

SATISH CHANDRA MEMORIAL SCHOOL

PRACTICE QUESTIONS

CLASS IX – NUMBER SYSTEM

1. **Assertion (A):** The sum of two irrational numbers is always irrational.

Reason (R): The set of irrational numbers is closed under addition.

2. **Assertion (A):** The number 0.10110111011110...0.10110111011110... is irrational.

Reason (R): It has a non-terminating and non-repeating decimal expansion.

3. **Assertion (A):** The product of a non-zero rational and an irrational number is rational.

Reason (R): Rational numbers are closed under multiplication.

4. **Assertion (A):** $\sqrt{2}$ is an irrational number.

Reason (R): The decimal expansion of $\sqrt{2}$ is terminating.

5. **Assertion (A):** The sum of two rational numbers is always rational.

Reason (R): Rational numbers are closed under addition.

6. **Assertion (A):** Every real number is either rational or irrational.

Reason (R): The set of real numbers is the union of rational and irrational numbers.

7. **Assertion (A):** The product of two irrational numbers is always irrational.

Reason (R): Irrational numbers are not closed under multiplication.

8. **Assertion (A):** $\frac{1}{\sqrt{3}}$ is a rational number.

Reason (R): After rationalizing the denominator, it becomes $\frac{\sqrt{3}}{3}$, which is irrational.

9. **Assertion (A):** The decimal expansion of $\frac{22}{7}$ is non-terminating and non-repeating.

Reason (R): $\frac{22}{7}$ is an irrational number.

10. **Assertion (A):** The number 3.1416 is irrational.

Reason (R): It is a non-terminating, non-repeating decimal.

11. **Assertion (A):** If a number has a terminating decimal expansion, it is rational.

Reason (R): A terminating decimal can be expressed as $\frac{p}{q}$ where q is of the form $2^n 5^m$.

12. **Assertion (A):** The sum of a rational and an irrational number is irrational.

Reason (R): An irrational number cannot be expressed as a fraction of integers.

13. **Assertion (A):** The square of an irrational number is always rational.

Reason (R): Squaring an irrational number removes the radical.

14. **Assertion (A):** Every point on the number line represents a unique real number.

Reason (R): Real numbers are in one-to-one correspondence with points on a number line.

15. **Assertion (A):** The reciprocal of an irrational number is always irrational.

Reason (R): The reciprocal of a non-zero real number is always real.

Case Study

1. A baker has $\frac{3}{4}$ kg of sugar. She needs 0.4444 ... kg of sugar per cake and wants to adjust the recipe for 10 cakes.



i) Convert 0.444... to a fraction.

ii) Is $\frac{3}{4}$ kg sufficient for 10 cakes?

iii) If not, what minimum quantity (in kg) is needed?

2. A student saves ₹5000. He allocates 25% for books, $\sqrt{2}\%$ for charity, and the rest for stationery.

i) Calculate the amount allocated to charity. Is this amount rational?

ii) Is the total allocated money for charity irrational?

iii) Is the "remaining amount for stationery" rational?



MATHEMATICS

Case study-1

Chapter name - Number System

- *Read the passage and answer the questions given below :*

Two classmates Nitya and Salma simplified two different expressions during the revision hour and explained to each other their simplifications . Nitya explains simplification of $\sqrt{2}/\sqrt{5}+\sqrt{3}$ by rationalising the denominator and Salma explains the simplifications of $(\sqrt{2}+\sqrt{3})(\sqrt{2}-\sqrt{3})$ by using the identity $(a+b)(a-b)$.



Answer the following questions :

1. What is the conjugate of $\sqrt{2}+\sqrt{3}$:-

- a) $\sqrt{2}+\sqrt{3}$**
- b) $\sqrt{2}-\sqrt{3}$**
- c) $\sqrt{2} \times \sqrt{3}$**
- d) $\sqrt{2}/\sqrt{3}$**

2. By rationalising the denominator of $\frac{\sqrt{2}}{\sqrt{5}+\sqrt{3}}$ Nitya got the answer

- a) $\frac{\sqrt{2}}{\sqrt{5}-\sqrt{3}}$
- b) $\frac{\sqrt{2}(\sqrt{5}-\sqrt{3})}{+}$
- c) $\sqrt{5}-\sqrt{3}$
- d) $\frac{\sqrt{2}(\sqrt{5}+\sqrt{3})}{+}$

3. Salma applied _____ identity to solve $(\sqrt{5}+\sqrt{3})(\sqrt{5}-\sqrt{3})$

- a) $(a+b)(a+b)$
- b) $(a+b)(a-b)$
- c) $(a-b)(a-b)$
- d) $(x+a)(x+b)$

4. $(\sqrt{2}+\sqrt{3})(\sqrt{2}-\sqrt{3})$ is _____

- a) -1
- b) 1
- c) 3
- d) -3

5. Addition of two rational numbers is equal to _____

- a) rational
- b) irrational
- c) integers
- d) whole numbers