MATHS

BOOKS - MBD

REAL NUMBERS

Example

1. Use Euclid's division algorithm to find the HCF of : 135 and 225

Watch Video Solution

2. Use Euclid's division algorithm to find the HCF of : 196 and 38220

Watch Video Solution

3. Use Euclid's division algorithm to find the HCF of : 867 and 255.

Watch Video Solution

4. Show that any positive odd integer is of the form 6q + 1 or 6q + 3 or 6q + 5, where q is some integer.

Watch Video Solution

5. An army contingent of 616 members is to march behind an army band of 32members in a parade. The two groups are to march in the same number of columns. What is the maximum number of columns in which they can march ?

Watch Video Solution

6. Use Euclid's division lemma to show that the square of any positive integer is either of the form 3m or 3m + 1 for some integer m.

Watch Video Solution

7. Use Euclid's division lemma to show that the cube of any positive integer is of the form 9m, 9m + 1 or 9m + 8.

Watch Video Solution

8. Express each number as a product of its prime factors : 140

Watch Video Solution

9. Express each number as a product of its prime factors : 156

Watch Video Solution

10. Express each number as a product of its prime factors : 3825

Watch Video Solution

11. Express each number as a product of its prime factors : 5005

Watch Video Solution

12. Express each number as a product of its prime factors : 7429

Watch Video Solution

13. Find the LCM and HCF of the following pairs of integers and verify that LCM x HCF = Product of the two numbers.: 26 and 91.

Watch Video Solution

14. Find the LCM and HCF of the following pairs of integers and verify that LCM x HCF = Product of the two numbers.: 510 and 92.

Watch Video Solution

15. Find the LCM and HCF of the following pairs of integers and verify that LCM x HCF = Product of the two numbers.: 336 and 54.

Watch Video Solution

16. Find the LCM and HCF of the following integers by applying the prime factorisation method. : 12, 15 and 21 .

Watch Video Solution

17. Find the LCM and HCF of the following integers by applying the prime factorisation method. : 17,23 and 29.

Watch Video Solution

18. Find the LCM and HCF of the following integers by applying the prime factorisation method. : 8 , 9 and 25.

Watch Video Solution

19. Given that HCF (306, 657) = 9, find LCM (306, 657).

Watch Video Solution

20. Check whether 6^n can end with the digit 0 for any natural number n.

Watch Video Solution

21. Explain why $7 \times 11 \times 13 + 13$ and $7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 + 5$ are composite numbers.

Watch Video Solution

22. There is a circular path around a sports field. Sonia takes 18 minutes to drive one round of the field, while Ravi takes 12 minutes for the same. Suppose they both start at the same point and at the same time, and go in the same direction. After how many minutes will they meet again at the starting point ?

Watch Video Solution

23. Prove that $\sqrt{5}$ irrational.

Watch Video Solution

24. Prove that 3+2 $\sqrt{5}$ irrational.

Watch Video Solution

25. Prove that the following are irrationals : $\frac{1}{\sqrt{2}}$

Watch Video Solution

26. Prove that the following are irrationals : $7\sqrt{5}$

Watch Video Solution

27. Prove that the following are irrationals : $6+\sqrt{2}$

Watch Video Solution

28. Without actually performing the long division , state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion : $\frac{13}{3125}$

Watch Video Solution

29. Without actually performing the long division , state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion : 17/8

Watch Video Solution

30. Without actually performing the long division , state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion : 64/455

Watch Video Solution

31. Without actually performing the long division , state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion : 15/1600

Watch Video Solution

32. Without actually performing the long division , state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion : $\frac{29}{343}$

Watch Video Solution

33. Without actually performing the long division , state whether the following rational numbers will have a terminating decimal

expansion or a non-terminating repeating decimal expansion : $\frac{23}{2^3 5^2}$

Watch Video Solution

34. Without actually performing the long division , state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion : $\frac{129}{2^5 5^7 7^5}$

Watch Video Solution

35. Without actually performing the long division , state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion : 6/15

Watch Video Solution

36. Without actually performing the long division , state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion : 35/50

Watch Video Solution

37. Without actually performing the long division , state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion : 77/210

Watch Video Solution

38. Write down the decimal expansions of those rational numbers which have terminating decimal expansions. : 13/3125.

Watch Video Solution

39. Write down the decimal expansions of those rational numbers which have terminating decimal expansions. : 17/8.

Watch Video Solution

40. Write down the decimal expansions of those rational numbers which have terminating decimal expansions. : 64/455.

Watch Video Solution

41. Write down the decimal expansions of those rational numbers which have terminating decimal expansions. : 15/1600.

Watch Video Solution

42. Write down the decimal expansions of those rational numbers which have terminating decimal expansions. : 29/343.

Watch Video Solution

43. Write down the decimal expansions of those rational numbers which have terminating decimal expansions. : $\frac{23}{2^3 5^2}$.

Watch Video Solution

44. Write down the decimal expansions of those rational numbers which have terminating decimal expansions. : $\frac{129}{2^5 5^7 7^5}$.

Watch Video Solution

45. Write down the decimal expansions of those rational numbers which have terminating decimal expansions. : 6/15 .

Watch Video Solution

46. Write down the decimal expansions of those rational numbers which have terminating decimal expansions. : 35/50 .

Watch Video Solution

47. Write down the decimal expansions of those rational numbers which have terminating decimal expansions. : 77/210 .

Watch Video Solution

48. The following real numbers have decimal expansions as given below. In each case, decide whether they are rational or not. If they are rational, and of the form $\frac{p}{q}$, what can you say about the prime factors of q ? :- 43.123456789 .

Watch Video Solution

49. The following real numbers have decimal expansions as given below. In each case, decide whether they are rational or not. If they are rational, and of the form $\frac{p}{q}$, what can you say about the prime factors of q ? :- 0.120120012000120000 .....

Watch Video Solution

50. The following real numbers have decimal expansions as given below. In each case, decide whether they are rational or not. If they are rational, and of the form $\frac{p}{q}$, what can you say about the prime factors of q ? :- $43.\overline{123456789}$

Watch Video Solution

Exercise

1. Use Euclid's division algorithm to find HCF of : 36,84

Watch Video Solution

2. Use Euclid's division algorithm to find HCF of : 34,102

Watch Video Solution

3. Use Euclid's division algorithm to find HCF of : 45,75

Watch Video Solution

4. Use Euclid's division algorithm to find HCF of : 112,49

Watch Video Solution

5. Use Euclid's division algorithm to find HCF of : 4052,12576

Watch Video Solution

6. Show that every positive even integer is of the form 2q, for some integer q.

Watch Video Solution

7. Show that every positive odd integer is of the form 2q + 1, for some integer q.

Watch Video Solution

8. Show that every positive odd integer is of the form 4q + 1 or 4q + 3, where q is some integer.

Watch Video Solution

9. A sweet seller has 420 kaju baths and 130 badam barfis. She wants to stack them in such a way that each stack has the same number and they take up the least area of the tray. What is the number that can be placed in each stack for this purpose ?

Watch Video Solution

10. Show that one and only one out of p, p + 2 or p + 4 is divisible by 3.

Watch Video Solution

11. Renu purchases two bags of fertiliser of weights 75 kg and 69 kg. Find the maximum value of weight which can measure the weight of the fertiliser exact number of times.

Watch Video Solution

Watch Video Solution

12. Two tankers contain 434l and 465 litres of diesel respectively. Find the maximum capacity of a container that can measure the diesel of two tankers exact number of times.

Watch Video Solution

13. Hotel 'A' has 560 tables. Hotel `B' has 400 tables. In each Hotel, the tables are arranged in rows with the same number of tables in each row. What is the greatest possible number of tables in each row in the two hotels ?

Watch Video Solution

14. Use Euclid's division algorithm to find the HCF of 420 and 130.

Watch Video Solution

15. Express each number as a product of its prime factors : 32760

Watch Video Solution

16. Express each number as a product of its prime factors : 404

Watch Video Solution

17. Express each number as a product of its prime factors : 120

Watch Video Solution

18. Express each number as a product of its prime factors : 825

Watch Video Solution

Watch Video Solution

19. Express each number as a product of its prime factors : 2658

Watch Video Solution

20. Find the LCM and HCF of the following pairs of integers and verify that LCM $\times$ HCF = Product of the two numbers. : 96 and 404

Watch Video Solution

21. Find the LCM and HCF of the following pairs of integers and verify that LCM $\times$ HCF = Product of the two numbers. : 625 and 1025

Watch Video Solution

22. Find the LCM and HCF of the following pairs of integers and verify that LCM x HCF = Product of the two numbers. : 441 and 539

Watch Video Solution

23. Find the LCM and HCF of the following pairs of integers and verify that LCM $\times$ HCF = Product of the two numbers. : 385 and 2275.

Watch Video Solution

24. Find the LCM and HCF of the following integers by applying the prime factorisation method : 15, 25 and 30

Watch Video Solution

25. Find the LCM and HCF of the following integers by applying the prime factorisation method : 12, 16 and 28

Watch Video Solution

26. Find the LCM and HCF of the following integers by applying the prime factorisation method : 70, 105 and 175

Watch Video Solution

27. Find the LCM and HCF of the following integers by applying the prime factorisation method : 91, 112 and 49

Watch Video Solution

28. Find the LCM and HCF of the following integers by applying the prime factorisation method : 12, 45 and 75

Watch Video Solution

29. Find the LCM and HCF of the following integers by applying the prime factorisation method : 6, 72 and 120

Watch Video Solution

30. Find HCF (96, 404) if LCM (96, 404) = 9696.

Watch Video Solution

31. If HCF (6, 20) is 2, then find LCM (6, 20).

Watch Video Solution

Watch Video Solution

32. Check whether 4^n can end with the digit 0 for any natural number n.

Watch Video Solution

33. The Traffic lights at three different road crossings change after every 48 seconds, 72 seconds and 108 seconds respectively, If they change simultaneously at 7 am at what time will they change simultaneously again ?

Watch Video Solution

34. Three boys step off together from the same spot. Their steps measure 63 cm, 70 cm and 77 cm respectively. What is the

minimum distance each should cover so that all can over the distance in complete steps ?

Watch Video Solution

35. Find the least number which when divided by 6, 15 and 18 leave remainder 5 in each case.

Watch Video Solution

36. Check whether 3^n can end with the digit 0 for any natural number n.

Watch Video Solution

37. Explain

$5 \times 4 \times 2 \times 1 + 5$ and $17 \times 15 \times 13 \times 11 \times 9 \times 7 \times 5 \times 3 \times 1 + 7$

are composite numbers.

Watch Video Solution

38. Every composite number can be expressed (factorized) as a product of primes.

Watch Video Solution

39. Prove that $5 - \sqrt{3}$ is irrational.

Watch Video Solution

40. Show that $3\sqrt{2}$ is irrational.

Watch Video Solution

41. Show that following are irrational. : $\sqrt{11}$

Watch Video Solution

42. Show that following are irrational. : $\sqrt{13}$

Watch Video Solution

43. Show that following are irrational. : $\sqrt{7}$

Watch Video Solution

44. Show that following are irrational. : $\sqrt{15}$

Watch Video Solution

45. Prove that $5+\sqrt{2}$ is irrational.

Watch Video Solution

46. Prove that $\frac{2\sqrt{3}}{3}$ is irrational.

Watch Video Solution

47. Prove that $\frac{2\sqrt{7}}{\sqrt{11}}$ is irrational.

Watch Video Solution

48. Prove that $\frac{\sqrt{5}}{3\sqrt{3}}$ is irrational.

Watch Video Solution

49. Prove that $\frac{2}{\sqrt{12}}$ is irrational.

Watch Video Solution

50. Prove that $2-\sqrt{3}$ is irrational.

Watch Video Solution

51. Prove that $\sqrt{5}+1$ is irrational.

Watch Video Solution

52. Prove that $5 - \sqrt{3}$ is irrational.

Watch Video Solution

53. Without actually performing the long division, state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion : 2/7 .

Watch Video Solution

54. Without actually performing the long division, state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion : 14/11 .

Watch Video Solution

55. Without actually performing the long division, state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion : 27/8 .

Watch Video Solution

56. Without actually performing the long division, state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion : 35/16 .

Watch Video Solution

57. Without actually performing the long division, state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion : 47/9 .

Watch Video Solution

58. Without actually performing the long division, state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion : 6/11 .

Watch Video Solution

59. Write down the decimal expansion of those rational numbers which have terminating decimal expansions : 43/20 .

Watch Video Solution

60. Write down the decimal expansion of those rational numbers which have terminating decimal expansions : $\frac{411}{(2)^4}$.

Watch Video Solution

61. Write down the decimal expansion of those rational numbers which have terminating decimal expansions : $\frac{35}{(3)^2(11)}$.

Watch Video Solution

62. Write down the decimal expansion of those rational numbers which have terminating decimal expansions : $\frac{2157}{(5)^4}$.

Watch Video Solution

63. Write down the decimal expansion of those rational numbers which have terminating decimal expansions : $\frac{349}{(3)^2(10)^3(11)}$.

Watch Video Solution

64. The following real numbers have decimal expansions as given below. In each case decide whether they are rational or not.If they are rational, and of the form $\frac{p}{q}$ what can you say about the prime factors of q ? : 58.567823 .

Watch Video Solution

65. The following real numbers have decimal expansions as given below. In each case decide whether they are rational or not.If they

are rational, and of the form $\frac{p}{q}$ what can you say about the prime factors of q ? : $0.003\overline{352}$.

Watch Video Solution

66. The following real numbers have decimal expansions as given below. In each case decide whether they are rational or not.If they are rational, and of the form $\frac{p}{q}$ what can you say about the prime factors of q ? : 15712121212..... .

Watch Video Solution

67. The following real numbers have decimal expansions as given below. In each case decide whether they are rational or not.If they are rational, and of the form $\frac{p}{q}$ what can you say about the prime factors of q ? : 8.652365236523 .

Watch Video Solution

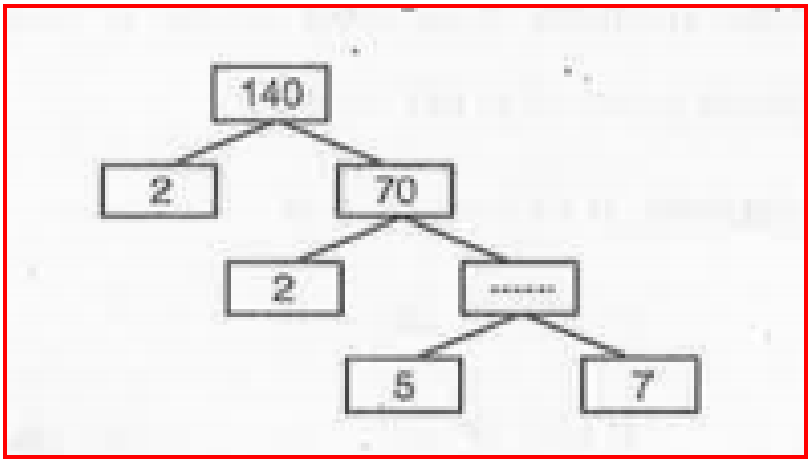
68. The following real numbers have decimal expansions as given below. In each case decide whether they are rational or not.If they are rational, and of the form $\frac{p}{q}$ what can you say about the prime factors of q ? : $0.\overline{54}$

Watch Video Solution

69. The following real numbers have decimal expansions as given below. In each case decide whether they are rational or not.If they are rational, and of the form $\frac{p}{q}$ what can you say about the prime factors of q ? : 0.00026 .

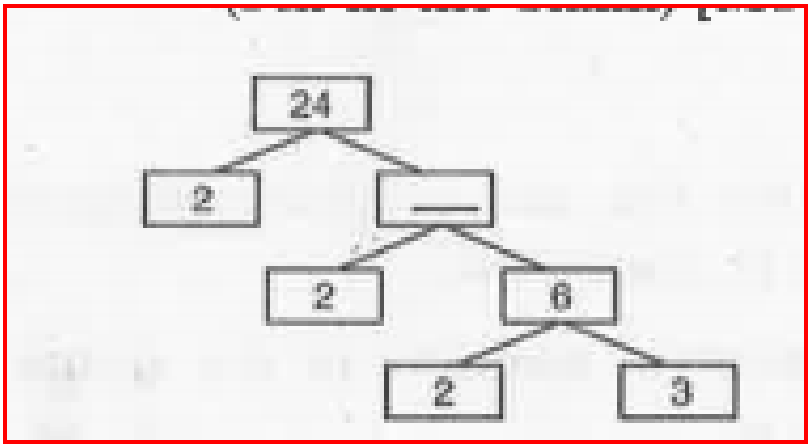
Watch Video Solution

70. Complete the prime factor tree :



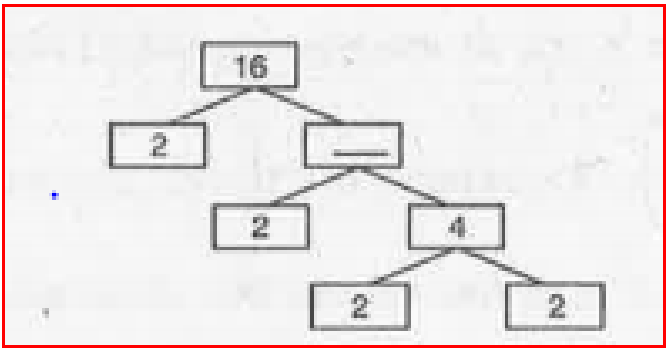
Watch Video Solution

71. Complete the prime factorization tree :



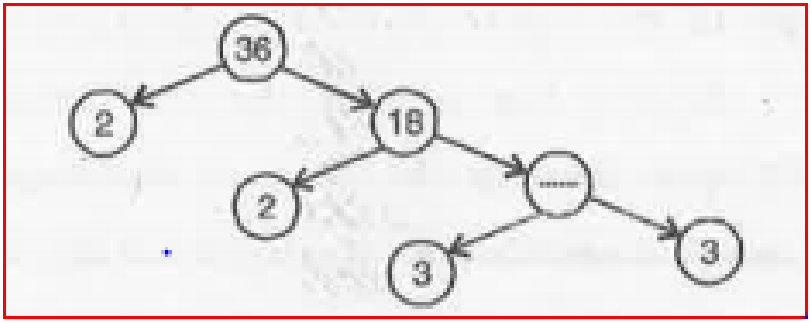
Watch Video Solution

72. Complete the prime factorization tree :



Watch Video Solution

73. Complete the prime factorization tree :



Watch Video Solution

74. Every composite number can be (factorised) as a product of primes. True or False

Watch Video Solution

75. $\sqrt{5}$ is an irrational number.

Watch Video Solution

76. $2\sqrt{3}$ is an irrational number.

Watch Video Solution

77. 3 is a rational number.

Watch Video Solution

78. $3\sqrt{2}$ is an _____ number.

Watch Video Solution

79. $\sqrt{14}$ is an _____ number .

Watch Video Solution

80. HCF of 64 and 96 will be _____ .

Watch Video Solution

81. HCF of 56 and 98 will be _____ .

Watch Video Solution

82. 140 is written as the product of factors in the form _____ .

Watch Video Solution

83. 150 is written as the product of factors in the form _____.

Watch Video Solution

Watch Video Solution