



MATHEMATICS CLASS X CHAPTER – 1 REAL NUMBERS

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

- (i) 135 and 225 (ii) 196 and 38220 (iii) 867 and 255

Q.2. Show that any positive odd integer is of the form $6q+1$, or $6q+3$, or $6q+5$, where q is some integer.

Q.3. 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?

Q.4. Use Euclid's division lemma to show that the square of any positive integer is either of 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 $3m + 1$.]

Q.5. Use Euclid's division lemma to show that the cube of any positive integer is of the form $9m$, $9m + 1$ or $9m + 8$.

Q.6. Express each number as product of its prime factors:

- (i) 140 (ii) 156 (iii) 3825 (iv) 5005 (v) 7429

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

- (i) 26 and 91 (ii) 510 and 92 (iii) 336 and 54



Q.8. Find the LCM and HCF of the following integers by applying the prime factorisation method.

- (i) 12, 15 and 21 (ii) 17, 23 and 29 (iii) 8, 9 and 25

Q.9. Given that $\text{HCF}(306, 657) = 9$, find $\text{LCM}(306, 657)$.

Q.10. Check whether 6^n can end with the digit 0 for any natural number n .

Q.11. 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.

Q.12. 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?

Q.13. Prove that $\sqrt{5}$ is irrational.

Q.14. Prove that $3+2\sqrt{5}$ is irrational.

Q.15. Prove that the following are irrationals:

- (i) $\frac{1}{\sqrt{2}}$ (ii) $7\sqrt{5}$ (iii) $6+\sqrt{2}$

Q.16. 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:



- (i) $\frac{13}{3125}$ (ii) $\frac{17}{8}$ (iii) $\frac{64}{455}$ (iv) $\frac{15}{1600}$
(v) $\frac{29}{343}$ (vi) $\frac{23}{2^3 5^2}$ (vii) $\frac{129}{2^2 5^7 7^5}$ (viii) $\frac{6}{15}$
(ix) $\frac{35}{50}$ (x) $\frac{77}{210}$

Q.17. Write down the decimal expansions of those rational numbers in Question 1 above which have terminating decimal expansions.

Q.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 factor of q ?

- (i) 43.123456789 (ii) 0.120120012000120000... (iii) $\overline{43.123456789}$