

# Mathematics

## (Chapter – 9) (Rational Numbers)

(Class – VII)

### Exercise 9.1

#### Question 1:

List five rational numbers between:

(i)  $-1$  and  $0$

(ii)  $-2$  and  $-1$

(iii)  $\frac{-4}{5}$  and  $\frac{-2}{3}$

(iv)  $\frac{-1}{2}$  and  $\frac{2}{3}$

#### Answer 1:

(i)  $-1$  and  $0$

Let us write  $-1$  and  $0$  as rational numbers with denominator 6.

$$\Rightarrow -1 = \frac{-6}{6} \text{ and } 0 = \frac{0}{6}$$

$$\therefore \frac{-6}{6} < \frac{-5}{6} < \frac{-4}{6} < \frac{-3}{6} < \frac{-2}{6} < \frac{-1}{6} < 0$$

$$\Rightarrow -1 < \frac{-5}{6} < \frac{-2}{3} < \frac{-1}{2} < \frac{-1}{3} < \frac{-1}{6} < 0$$

Therefore, five rational numbers between  $-1$  and  $0$  would be

$$\frac{-5}{6}, \frac{-2}{3}, \frac{-1}{2}, \frac{-1}{3}, \frac{-1}{6}$$

(ii)  $-2$  and  $-1$

Let us write  $-2$  and  $-1$  as rational numbers with denominator 6.

$$\Rightarrow -2 = \frac{-12}{6} \text{ and } -1 = \frac{-6}{6}$$

$$\therefore \frac{-12}{6} < \frac{-11}{6} < \frac{-10}{6} < \frac{-9}{6} < \frac{-8}{6} < \frac{-7}{6} < \frac{-6}{6}$$

$$\Rightarrow -2 < \frac{-11}{6} < \frac{-5}{3} < \frac{-3}{2} < \frac{-4}{3} < \frac{-7}{6} < -1$$

Therefore, five rational numbers between  $-2$  and  $-1$  would be

$$\frac{-11}{6}, \frac{-5}{3}, \frac{-3}{2}, \frac{-4}{3}, \frac{-7}{6}$$

(iii)  $\frac{-4}{5}$  and  $\frac{-2}{3}$

Let us write  $\frac{-4}{5}$  and  $\frac{-2}{3}$  as rational numbers with the same denominators.

$$\Rightarrow \frac{-4}{5} = \frac{-36}{45} \text{ and } \frac{-2}{3} = \frac{-30}{45}$$

$$\therefore \frac{-36}{45} < \frac{-35}{45} < \frac{-34}{45} < \frac{-33}{45} < \frac{-32}{45} < \frac{-31}{45} < \frac{-30}{45}$$

$$\Rightarrow \frac{-4}{5} < \frac{-7}{9} < \frac{-34}{45} < \frac{-11}{15} < \frac{-32}{45} < \frac{-31}{45} < \frac{-2}{3}$$

Therefore, five rational numbers between  $\frac{-4}{5}$  and  $\frac{-2}{3}$  would be

$$\frac{-7}{9}, \frac{-34}{45}, \frac{-11}{15}, \frac{-32}{45}, \frac{-31}{45}, \frac{-2}{3}$$

(iv)  $\frac{-1}{2}$  and  $\frac{2}{3}$

Let us write  $\frac{-1}{2}$  and  $\frac{2}{3}$  as rational numbers with the same denominators.

$$\Rightarrow \frac{-1}{2} = \frac{-3}{6} \text{ and } \frac{2}{3} = \frac{4}{6}$$

$$\therefore \frac{-3}{6} < \frac{-2}{6} < \frac{-1}{6} < 0 < \frac{1}{6} < \frac{2}{6} < \frac{3}{6} < \frac{4}{6}$$

$$\Rightarrow \frac{-1}{2} < \frac{-1}{3} < \frac{-1}{6} < 0 < \frac{1}{6} < \frac{1}{3} < \frac{1}{2} < \frac{2}{3}$$

Therefore, five rational numbers between  $\frac{-1}{2}$  and  $\frac{2}{3}$  would be

$$\frac{-1}{3}, \frac{-1}{6}, 0, \frac{1}{6}, \frac{1}{3}.$$

### Question 2:

Write four more rational numbers in each of the following patterns:

(i)  $\frac{-3}{5}, \frac{-6}{10}, \frac{-9}{15}, \frac{-12}{20}, \dots$

(ii)  $\frac{-1}{4}, \frac{-2}{8}, \frac{-3}{12}, \dots$

(iii)  $\frac{-1}{6}, \frac{2}{-12}, \frac{3}{-18}, \frac{4}{-24}, \dots$

(iv)  $\frac{-2}{3}, \frac{2}{-3}, \frac{4}{-6}, \frac{6}{-9}, \dots$

### Answer 2:

(i)  $\frac{-3}{5}, \frac{-6}{10}, \frac{-9}{15}, \frac{-12}{20}, \dots$

$\Rightarrow \frac{-3 \times 1}{5 \times 1}, \frac{-3 \times 2}{5 \times 2}, \frac{-3 \times 3}{5 \times 3}, \frac{-3 \times 4}{5 \times 4}, \dots$

Therefore, the next four rational numbers of this pattern would be

$$\frac{-3 \times 5}{5 \times 5}, \frac{-3 \times 6}{5 \times 6}, \frac{-3 \times 7}{5 \times 7}, \frac{-3 \times 8}{5 \times 8} = \frac{-15}{25}, \frac{-18}{30}, \frac{-21}{35}, \frac{-24}{40}$$

(ii)  $\frac{-1}{4}, \frac{-2}{8}, \frac{-3}{12}, \dots$

$\Rightarrow \frac{-1 \times 1}{4 \times 1}, \frac{-1 \times 2}{4 \times 2}, \frac{-1 \times 3}{4 \times 3}, \dots$

Therefore, the next four rational numbers of this pattern would be

$$\frac{-1 \times 4}{4 \times 4}, \frac{-1 \times 5}{4 \times 5}, \frac{-1 \times 6}{4 \times 6}, \frac{-1 \times 7}{4 \times 7} = \frac{-4}{16}, \frac{-5}{20}, \frac{-6}{24}, \frac{-7}{28}$$

(iii)  $\frac{-1}{6}, \frac{2}{-12}, \frac{3}{-18}, \frac{4}{-24}, \dots$

$\Rightarrow \frac{-1 \times 1}{6 \times 1}, \frac{1 \times 2}{-6 \times 2}, \frac{1 \times 3}{-6 \times 3}, \frac{1 \times 4}{-6 \times 4}, \dots$

Therefore, the next four rational numbers of this pattern would be

$$\frac{1 \times 5}{-6 \times 5}, \frac{1 \times 6}{-6 \times 6}, \frac{1 \times 7}{-6 \times 7}, \frac{1 \times 8}{-6 \times 8} = \frac{5}{-30}, \frac{6}{-36}, \frac{7}{-42}, \frac{8}{-48}$$

$$(iv) \quad \frac{-2}{3}, \frac{2}{-3}, \frac{4}{-6}, \frac{6}{-9}, \dots$$

$$\Rightarrow \frac{-2 \times 1}{3 \times 1}, \frac{2 \times 1}{-3 \times 1}, \frac{2 \times 2}{-3 \times 2}, \frac{2 \times 3}{-3 \times 3}, \dots$$

Therefore, the next four rational numbers of this pattern would be

$$\frac{2 \times 4}{-3 \times 4}, \frac{2 \times 5}{-3 \times 5}, \frac{2 \times 6}{-3 \times 6}, \frac{2 \times 7}{-3 \times 7} = \frac{8}{-12}, \frac{10}{-15}, \frac{12}{-18}, \frac{14}{-21}$$

### Question 3:

Give four rational numbers equivalent to:

$$(i) \quad \frac{-2}{7} \qquad (ii) \quad \frac{5}{-3} \qquad (iii) \quad \frac{4}{9}$$

### Answer 3:

$$(i) \quad \frac{-2}{7}$$

$$\frac{-2 \times 2}{7 \times 2} = \frac{-4}{14}, \quad \frac{-2 \times 3}{7 \times 3} = \frac{-6}{21}, \quad \frac{-2 \times 4}{7 \times 4} = \frac{-8}{28}, \quad \frac{-2 \times 5}{7 \times 5} = \frac{-10}{35}$$

Therefore, four equivalent rational numbers are  $\frac{-4}{14}, \frac{-6}{21}, \frac{-8}{28}, \frac{-10}{35}$ .

$$(ii) \quad \frac{5}{-3}$$

$$\frac{5 \times 2}{-3 \times 2} = \frac{10}{-6}, \quad \frac{5 \times 3}{-3 \times 3} = \frac{15}{-9}, \quad \frac{5 \times 4}{-3 \times 4} = \frac{20}{-12}, \quad \frac{5 \times 5}{-3 \times 5} = \frac{25}{-15}$$

Therefore, four equivalent rational numbers are  $\frac{10}{-6}, \frac{15}{-9}, \frac{20}{-12}, \frac{25}{-15}$ .

$$(iii) \quad \frac{4}{9}$$

$$\frac{4 \times 2}{9 \times 2} = \frac{8}{18}, \quad \frac{4 \times 3}{9 \times 3} = \frac{12}{27}, \quad \frac{4 \times 4}{9 \times 4} = \frac{16}{36}, \quad \frac{4 \times 5}{9 \times 5} = \frac{20}{45}$$

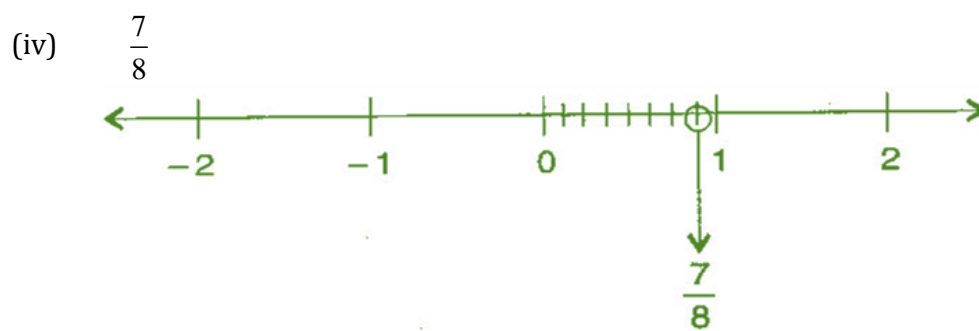
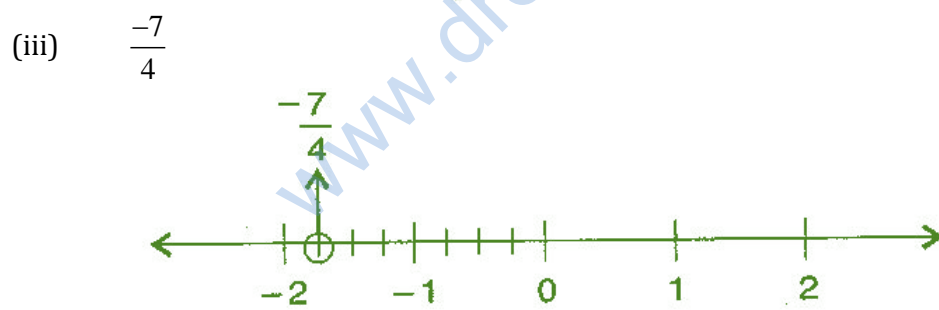
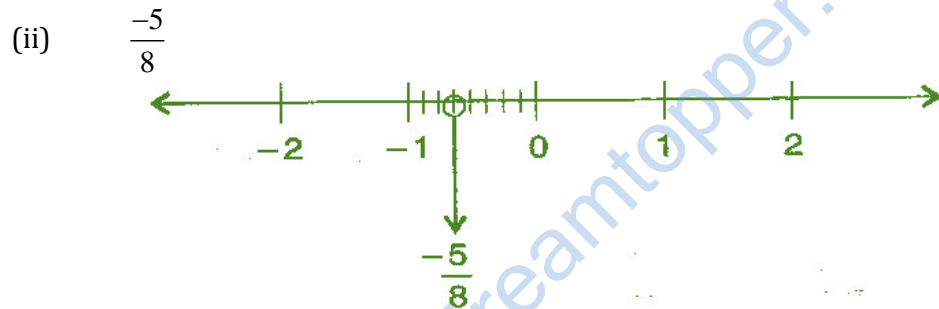
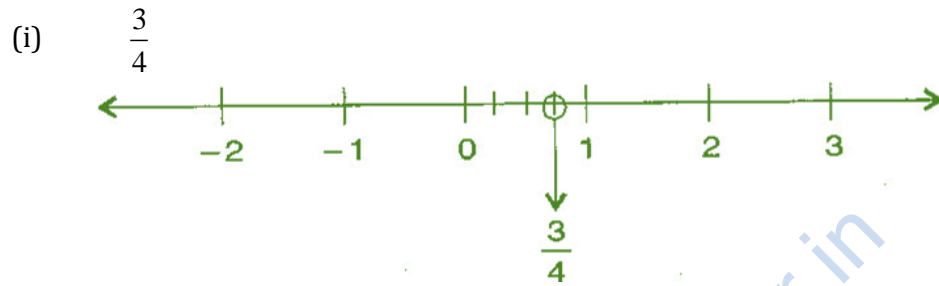
Therefore, four equivalent rational numbers are  $\frac{8}{18}, \frac{12}{27}, \frac{16}{36}, \frac{20}{45}$ .

**Question 4:**

Draw the number line and represent the following rational numbers on it:

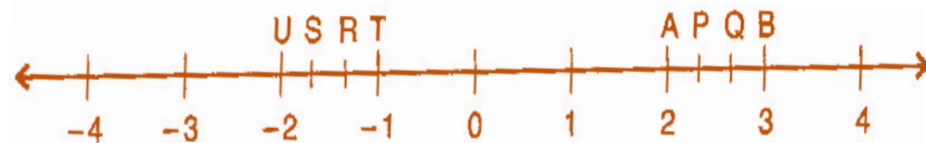
- (i)  $\frac{3}{4}$       (ii)  $-\frac{5}{8}$       (iii)  $-\frac{7}{4}$       (iv)  $\frac{7}{8}$

 **Answer 4:**



### Question 5:

The points P, Q, R, S, T, U, A and B on the number line are such that,  $TR = RS = SU$  and  $AP = PQ = QB$ . Name the rational numbers represented by P, Q, R and S.



### Answer 5:

Each part which is between the two numbers is divided into 3 parts.

Therefore,  $A = \frac{6}{3}$ ,  $P = \frac{7}{3}$ ,  $Q = \frac{8}{3}$  and  $B = \frac{9}{3}$

Similarly  $T = \frac{-3}{3}$ ,  $R = \frac{-4}{3}$ ,  $S = \frac{-5}{3}$  and  $U = \frac{-6}{3}$

Thus, the rational numbers represented P, Q, R and S are  $\frac{7}{3}$ ,  $\frac{8}{3}$ ,  $\frac{-4}{3}$  and  $\frac{-5}{3}$  respectively.

### Question 6:

Which of the following pairs represent the same rational numbers:

(i)  $\frac{-7}{21}$  and  $\frac{3}{9}$

(ii)  $\frac{-16}{20}$  and  $\frac{20}{-25}$

(iii)  $\frac{-2}{-3}$  and  $\frac{2}{3}$

(iv)  $\frac{-3}{5}$  and  $\frac{-12}{20}$

(v)  $\frac{8}{-5}$  and  $\frac{-24}{15}$

(vi)  $\frac{1}{3}$  and  $\frac{-1}{9}$

(vii)  $\frac{-5}{-9}$  and  $\frac{5}{-9}$

 **Answer 6:**

(i)  $\frac{-7}{21}$  and  $\frac{3}{9}$   
 $\Rightarrow \frac{-7}{21} = \frac{-1}{3}$  and  $\frac{3}{9} = \frac{1}{3}$  [Converting into lowest term]  
 $\therefore \frac{-1}{3} \neq \frac{1}{3}$   
 $\therefore \frac{-7}{21} \neq \frac{3}{9}$

(ii)  $\frac{-16}{20}$  and  $\frac{20}{-25}$   
 $\Rightarrow \frac{-16}{20} = \frac{-4}{5}$  and  $\frac{20}{-25} = \frac{4}{-5} = \frac{-4}{5}$  [Converting into lowest term]  
 $\therefore \frac{-4}{5} = \frac{-4}{5}$   
 $\therefore \frac{-16}{20} = \frac{20}{-25}$

(iii)  $\frac{-2}{-3}$  and  $\frac{2}{3}$   
 $\Rightarrow \frac{-2}{-3} = \frac{2}{3}$  and  $\frac{2}{3} = \frac{2}{3}$  [Converting into lowest term]  
 $\therefore \frac{2}{3} = \frac{2}{3}$   
 $\therefore \frac{-2}{-3} = \frac{2}{3}$

(iv)  $\frac{-3}{5}$  and  $\frac{-12}{20}$   
 $\Rightarrow \frac{-3}{5} = \frac{-3}{5}$  and  $\frac{-12}{20} = \frac{-3}{5}$  [Converting into lowest term]  
 $\therefore \frac{-3}{5} = \frac{-3}{5}$   
 $\therefore \frac{-3}{5} = \frac{-12}{20}$

$$\begin{aligned}
 \text{(v)} \quad & \frac{8}{-5} \text{ and } \frac{-24}{15} \\
 \Rightarrow & \frac{8}{-5} = \frac{-8}{5} \text{ and } \frac{-24}{15} = \frac{-8}{5} && \text{[Converting into lowest term]} \\
 \therefore & \frac{-8}{5} = \frac{-8}{5} \\
 \therefore & \frac{8}{-5} = \frac{-24}{15}
 \end{aligned}$$

$$\begin{aligned}
 \text{(vi)} \quad & \frac{1}{3} \text{ and } \frac{-1}{9} \\
 \Rightarrow & \frac{1}{3} = \frac{1}{3} \text{ and } \frac{-1}{9} = \frac{-1}{9} && \text{[Converting into lowest term]} \\
 \therefore & \frac{1}{3} \neq \frac{-1}{9} \\
 \therefore & \frac{1}{3} \neq \frac{-1}{9}
 \end{aligned}$$

$$\begin{aligned}
 \text{(vii)} \quad & \frac{-5}{-9} \text{ and } \frac{5}{-9} \\
 \Rightarrow & \frac{-5}{-9} = \frac{5}{9} \text{ and } \frac{5}{-9} = \frac{-5}{9} && \text{[Converting into lowest term]} \\
 \therefore & \frac{5}{9} \neq \frac{-5}{9} \\
 \therefore & \frac{-5}{-9} \neq \frac{5}{-9}
 \end{aligned}$$

**Question 7:**

Rewrite the following rational numbers in the simplest form:

$$\text{(i)} \quad \frac{-8}{6} \qquad \text{(ii)} \quad \frac{25}{45} \qquad \text{(iii)} \quad \frac{-44}{72} \qquad \text{(iv)} \quad \frac{-8}{10}$$

**Answer 7:**

$$\text{(i)} \quad \frac{-8}{6} = \frac{-8 \div 2}{6 \div 2} = \frac{-4}{3} \qquad \text{[H.C.F. of 8 and 6 is 2]}$$



(ii)  $\frac{25}{45} = \frac{25 \div 5}{45 \div 5} = \frac{5}{9}$  [H.C.F. of 25 and 45 is 5]

(iii)  $\frac{-44}{72} = \frac{-44 \div 4}{72 \div 4} = \frac{-11}{18}$  [H.C.F. of 44 and 72 is 4]

(iv)  $\frac{-8}{10} = \frac{-8 \div 2}{10 \div 2} = \frac{-4}{5}$  [H.C.F. of 8 and 10 is 2]

### Question 8:

Fill in the boxes with the correct symbol out of <, > and =:

(i)  $\frac{-5}{7} \square \frac{2}{3}$  (ii)  $\frac{-4}{5} \square \frac{-5}{7}$  (iii)  $\frac{-7}{8} \square \frac{14}{-16}$  (iv)  $\frac{-8}{5} \square \frac{-7}{4}$

(v)  $\frac{1}{-3} \square \frac{-1}{4}$  (vi)  $\frac{5}{-11} \square \frac{-5}{11}$  (vii)  $0 \square \frac{-7}{6}$

### Answer 8:

(i)  $\frac{-5}{7} \square < \frac{2}{3}$  Since, the positive number is greater than negative number.

(ii)  $\frac{-4 \times 7}{5 \times 7} \square \frac{-5 \times 5}{7 \times 5} \Rightarrow \frac{-28}{35} \square < \frac{-25}{35} \Rightarrow \frac{-4}{5} \square < \frac{-5}{7}$

(iii)  $\frac{-7 \times 2}{8 \times 2} \square \frac{14 \times (-1)}{-16 \times (-1)} \Rightarrow \frac{-14}{16} \square = \frac{-14}{16} \Rightarrow \frac{-7}{8} \square = \frac{14}{-16}$

(iv)  $\frac{-8 \times 4}{5 \times 4} \square \frac{-7 \times 5}{4 \times 5} \Rightarrow \frac{-32}{20} \square > \frac{-35}{20} \Rightarrow \frac{-8}{5} \square > \frac{-7}{4}$

(v)  $\frac{1}{-3} \square \frac{-1}{4} \Rightarrow \frac{1}{-3} \square < \frac{-1}{4}$

(vi)  $\frac{5}{-11} \square \frac{-5}{11} \Rightarrow \frac{5}{-11} \square = \frac{-5}{11}$

(vii)  $0 \square > \frac{-7}{6}$  Since, 0 is greater than every negative number.

### Question 9:

Which is greater in each of the following:

- (i)  $\frac{2}{3}, \frac{5}{2}$       (ii)  $\frac{-5}{6}, \frac{-4}{3}$       (iii)  $\frac{-3}{4}, \frac{2}{-3}$       (iv)  $\frac{-1}{4}, \frac{1}{4}$   
(v)  $-3\frac{2}{7}, -3\frac{4}{5}$

### Answer 9:

- (i)  $\frac{2 \times 2}{3 \times 2} = \frac{4}{6}$  and  $\frac{5 \times 3}{2 \times 3} = \frac{15}{6}$   
Since  $\frac{4}{6} < \frac{15}{6}$  Therefore  $\frac{2}{3} < \frac{5}{2}$
- (ii)  $\frac{-5 \times 1}{6 \times 1} = \frac{-5}{6}$  and  $\frac{-4 \times 2}{3 \times 2} = \frac{-8}{6}$   
Since  $\frac{-5}{6} > \frac{-8}{6}$  Therefore  $\frac{-5}{6} > \frac{-4}{3}$
- (iii)  $\frac{-3 \times 3}{4 \times 3} = \frac{-9}{12}$  and  $\frac{2 \times (-4)}{-3 \times (-4)} = \frac{-8}{12}$   
Since  $\frac{-9}{12} < \frac{-8}{12}$  Therefore  $\frac{-3}{4} < \frac{2}{-3}$
- (iv)  $\frac{-1}{4} < \frac{1}{4}$  Since positive number is always greater than negative number.
- (v)  $-3\frac{2}{7} = \frac{-23}{7} = \frac{-23 \times 5}{7 \times 5} = \frac{-115}{35}$  and  $-3\frac{4}{5} = \frac{-19}{5} = \frac{-19 \times 7}{5 \times 7} = \frac{-133}{35}$   
Since  $\frac{-115}{35} > \frac{-133}{35}$  Therefore  $-3\frac{2}{7} > -3\frac{4}{5}$

### Question 10:

Write the following rational numbers in ascending order:

- (i)  $\frac{-3}{5}, \frac{-2}{5}, \frac{-1}{5}$   
(ii)  $\frac{1}{3}, \frac{-2}{9}, \frac{-4}{3}$   
(iii)  $\frac{-3}{7}, \frac{-3}{2}, \frac{-3}{4}$

 **Answer 10:**

(i)  $\frac{-3}{5}, \frac{-2}{5}, \frac{-1}{5}$

$$\Rightarrow \frac{-3}{5} < \frac{-2}{5} < \frac{-1}{5}$$

(ii)  $\frac{1}{3}, \frac{-2}{9}, \frac{-4}{3} \Rightarrow \frac{3}{9}, \frac{-2}{9}, \frac{-12}{9}$  [Converting into same denominator]

Now  $\frac{-12}{9} < \frac{-2}{9} < \frac{3}{9} \Rightarrow \frac{-4}{3} < \frac{-2}{9} < \frac{1}{3}$

(iii)  $\frac{-3}{7}, \frac{-3}{2}, \frac{-3}{4}$

$$\Rightarrow \frac{-3}{2} < \frac{-3}{4} < \frac{-3}{7}$$

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## Exercise 9.2

### Question 1:

Find the sum:

$$(i) \quad \frac{5}{4} + \left(\frac{-11}{4}\right)$$

$$(iii) \quad \frac{-9}{10} + \frac{22}{15}$$

$$(v) \quad \frac{-8}{19} + \frac{(-2)}{57}$$

$$(vii) \quad -2\frac{1}{3} + 4\frac{3}{5}$$

$$(ii) \quad \frac{5}{3} + \frac{3}{5}$$

$$(iv) \quad \frac{-3}{-11} + \frac{5}{9}$$

$$(vi) \quad \frac{-2}{3} + 0$$

### Answer 1:

$$(i) \quad \frac{5}{4} + \left(\frac{-11}{4}\right) = \frac{5-11}{4} = \frac{-6}{4} = \frac{-3}{2}$$

$$(ii) \quad \frac{5}{3} + \frac{3}{5} = \frac{5 \times 5}{3 \times 5} + \frac{3 \times 3}{5 \times 3} = \frac{25}{15} + \frac{9}{15} \quad [\text{L.C.M. of 3 and 5 is 15}]$$
$$= \frac{25+9}{15} = \frac{34}{15} = 2\frac{4}{15}$$

$$(iii) \quad \frac{-9}{10} + \frac{22}{15} = \frac{-9 \times 3}{10 \times 3} + \frac{22 \times 2}{15 \times 2} = \frac{-27}{30} + \frac{44}{30} \quad [\text{L.C.M. of 10 and 15 is 30}]$$
$$= \frac{-27+44}{30} = \frac{17}{30}$$

$$(iv) \quad \frac{-3}{-11} + \frac{5}{9} = \frac{-3 \times 9}{-11 \times 9} + \frac{5 \times 11}{9 \times 11} = \frac{27}{99} + \frac{55}{99} \quad [\text{L.C.M. of 11 and 9 is 99}]$$
$$= \frac{27+55}{99} = \frac{82}{99}$$

$$(v) \quad \frac{-8}{19} + \frac{(-2)}{57} = \frac{-8 \times 3}{19 \times 3} + \frac{(-2) \times 1}{57 \times 1} = \frac{-24}{57} + \frac{(-2)}{57} \quad [\text{L.C.M. of 19 and 57 is 57}]$$
$$= \frac{-24-2}{57} = \frac{-26}{57}$$

$$(vi) \quad \frac{-2}{3} + 0 = \frac{-2}{3}$$

$$\begin{aligned}
 \text{(vii)} \quad -2\frac{1}{3} + 4\frac{3}{5} &= \frac{-7}{3} + \frac{23}{5} = \frac{-7 \times 5}{3 \times 5} + \frac{23 \times 3}{5 \times 3} = \frac{-35}{15} + \frac{69}{15} \quad [\text{L.C.M. of 3 and 5 is 15}] \\
 &= \frac{-35 + 69}{15} = \frac{34}{15} = 2\frac{4}{15}
 \end{aligned}$$

### Question 2:

Find:

$$\text{(i)} \quad \frac{7}{24} - \frac{17}{36}$$

$$\text{(ii)} \quad \frac{5}{63} - \left(\frac{-6}{21}\right)$$

$$\text{(iii)} \quad \frac{-6}{13} - \left(\frac{-7}{15}\right)$$

$$\text{(iv)} \quad \frac{-3}{8} - \frac{7}{11}$$

$$\text{(v)} \quad -2\frac{1}{9} - 6$$

### Answer 2:

$$\begin{aligned}
 \text{(i)} \quad \frac{7}{24} - \frac{17}{36} &= \frac{7 \times 3}{24 \times 3} - \frac{17 \times 2}{36 \times 2} = \frac{21}{72} - \frac{34}{72} \quad [\text{L.C.M. of 24 and 36 is 72}] \\
 &= \frac{21 - 34}{72} = \frac{-13}{72}
 \end{aligned}$$

$$\begin{aligned}
 \text{(ii)} \quad \frac{5}{63} - \left(\frac{-6}{21}\right) &= \frac{5 \times 1}{63 \times 1} - \left(\frac{-6 \times 3}{21 \times 3}\right) = \frac{5}{63} - \frac{-18}{63} \quad [\text{L.C.M. of 63 and 21 is 63}] \\
 &= \frac{5 - (-18)}{63} = \frac{5 + 18}{63} = \frac{23}{63}
 \end{aligned}$$

$$\begin{aligned}
 \text{(iii)} \quad \frac{-6}{13} - \left(\frac{-7}{15}\right) &= \frac{-6 \times 15}{13 \times 15} - \left(\frac{-7 \times 13}{15 \times 13}\right) = \frac{-90}{195} - \left(\frac{-91}{195}\right) \quad [\text{L.C.M. of 13 and 15 is 195}] \\
 &= \frac{-90 - (-91)}{195} = \frac{-90 + 91}{195} = \frac{1}{195}
 \end{aligned}$$

$$\begin{aligned}
 \text{(iv)} \quad \frac{-3}{8} - \frac{7}{11} &= \frac{-3 \times 11}{8 \times 11} - \frac{7 \times 8}{11 \times 8} = \frac{-33}{88} - \frac{56}{88} \quad [\text{L.C.M. of 8 and 11 is 88}] \\
 &= \frac{-33 - 56}{88} = \frac{-89}{88} = -1\frac{1}{88}
 \end{aligned}$$

$$\begin{aligned}
 \text{(v)} \quad -2\frac{1}{9} - 6 &= \frac{-19}{9} - \frac{6}{1} = \frac{-19 \times 1}{9 \times 1} - \frac{6 \times 9}{1 \times 9} \quad [\text{L.C.M. of 9 and 1 is 9}] \\
 &= \frac{-19 - 54}{9} = \frac{-73}{9} = -8\frac{1}{9}
 \end{aligned}$$

**Question 3:**

Find the product:

(i)  $\frac{9}{2} \times \left(\frac{-7}{4}\right)$

(ii)  $\frac{3}{10} \times (-9)$

(iii)  $\frac{-6}{5} \times \frac{9}{11}$

(iv)  $\frac{3}{7} \times \left(\frac{-2}{5}\right)$

(v)  $\frac{3}{11} \times \frac{2}{5}$

(vi)  $\frac{3}{-5} \times \frac{5}{3}$

**Answer 3:**

(i)  $\frac{9}{2} \times \left(\frac{-7}{4}\right) = \frac{9 \times (-7)}{2 \times 4} = \frac{-63}{8} = -7\frac{7}{8}$

(ii)  $\frac{3}{10} \times (-9) = \frac{3 \times (-9)}{10} = \frac{-27}{10} = -2\frac{7}{10}$

(iii)  $\frac{-6}{5} \times \frac{9}{11} = \frac{(-6) \times 9}{5 \times 11} = \frac{-54}{55}$

(iv)  $\frac{3}{7} \times \left(\frac{-2}{5}\right) = \frac{3 \times (-2)}{7 \times 5} = \frac{-6}{35}$

(v)  $\frac{3}{11} \times \frac{2}{5} = \frac{3 \times 2}{11 \times 5} = \frac{6}{55}$

(vi)  $\frac{3}{-5} \times \left(\frac{-5}{3}\right) = \frac{3 \times (-5)}{-5 \times 3} = 1$

**Question 4:**

Find the value of:

(i)  $(-4) \div \frac{2}{3}$

(ii)  $\frac{-3}{5} \div 2$

(iii)  $\frac{-4}{5} \div (-3)$

(iv)  $\frac{-1}{8} \div \frac{3}{4}$

(v)  $\frac{-2}{13} \div \frac{1}{7}$

(vi)  $\frac{-7}{12} \div \left(\frac{2}{13}\right)$

(vii)  $\frac{3}{13} \div \left(\frac{-4}{65}\right)$

 **Answer 4:**

$$(i) \quad (-4) \div \frac{2}{3} = (-4) \times \frac{3}{2} = (-2) \times 3 = -6$$

$$(ii) \quad \frac{-3}{5} \div 2 = \frac{-3}{5} \times \frac{1}{2} = \frac{(-3) \times 1}{5 \times 2} = \frac{-3}{10}$$

$$(iii) \quad \frac{-4}{5} \div (-3) = \frac{(-4)}{5} \times \frac{1}{(-3)} = \frac{(-4) \times 1}{5 \times (-3)} = \frac{4}{15}$$

$$(iv) \quad \frac{-1}{8} \div \frac{3}{4} = \frac{-1}{8} \times \frac{4}{3} = \frac{(-1) \times 4}{8 \times 3} = \frac{-1}{6}$$

$$(v) \quad \frac{-2}{13} \div \frac{1}{7} = \frac{-2}{13} \times \frac{7}{1} = \frac{(-2) \times 7}{13 \times 1} = \frac{-14}{13} = -1 \frac{1}{13}$$

$$(vi) \quad \frac{-7}{12} \div \left(\frac{-2}{13}\right) = \frac{-7}{12} \times \frac{13}{(-2)} = \frac{(-7) \times 13}{12 \times (-2)} = \frac{-91}{24} = 3 \frac{19}{24}$$

$$(vii) \quad \frac{3}{13} \div \left(\frac{-4}{65}\right) = \frac{3}{13} \times \frac{65}{(-4)} = \frac{3 \times (-5)}{1 \times 4} = \frac{-15}{4} = -3 \frac{3}{4}$$