1. Which of the following is not a rational number?

   A. 3/5 B. 0

   C. $\sqrt{2}$ D. -4 (C)

Explanation : $\sqrt{2}$ cannot be expressed in the form p/q, so it is an irrational number.

2. The decimal expansion of a rational number is always :

   A. Terminating

   B. Non-terminating non-repeating

   C. Terminating or non-terminating repeating

   D. None of these (C)

Explanation : Rational numbers either terminate or repeat in a pattern.

3. Which of the following has a terminating decimal expansion?

   A. 1/3 B. 7/8

   C. 1/7 D. 2/11 (B)

Explanation : 7/8 = 0.875 which terminates; others repeat.

4. Which of the following is an irrational number?

   A. $\sqrt{9}$ B. $\sqrt{5}$

   C. 1/2 D. 0 (B)

Explanation : $\sqrt{5}$ cannot be expressed as a rational fraction.

5. What is the decimal expansion of 1/7?

   A. 0.111... B. 0.285714...

   C. 0.125 D. 0.1666... (B)

Explanation : 1/7 = 0.142857 (repeating with 6 digits).

6. $\sqrt{2} + 1$ is :

   A. Rational B. Irrational

   C. Integer D. Whole number (B)

Explanation : Adding a rational and irrational gives an irrational number.

7. $1/\sqrt{2}$ rationalised gives :

   A. $\sqrt{2}/2$ B. $\sqrt{2}$

   C. $2/\sqrt{2}$ D. 1 (A)

Explanation : Multiply numerator and denominator by $\sqrt{2}$: $(1/\sqrt{2}) \times (\sqrt{2}/\sqrt{2}) = \sqrt{2}/2$

8. The value of $(\sqrt{5} + \sqrt{3})(\sqrt{5} - \sqrt{3})$ is :

   A. 8 B. 2

   C. 15 - 9 D. 5 (B)

Explanation : Using identity $(a + b)(a - b) = a^2 - b^2 = 5 - 3 = 2$

9. The number π is :

   A. Rational

   B. Real but not irrational C. Irrational

   D. Natural (C)

Explanation : π is a non-terminating, non-repeating decimal, hence irrational.

10. Every real number is either :

    A. Natural or integer

    B. Rational or irrational

    C. Terminating or whole number

    D. Integer or irrational (B)

Explanation : Real numbers include both rational and irrational numbers.