



MATHS

BOOKS - SWAN PUBLICATION

REAL NUMBERS

Exercise 1 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 .



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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 1 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 $\text{LCM} \times \text{HCF} = \text{Product of}$

the two numbers. : 625 and 1025



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7. Find the LCM and HCF of the following pairs of integers and verify that $\text{LCM} \times \text{HCF} = \text{Product of the two numbers.}$: 510 and 92.



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8. Find the LCM and HCF of the following pairs of integers and verify that $\text{LCM} \times \text{HCF} = \text{Product of the two numbers.}$: 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 $\text{HCF}(306, 657) = 9$, find $\text{LCM}(306, 657)$.



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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

$$7 \times 11 \times 13 + 13 \text{ and } 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 + 5$$

are composite numbers.



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15. There is a circular path around a sports field.

Sonia takes 18 minutes to 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 ?



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Exercise 1 3

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



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



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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 14

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 : $\frac{17}{8}$



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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 : $17/8$



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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 : $6/15$



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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 : $17/8$



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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 : $2/7$.



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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 : $\frac{2}{7}$.



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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 : $17/8$



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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 : $17/8$



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



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12. 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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13. 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



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14. 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 ? :- $43.\overline{123456789}$



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