

Real Numbers Class 10: Important Questions & Worksheet PDF

Practise prime factorisation, HCF, LCM and irrationality with 10 original Class 10 questions, worked answers and a free printable worksheet.

Name: _____ Date: _____

Use this 30-minute worksheet after studying prime factors. Questions 1–5 check calculation; questions 6–10 ask you to choose a method or justify a claim. These are original revision questions, not predictions of board-exam questions. Write your working before looking at the answers.

Real numbers practice questions

1. Express 180 and 252 as products of primes.

2. Find the HCF and LCM of 180 and 252.

3. A teacher has 84 pencils and 126 erasers. Make the greatest possible number of identical packs with no items left. How many packs and what goes in each?

4. Two bells ring together at 9:00 a.m. and repeat every 12 and 18 minutes. When will they next ring together?

5. Find the least positive integer divisible by 8, 12 and 15.

6. The HCF of two positive integers is 6 and their LCM is 180. One number is 30. Find the other, then verify the claim.

7. Can a positive integer power of 3 end in zero? Explain using prime factors.

8. Prove that the square root of 7 is irrational.

9. If a number r is irrational, must $r + 4$ be irrational? Give a proof.

10. Does $\text{HCF} \times \text{LCM}$ equal the product for three numbers? Test 2, 4 and 8.

Worked answers and method

1–2. Prime factors, HCF and LCM

1. $180 = 2^2 \times 3^2 \times 5$; $252 = 2^2 \times 3^2 \times 7$.
2. The shared prime powers with the smaller exponents give $\text{HCF} = 2^2 \times 3^2 = 36$.
3. Use the largest exponent of every prime for $\text{LCM} = 2^2 \times 3^2 \times 5 \times 7 = 1260$.
4. Check: $36 \times 1260 = 45360 = 180 \times 252$.

3. Identical packs

1. The number of packs must divide both 84 and 126. The greatest such divisor is $\text{HCF}(84, 126) = 42$.
2. Each pack has $84 \div 42 = 2$ pencils and $126 \div 42 = 3$ erasers. Packs = 42, not 42 items per pack.

4–5. Repeating events and common multiples

1. $\text{LCM}(12, 18) = 36$, so the bells ring together at 9:36 a.m.
2. $8 = 2^3$, $12 = 2^2 \times 3$, $15 = 3 \times 5$. Their LCM is $2^3 \times 3 \times 5 = 120$.

6. Use the product identity and check

1. The other number is $(6 \times 180) \div 30 = 36$.
2. $\text{HCF}(30, 36) = 6$ and $\text{LCM}(30, 36) = 180$, so both conditions hold.

7. Last digit zero

1. A number ending in zero is divisible by 10 and therefore has prime factors 2 and 5.
2. A positive integer power of 3 has only the prime factor 3, so it cannot end in zero.

8. Irrationality proof

1. Assume $\sqrt{7} = a/b$ in lowest terms, where a and b are integers and $b \neq 0$. Then $a^2 = 7b^2$.
2. Because 7 is prime, 7 dividing a^2 means 7 divides a . Write $a = 7k$.
3. Substitution gives $b^2 = 7k^2$, so 7 also divides b . This contradicts a/b being in lowest terms. Therefore $\sqrt{7}$ is irrational.

9–10. Reasoning checks

1. If $r + 4$ were rational, subtracting rational 4 would make r rational, a contradiction.
2. For 2, 4 and 8, $\text{HCF} = 2$ and $\text{LCM} = 8$. Their product is 16, while $2 \times 4 \times 8 = 64$. The two-number identity does not extend unchanged.

How to revise mistakes

If you chose LCM for the packing problem, underline “greatest number of identical packs”: the number must divide both totals. For bells, list the first few multiples to see why the first shared time uses LCM. For a proof, check that you explicitly state the fraction is in lowest terms before reaching a contradiction.

Review the fundamental theorem and HCF–LCM method:

<https://udayy.com/en/lesson/fundamental-theorem-of-arithmetic>

Topic reference: NCERT Mathematics, Real Numbers: <https://ncert.nic.in/textbook/pdf/jemh101.pdf>

AI-assisted material; source and answer checks by Codex (AI content review). Report errors through the lesson page.

Read the current web version: <https://udayy.com/en/lesson/real-numbers-important-questions-worksheet>