MATHS

BOOKS - SUPER COMPANION MADE EASY

REAL NUMBER

Exercise 8 1

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

135 and 225

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

196 and 38220

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

867 and 255

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

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5. An army contingent of 616 members is to march behind an army band of 32 members 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?

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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. [Hint : Let x be any positive integer then it is of the form 3q, 3q+1 or 3q+2. Now square each of

these and show that they can be rewritten in the form 3m or 3m+1].

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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.

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Exercise 8 2

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

140

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

156

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

3825

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

5005

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

7429

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6. Find the LCM and HCF of the following pairs of integers and verify that LCM $\times$ HCF = product of the two numbers

26 and 91

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7. Find the LCM and HCF of the following pairs of integers and verify that LCM $\times$ HCF = product of the two numbers

510 and 92

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8. Find the LCM and HCF of the following pairs of integers and verify that LCM $\times$ HCF = product of the two numbers

336 and 54

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9. Find the LCM and HCF of the following integers by applying the prime factorisation method.

12, 15 and 21

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10. Find the LCM and HCF of the following integers by applying the prime factorisation method.

17, 23 and 29

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11. Find the LCM and HCF of the following integers by applying the prime factorisation method.

8, 9 and 25

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

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

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14. 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.

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15. There is a circular path around a sports field. Sonia takes 18 minutes to derive 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?

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Exercise 8 3

1. Prove that $\sqrt{5}$ is an irrational number.

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2. Prove that $3 + 2\sqrt{5}$ is an irrational number .

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3. Prove that the following are irrationals :

$$\frac{1}{\sqrt{2}}$$

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4. Prove that the following are irrationals :

$7\sqrt{5}$

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5. Prove that the following are irrationals :

$6 + \sqrt{2}$

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Exercise 8 4

1. 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

$$\frac{13}{3125}$$

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2. 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

$$\frac{17}{8}$$

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3. 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

$$\frac{64}{455}$$

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4. 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

$$\frac{15}{1600}$$

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5. 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

$$\frac{29}{343}$$

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6. 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

$$\frac{23}{2^3 5^2}$$

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7. 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

$$\frac{129}{2^2 5^7 7^5}$$

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8. 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

$\frac{6}{15}$

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9. 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

$\frac{35}{50}$

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10. 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

$$\frac{77}{210}$$

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11. Write down the decimal expansions of $\frac{13}{3125}$

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12. Write down the decimal expansions of $\frac{17}{8}$

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13. Write down the decimal expansions of $\frac{15}{1600}$

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14. Write down the decimal expansions of $\frac{6}{15}$

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15. Write down the decimal expansions of $\frac{23}{2^3 \times 5^2}$

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16. Write down the decimal expansions of $\frac{35}{50}$

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17. 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

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18. 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?

0.12012001200012000 0...

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19. 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

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