CLASS 10 MATHS EXTRA QUESTIONS

Extra Questions: Class 10 Maths Chapter 1 Real Numbers

These go beyond the textbook Exercise 1.1 and even beyond typical extra-practice level -- HOTS (Higher Order Thinking Skills) style questions on Real Numbers, the kind that separate a good board-exam score from a great one. See the standard-level Exercise 1.1 Solutions first if you haven't already. These Class 10 Ma...

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Extra Questions (HOTS Level): Real Numbers (Class 10 Maths Chapter 1)

Q1. Find the largest number that divides 615 and 963, leaving remainder 6 in each case.
If the number leaves remainder 6 in both cases, it must divide (615 – 6) = 609 and (963 – 6) = 957 exactly. So we need HCF(609, 957).
609 = 3 × 7 × 29. 957 = 3 × 11 × 29. Common factors: 3 × 29 = **87**.
Check: 615 ÷ 87 = 7 remainder 6; 963 ÷ 87 = 11 remainder 6. ✓

Q2. Prove that for any prime number p, √p is irrational.
Assume, for contradiction, that √p is rational: √p = a/b, where a and b are coprime integers, b ≠ 0. Squaring: $pb^2 = a^2$, so p divides a^2. Since p is prime, by Euclid's lemma p must divide a itself. Let a = pc. Then $pb^2 = p^2c^2$, so $b^2 = pc^2$, meaning p divides b^2 too, and therefore p divides b. But then p divides both a and b, contradicting that they are coprime. Hence √p is irrational for every prime p — this single proof is why √2, √3, √5, √7… are all irrational.

Q3. The HCF and LCM of two numbers are 23 and 1449 respectively. If one number is 161, find the other.
HCF × LCM = product of the two numbers, so: 23 × 1449 = 33,327. Other number = 33,327 ÷ 161 = **207**.
Check: 161 = 7 × 23. 207 = 3^2 × 23. HCF(161, 207) = 23 ✓. LCM = 161 × 9 = 1,449 ✓.

Q4 (Assertion-Reason).
Assertion (A): The number 6^n, where n is a natural number, ends with the digit 0 for some value of n.
Reason (R): A number ends with the digit 0 if its prime factorisation includes both 2 and 5.
Choose the correct option: (a) Both A and R are true, and R is the correct explanation of A. (b) Both A and R are true, but R is not the correct explanation of A. (c) A is true, R is false. (d) A is false, R is true.
Answer: (d). R is a true, general statement. But A is false: $6^n = 2^n \times 3^n$ never has 5 as a factor, no matter what n is, so it can never end in 0.

Q5. Prove that √2 + √3 is irrational.
Assume √2 + √3 = r, a rational number. Squaring both sides: 2 + 3 + 2√6 = r^2, so 5 + 2√6 = r^2, which gives √6 = (r^2 – 5)/2. Since r is rational, the right-hand side is rational, so this would make √6 rational. But √6 = √2 × √3, and the same contradiction method used for √2, √3, √5 shows √6 is irrational too. This contradiction means our assumption was wrong, so √2 + √3 is irrational.

Q6. Three sets of English, Mathematics, and Science books contain 405, 540, and 675 books respectively. They have to be stacked subject-wise, with every stack the same height. What is the minimum number of stacks?
The tallest possible equal stack height corresponds to the HCF of 405, 540, and 675 (the largest number of books per stack that divides all three exactly).
405 = 3^4 × 5. 540 = 2^2 × 3^3 × 5. 675 = 3^3 × 5^2. Common factors: 3^3 × 5 = **135** books per stack.
Total books = 405 + 540 + 675 = 1,620. Number of stacks = 1,620 ÷ 135 = **12**.

Continue Your Chapter 1 Practice

Compare against the standard-level Exercise 1.1 Solutions, recap fast with the Revision Notes, or check the Class 10 Maths Formulas Handbook.

Class 10 Mathematics Chapter 1 – Solutions and Notes

For complete step-by-step answers and a quick summary, check the Class 10 Mathematics Chapter 1 Solutions and Class 10 Mathematics Chapter 1 Revision Notes.