# Rational Numbers

## Exercise 45:

### Solution 1:

1. The smallest natural number is 1.
2. The biggest whole number cannot be determined.
3. The smallest integer cannot be determined.

### Solution 2:

1. $-28 \times 1 = -28$
2. $4 + 0 = 4$
3. $0 \times (-10) = 0$
4. $(-5) - 0 = -5$
5. $13 - (-3) = 13 + 3 = 16$
6. $29 + 99 + 1 = 29 + 100 = 129$
7. $593 \times 25 \times 4 = 593 \times (25 \times 4) = 593 \times 100 = 59300$
8. $95 + 741 + 5 = (95 + 5) + 741 = 100 + 741 = 841$
9. $5 \times 379 \times 2 = (5 \times 2) \times 379 = 10 \times 397 = 3970$
10. $87 \times 95 + 87 \times 5 = 87 \times (95 + 5) = 87 \times 100 = 8700$

## Exercise 46:

### Solution 1:

The rational numbers using each of the integers $5, -7, 10$ only once are as follows,

$$\frac{5}{10}, \frac{10}{5}, \frac{-7}{5}, -\frac{5}{7}, \frac{-7}{10}, -\frac{10}{7}$$

### Solution 2:

The rational numbers using each of the integers $13, 0, -18, 8$ only once are as follows,

$$\frac{0}{13}, \frac{8}{13}, \frac{-18}{13}, \frac{0}{-18}, -\frac{8}{18}, -\frac{13}{18}, \frac{0}{8}, \frac{-18}{8}, \frac{13}{8}$$

## Exercise 47:

### Solution 1:

| S. No. | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Given rational number | $\frac{5}{-1}$ | $\frac{-5}{-1}$ | $\frac{2}{-9}$ | $\frac{-2}{-9}$ | $\frac{0}{-4}$ | $\frac{11}{-8}$ |
| Number as per convention | $-\frac{5}{1}$ | $\frac{5}{1}$ | $-\frac{2}{9}$ | $\frac{2}{9}$ | $-\frac{0}{4}$ | $-\frac{11}{8}$ |

### Solution 2:

| S. No. | Number | Natural | Whole | Integer | Rational |
|---|---|---|---|---|---|
| 1 | 2 | ✓ | ✓ | ✓ | ✓ |
| 2 | 0 | x | ✓ | ✓ | ✓ |
| 3 | −7 | x | x | ✓ | ✓ |
| 4 | $\frac{-4}{3}$ | x | x | x | ✓ |
| 5 | $\frac{1}{2}$ | x | x | x | ✓ |
| 6 | $-\frac{1}{3}$ | x | x | x | ✓ |
| 7 | $\frac{-1}{-5}$ | x | x | x | ✓ |