \frac{7}{2}, \ldots\ldots$

Watch Video Solution

40. Fill in the blanks if the following are in G.P.

$\ldots\ldots\ldots, 2\sqrt{2}, 4, \ldots\ldots$

Watch Video Solution

41. If first term = a, common ratio = r, then find the value of t_9 and t_{27}.

Watch Video Solution

42. If G.P if $t_1 = \frac{1}{5}$ and $t_2 = \frac{1}{25}$ then the common ratio is ___.

Watch Video Solution

43. Three Non-zero numbers a, b and c will be in G.P. If and only if ____.

Watch Video Solution

44. A series whose terms are in Geometric progression is called .....

Watch Video Solution

45. When $r = 1$, the formula for finding sum to n terms of a G.P. is .....

Watch Video Solution

46. When $r \neq 1$, the formula for finding sum to n terms of a G.P. is .....

Watch Video Solution

47. Sum to infinite number of terms of a G.P. is ....

Watch Video Solution

48. For what values of r, does the formula for infinite G.P. valid ?

Watch Video Solution

49. Is the series $3 + 33 + 333 +$ ....a Geometric series ?

Watch Video Solution

50. The value of r, such that $1 + r + r^2 + r^3 \ldots = \frac{3}{4}$ is ...

Watch Video Solution

51. The sum of cubes of first n natural numbers is .....of the first n natural numbers.

Watch Video Solution

52. The average of first 100 natural number is ___.

Watch Video Solution

53. The sum of first n odd natural numbers is always an odd number.

Watch Video Solution

54. The sum of consecutive even numbers is always an even number.

Watch Video Solution

55. The difference between the sum of squares of first n natural numbers and the sum of first n natural numbers is always divisible by 2.

Watch Video Solution

56. The sum of cubes of the first n natural numbers is always a square number.

Watch Video Solution

Activities

1. This activity helps you to find H.C.F. of two positive numbers. We first observe the following instructions.

Construct a rectangle whose length and breadth are the given numbers.

Watch Video Solution

2. This activity helps you to find H.C.F. of two positive numbers. We first observe the following instructions.

Fill the H.C.F of (a) 12, 20 (b) 16,24 (c) 11, 9.

Watch Video Solution

3. This activity to determine H.C.F. of two given positive integers.

(i) From the given numbers, subtract the smaller from the larger number.

(ii) From the remaining numbers, subtract smaller from the larger.

(iii) Repeat the subtraction process by subtracting smaller from the larger.

(iv) Stop the process, when the numbers become equal.

(v) The number representing equal numbers obtained in step (iv), will be the H.C.F. of the given numbers.

Using the Activity , find the HCF of

$90, 15$

Watch Video Solution

4. This activity to determine H.C.F. of two given positive integers.

(i) From the given numbers, subtract the smaller from the larger number.

(ii) From the remaining numbers, subtract smaller from the larger.

(iii) Repeat the subtraction process by subtracting smaller from the larger.

(iv) Stop the process, when the numbers become equal.

(v) The number representing equal numbers obtained in step (iv), will be the H.C.F. of the given numbers.

Using the Activity , find the HCF of

$80, 25$

Watch Video Solution

5. This activity to determine H.C.F. of two given positive integers.

(i) From the given numbers, subtract the smaller from the larger number.

(ii) From the remaining numbers, subtract smaller from the larger.

(iii) Repeat the subtraction process by subtracting smaller from the larger.

(iv) Stop the process, when the numbers become equal.

(v) The number representing equal numbers obtained in step

(iv), will be the H.C.F. of the given numbers.

Using the Activity , find the HCF of

$40, 16$

Watch Video Solution

6. This activity to determine H.C.F. of two given positive integers.

(i) From the given numbers, subtract the smaller from the larger number.

(ii) From the remaining numbers, subtract smaller from the larger.

(iii) Repeat the subtraction process by subtracting smaller from the larger.

(iv) Stop the process, when the numbers become equal.

(v) The number representing equal numbers obtained in step (iv), will be the H.C.F. of the given numbers.

Using the Activity , find the HCF of

$23, 12$

Watch Video Solution

7. This activity to determine H.C.F. of two given positive integers.

(i) From the given numbers, subtract the smaller from the larger number.

(ii) From the remaining numbers, subtract smaller from the larger.

(iii) Repeat the subtraction process by subtracting smaller from the larger.

(iv) Stop the process, when the numbers become equal.

(v) The number representing equal numbers obtained in step (iv), will be the H.C.F. of the given numbers.

Using the Activity , find the HCF of

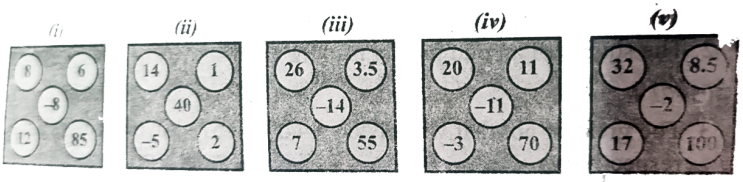
$93, 13$

Watch Video Solution

8. Can you find the 4- digit pin number 'pqrs' of an ATM card such that $p^2 \times q^1 \times r^4 \times s^3 = 3, 15, 000$?

Watch Video Solution

9. There are five boxes here. You have to pick one number from each box and form five Arithmetic Progressions.



Watch Video Solution

Other Important Objective Type Questions

1. The quotient and remainder when 19 is divided by -3 are :

A. $(6, 1)$

B. $(6, -1)$

C. $(-6, -1)$

D. $(-6, 1)$

Answer: D

Watch Video Solution

2. The square of an odd integer is of the form $4q + r$ where r is :

A. 2

B. -1

C. 1

D. 0

Answer: C

Watch Video Solution

3. Find the greatest number that will divide 445 and 572 leaving remainders 4 and 5 respectively.

A. 62

B. 61

C. 63

D. 68

Answer: C

Watch Video Solution

4. Use Euclid Division Algorithm to find the Highest Common Factor (H.C.F) of

867 and 255

A. 57

B. 61

C. 71

D. 81

Answer: A

Watch Video Solution

5. Find a and b such that $a^b \times b^a = 5184$

A. 3 and 4

B. 3 and 6

C. 2 and 6

D. None of these

Answer: A

Watch Video Solution

6. We say that n is congruent to r modulo m if :

A. $m = nq + r$

B. $n = mq + r$

C. $m = nq$

D. $n + r = mq$

Answer: B

Watch Video Solution

7. If $59 \equiv 3 \pmod 7$,$46 \equiv 4 \pmod 7$ then $105 \equiv$ .... (mod 7), $13 \equiv \ldots.$ (mod 7) , $413 \equiv \ldots\ldots$ (mod 7) , $368 \equiv \ldots..$ (mod 7).

A. 0

B. 4

C. 3

D. 12

Answer: A

Watch Video Solution

8. The remainder when $7 \times 13 \times 19 \times 23 \times 29 \times 31$ is divided by 6 is :

A. 3

B. -1

C. 0

D. 1

Answer: D

Watch Video Solution

9. Find the least positive value of x such that $197 \equiv (x + 3)$ (mod 5).

A. 1

B. 2

C. 4

D. 3

Answer: C

Watch Video Solution

10. Find x if $10^4 \equiv x \pmod{23}$

A. 18

B. 15

C. 21

D. 17

Answer: A

Watch Video Solution

11. What is the time 100 hours after 6 am ?

A. 2pm

B. $8am$

C. $9am$

D. $10am$

Answer: D

Watch Video Solution

12. The n^{th} term of the sequence $4, 7, 12, 19, \ldots$ is

A. $2n + 3$

B. $n^2 + 3$

C. $n^3 - 1$

D. None of these

Answer: B

Watch Video Solution

13. In an A.P. with first term 'a' and common difference 'd' $t_{2n} - t_n$ is : (where t_n is the n^{th} term)

A. nd

B. $(2n - 1)$d

C. $(n - 1)$ d

D. $a + nd$

Answer: A

Watch Video Solution

14. If an A.P. has its second term as 15, third term as 27 its fifth term is :

A. 47

B. 71

C. 51

D. 61

Answer: C

Watch Video Solution

15. No. of terms is the A.P. $2, 5, 8, 11, \ldots . 110$ is :

A. 36

B. 37

C. 38

D. 39

Answer: B

Watch Video Solution

16. In the A.P. $3, 5, 7, \ldots 43$, find the middle term :

A. 23

B. 13

C. 33

D. 26

Answer: A

Watch Video Solution

17. If $7+k, 22-k$ and $5k+5$ are in A.P. , then k is ,

A. 6

B. 3

C. 4

D. 5

Answer: C

Watch Video Solution

18. What is the sum of first n natural numbers ?

A. $2n^2$

B. $2n^2 + 1$

C. $n^2 + 1$

D. $\frac{n(n+1)}{2}$

Answer: D

Watch Video Solution

19. If the 3^{rd} term of a G.P. is $\frac{4}{3}$ and 6^{th} term is $\frac{32}{81}$ find first term.

A. $\frac{3}{2}$

B. $\frac{2}{3}$

C. 2

D. 3

Answer: D

Watch Video Solution

20. An A.P. has 21 terms. If its 11^{th} term is 25, sum of all the term is :

A. 525

B. 550

C. 575

D. 625

Answer: A

Watch Video Solution

21. Find the no. of terms in the G.P. $4, 8, 16, \ldots .512.$

A. 8

B. 7

C. 6

D. 5

Answer: A

Watch Video Solution

22. Find x if $4, x, 9$ are in G.P:

A. 2

B. 7

C. 3

D. 6

Answer: D

Watch Video Solution

23. Find the sum $4 + 1 + \frac{1}{4} + \ldots$ to ∞.

A. $5\frac{1}{4}$

B. $\frac{16}{3}$

C. $\frac{15}{3}$

D. $\frac{3}{16}$

Answer: B

Watch Video Solution