MATHS -7 (CH-09-RATIONAL NUMBERS)

MATHS -7 (CH-09-9.1-RATIONAL NUMBERS)

Question 1:

List five rational numbers between:

(i) – 1 and 0 (ii) – 2 and – 1

(iii) $\dfrac{-4}{5}$ and $\dfrac{-2}{3}$ (iv) $\dfrac{1}{2}$ and $\dfrac{2}{3}$

Answer 1:

(i) −1 and 0

$$\dfrac{-1}{10}, \dfrac{-1}{20}, \dfrac{-1}{30}, \dfrac{-1}{40}, \dfrac{-1}{50}$$

(ii) −2 and −1

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

Five rational numbers are

$$\dfrac{-11}{6}, \dfrac{-10}{6}, \dfrac{-9}{6}, \dfrac{-8}{6}, \dfrac{-7}{6}$$

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

$$\dfrac{-4}{5} = \dfrac{-4 \times 9}{5 \times 9} = \dfrac{-36}{45} \text{ and } \dfrac{-2}{3} = \dfrac{-2 \times 15}{3 \times 15} = \dfrac{-30}{45}$$

Five rational numbers are

$$\dfrac{-35}{45}, \dfrac{-34}{45}, \dfrac{-33}{45}, \dfrac{-32}{45}, \dfrac{-31}{45}$$

(iv) $\dfrac{1}{2}$ and $\dfrac{2}{3}$

$$\dfrac{1}{2} = \dfrac{1 \times 18}{2 \times 18} = \dfrac{18}{36} \text{ and } \dfrac{2}{3} = \dfrac{2 \times 12}{3 \times 12} = \dfrac{24}{36}$$

Five rational numbers are

$$\dfrac{19}{36}, \dfrac{20}{36}, \dfrac{21}{36}, \dfrac{22}{36}, \dfrac{23}{36}$$

Question 2:

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

(i) $\dfrac{-3}{5}, \dfrac{-6}{10}, \dfrac{-9}{15}, \dfrac{-12}{20}, \ldots$ (ii) $\dfrac{-1}{4}, \dfrac{-2}{8}, \dfrac{-3}{12}, \ldots$

(iii) $\dfrac{-1}{6}, \dfrac{2}{-12}, \dfrac{3}{-18}, \dfrac{4}{-24}, \ldots$ (iv) $\dfrac{-2}{3}, \dfrac{2}{-3}, \dfrac{4}{-6}, \dfrac{6}{-9}, \ldots$

Answer 2:

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

$\dfrac{-3}{5}, \dfrac{-3 \times 2}{5 \times 2}, \dfrac{-3 \times 3}{5 \times 3}, \dfrac{-3 \times 4}{5 \times 4} .....$

It can be observed that the numerator is a multiple of 3 while the denominator is a multiple of 5 and as we increase them further, these multiples are increasing. Therefore, the next four rational numbers in this pattern are

$\dfrac{-3 \times 5}{5 \times 5}, \dfrac{-3 \times 6}{5 \times 6}, \dfrac{-3 \times 7}{5 \times 7}, \dfrac{-3 \times 8}{5 \times 8}...$

$\dfrac{-15}{25}, \dfrac{-18}{30}, \dfrac{-21}{35}, \dfrac{-24}{40}...$

(ii)

$\dfrac{-1}{4}, \dfrac{-2}{8}, \dfrac{-3}{12}...$

$\dfrac{-1}{4}, \dfrac{-1 \times 2}{4 \times 2}, \dfrac{-1 \times 3}{4 \times 3} ....$

The next four rational numbers in this pattern are

$\dfrac{-1 \times 4}{4 \times 4}, \dfrac{-1 \times 5}{4 \times 5}, \dfrac{-1 \times 6}{4 \times 6}, \dfrac{-1 \times 7}{4 \times 7}...$

$\dfrac{-4}{16}, \dfrac{-5}{20}, \dfrac{-6}{24}, \dfrac{-7}{28}...$

(iii)

$\dfrac{-1}{6}, \dfrac{2}{-12}, \dfrac{3}{-18}, \dfrac{4}{-24}...$

$\dfrac{-1}{6}, \dfrac{1 \times 2}{-6 \times 2}, \dfrac{1 \times 3}{-6 \times 3}, \dfrac{1 \times 4}{-6 \times 4}...$

The next four rational numbers in this pattern are

$\dfrac{1 \times 5}{-6 \times 5}, \dfrac{1 \times 6}{-6 \times 6}, \dfrac{1 \times 7}{-6 \times 7}, \dfrac{1 \times 8}{-6 \times 8}...$

$\dfrac{5}{-30}, \dfrac{6}{-36}, \dfrac{7}{-42}, \dfrac{8}{-48}...$

(iv) $\dfrac{-2}{3}, \dfrac{2}{-3}, \dfrac{4}{-6}, \dfrac{6}{-9}...$

$\dfrac{-2}{3}, \dfrac{2}{-3}, \dfrac{2 \times 2}{-3 \times 2}, \dfrac{2 \times 3}{-3 \times 3}...$

The next four rational numbers in this pattern are

$\dfrac{2 \times 4}{-3 \times 4}, \dfrac{2 \times 5}{-3 \times 5}, \dfrac{2 \times 6}{-3 \times 6}, \dfrac{2 \times 7}{-3 \times 7}...$

$\dfrac{8}{-12}, \dfrac{10}{-15}, \dfrac{12}{-18}, \dfrac{14}{-21}...$

Question 3:

Give four rational numbers equivalent to:

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

Answer 3:

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

Four rational numbers are

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

$$\frac{-4}{14}, \frac{-6}{21}, \frac{-8}{28}, \frac{-10}{35}$$

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

Four rational numbers are

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

$$\frac{10}{-6}, \frac{15}{-9}, \frac{20}{-12}, \frac{25}{-15}$$

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

Four rational numbers are

$$\frac{4 \times 2}{9 \times 2}, \frac{4 \times 3}{9 \times 3}, \frac{4 \times 4}{9 \times 4}, \frac{4 \times 5}{9 \times 5}$$

$$\frac{8}{18}, \frac{12}{27}, \frac{16}{36}, \frac{20}{45}$$

Question 4:

Draw the number line and represent the following rational numbers on it:
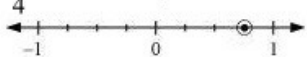
(i) $\frac{3}{4}$ (ii) $\frac{-5}{8}$

(iii) $\frac{-7}{4}$ (iv) $\frac{7}{8}$

Answer 4:

(i) $\dfrac{3}{4}$

This fraction represents 3 parts out of 4 equal parts. Therefore, each space between two integers on number line must be divided into 4 equal parts.
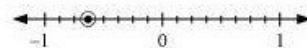
$\dfrac{3}{4}$ can be represented as

(ii) $\dfrac{-5}{8}$

This fraction represents 5 parts out of 8 equal parts. Negative sign represents that it is on the negative side of number line. Therefore, each space between two integers on number line must be divided into 8 equal parts.

$\dfrac{-5}{8}$ can be represented as

(iii) $\dfrac{-7}{4} = -1\dfrac{3}{4}$

This fraction represents 1 full part and 3 parts out of 4 equal parts. Negative sign represents that it is on the negative side of number line. Therefore, each space between two integers on number line must be divided into 4 equal parts.
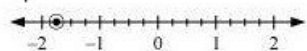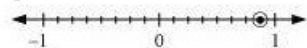
$\dfrac{-7}{4}$ can be represented as

(iv) $\dfrac{7}{8}$

This fraction represents 7 parts out of 8 equal parts. Therefore, each space between two integers on number line must be divided into 8 equal parts.

$\dfrac{7}{8}$ can be represented as

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:

Distance between U and T = 1 unit

It is divided into 3 equal parts.

$TR = RS = SU = \dfrac{1}{3}$

$R = -1 - \dfrac{1}{3} = -\dfrac{3}{3} - \dfrac{1}{3} = \dfrac{-4}{3}$

$S = -1 - \dfrac{2}{3} = -\dfrac{3}{3} - \dfrac{2}{3} = -\dfrac{5}{3}$

Similarly,

AB = 1 unit

It is divided into 3 equal parts.

$P = 2 + \dfrac{1}{3} = \dfrac{6}{3} + \dfrac{1}{3} = \dfrac{7}{3}$

$Q = 2 + \dfrac{2}{3} = \dfrac{6}{3} + \dfrac{2}{3} = \dfrac{8}{3}$

Question 6:

Which of the following pairs represent the same rational number?

(i) $\dfrac{-7}{21}$ and $\dfrac{3}{9}$ (ii) $\dfrac{-16}{20}$ and $\dfrac{20}{-25}$ (iii) $\dfrac{-2}{-3}$ and $\dfrac{2}{3}$

(iv) $\dfrac{-3}{5}$ and $\dfrac{-12}{20}$ (v) $\dfrac{8}{-5}$ and $\dfrac{-24}{15}$ (vi) $\dfrac{1}{3}$ and $\dfrac{-1}{9}$

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

Answer 6:

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

$\dfrac{-7}{21} = \dfrac{-1}{3}$

$\dfrac{3}{9} = \dfrac{1}{3}$

As $\dfrac{-1}{3} \neq \dfrac{1}{3}$, therefore, it does not represent same rational numbers.

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

$\dfrac{-16}{20} = \dfrac{-4}{5}$

$\dfrac{-20}{25} = \dfrac{-4}{5}$

Therefore, it represents same rational numbers.

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

$\dfrac{-2}{-3} = \dfrac{2}{3}$

Therefore, it represents same rational numbers.

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

$\dfrac{-12}{20} = \dfrac{-3}{5}$

Therefore, it represents same rational numbers.

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

$\dfrac{-24}{15} = \dfrac{-8}{5}$

$\dfrac{8}{-5} = \dfrac{-8}{5}$

Therefore, it represents same rational numbers.

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

As $\dfrac{1}{3} \neq \dfrac{-1}{9}$, therefore, it does not represent same rational numbers.

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

$\dfrac{-5}{-9} = \dfrac{5}{9}$

As $\dfrac{5}{9} \neq \dfrac{-5}{9}$, therefore, it does not represent same rational numbers.

Question 7:

Rewrite the following rational numbers in the simplest form:

(i) $\dfrac{-8}{6}$ (ii) $\dfrac{25}{45}$

(iii) $\dfrac{-44}{72}$ (iv) $\dfrac{-8}{10}$

Answer 7:

(i) $\dfrac{-8}{6} = \dfrac{-4 \times 2}{3 \times 2} = \dfrac{-4}{3}$

(ii) $\dfrac{25}{45} = \dfrac{5 \times 5}{9 \times 5} = \dfrac{5}{9}$

(iii) $\dfrac{-44}{72} = \dfrac{-11 \times 4}{18 \times 4} = \dfrac{-11}{18}$

(iv) $\dfrac{-8}{10} = \dfrac{-4 \times 2}{5 \times 2} = \dfrac{-4}{5}$

Question 8:

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

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

(iv) $\dfrac{-8}{5} \square \dfrac{-7}{4}$ (v) $\dfrac{1}{-3} \square \dfrac{-1}{4}$ (vi) $\dfrac{5}{-11} \square \dfrac{-5}{11}$

(vii) $0 \square \dfrac{-7}{6}$

Answer 8:

(i)

$$\frac{-5}{7} = \frac{-5 \times 3}{7 \times 3} = \frac{-15}{21}$$

$$\frac{2}{3} = \frac{2 \times 7}{3 \times 7} = \frac{14}{21}$$

As −15 < 14,

Therefore, $\dfrac{-5}{7} \boxed{<} \dfrac{2}{3}$

(ii)

$$\frac{-4}{5} = \frac{-4 \times 7}{5 \times 7} = \frac{-28}{35}$$

$$\frac{-5}{7} = \frac{-5 \times 5}{7 \times 5} = \frac{-25}{35}$$

As −28 < −25

Therefore, $\dfrac{-4}{5} \boxed{<} \dfrac{-5}{7}$

(iii) Here, $\dfrac{14}{-16} = \dfrac{7 \times 2}{-8 \times 2} = \dfrac{7}{-8} = \dfrac{-7}{8}$

Therefore, $\dfrac{-7}{8} \boxed{=} \dfrac{14}{-16}$

(iv)

$$\frac{-8}{5} = \frac{-8 \times 4}{5 \times 4} = \frac{-32}{20}$$

$$\frac{-7}{4} = \frac{-7 \times 5}{4 \times 5} = \frac{-35}{20}$$

As −32 > −35,

Therefore, $\dfrac{-8}{5} \boxed{>} \dfrac{-7}{4}$

(v)

$$\frac{-1}{3} = \frac{-1 \times 4}{3 \times 4} = \frac{-4}{12}$$

$$\frac{-1}{4} = \frac{-1 \times 3}{4 \times 3} = \frac{-3}{12}$$

As $-4 < -3$,

Therefore, $\frac{-1}{3} \boxed{<} \frac{-1}{4}$

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

(vii) $0 \boxed{>} \frac{-7}{6}$

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) $\frac{2}{3}, \frac{5}{2}$

By converting these into like fractions,

$$\frac{2}{3} = \frac{2 \times 2}{3 \times 2} = \frac{4}{6}$$

$$\frac{5}{2} = \frac{5 \times 3}{2 \times 3} = \frac{15}{6}$$

As $15 > 4$, therefore, $\frac{5}{2}$ is greater.

(ii) $\frac{-5}{6}, \frac{-4}{3}$

$$\frac{-4}{3} = \frac{-4 \times 2}{3 \times 2} = \frac{-8}{6}$$

As $-5 > -8$, therefore, $\frac{-5}{6}$ is greater.

(iii)

$$\frac{-3}{4}, \frac{2}{-3}$$

Or, $\frac{-3}{4}, \frac{-2}{3}$

By converting these into like fractions,

$$\frac{-3}{4} = \frac{-3 \times 3}{4 \times 3} = \frac{-9}{12}$$

$$\frac{-2}{3} = \frac{-2 \times 4}{3 \times 4} = \frac{-8}{12}$$

As $-8 > -9$, therefore, $\frac{-2}{3}$ is greater.

(iv) $\frac{-1}{4}, \frac{1}{4}$

$$\frac{1}{4} > \frac{-1}{4}$$

(v) $-3\frac{2}{7}, -3\frac{4}{5}$

$$\frac{-23}{7}, \frac{-19}{5}$$

By converting these into like fractions,

$$\frac{-23}{7} = \frac{-23 \times 5}{7 \times 5} = \frac{-115}{35}$$

$$\frac{-19}{5} = \frac{-19 \times 7}{5 \times 7} = \frac{-133}{35}$$

As $-115 > -133$, therefore, $-3\frac{2}{7}$ is greater.

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

As $-3 < -2 < -1$,

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

(ii) $\frac{-1}{3}, \frac{-2}{9}, \frac{-4}{3}$

By converting these into like fractions,

$\frac{-1 \times 3}{3 \times 3}, \frac{-2}{9}, \frac{-4 \times 3}{3 \times 3}$

$\frac{-3}{9}, \frac{-2}{9}, \frac{-12}{9}$

As $-12 < -3 < -2$,

$\therefore \frac{-4}{3} < \frac{-1}{3} < \frac{-2}{9}$

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

By converting these into like fractions,

$\frac{-3 \times 4}{7 \times 4}, \frac{-3 \times 14}{2 \times 14}, \frac{-3 \times 7}{4 \times 7}$

$\frac{-12}{28}, \frac{-42}{28}, \frac{-21}{28}$

As $-42 < -21 < -12$,

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

MATHS -7 (CH-09-9.2-RATIONAL NUMBERS)

Question 1:

Find the sum:

(i) $\frac{4}{5} + \left(\frac{-11}{4}\right)$ (ii) $\frac{5}{3} + \frac{3}{5}$ (iii) $\frac{-9}{10} + \frac{22}{15}$

(iv) $\frac{-3}{-11} + \frac{5}{9}$ (v) $\frac{-8}{19} + \frac{(-2)}{57}$ (vi) $\frac{-2}{3} + 0$

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

Answer 1:

(i) $\frac{4}{5} + \left(\frac{-11}{4}\right) = \frac{4}{5} - \frac{11}{4} = \frac{16-55}{20} = \frac{-39}{20}$

(ii) $\dfrac{5}{3}+\dfrac{3}{5}$

L.C.M of 3 and 5 is 15.

$\dfrac{5}{3}+\dfrac{3}{5}=\dfrac{5\times5}{3\times5}+\dfrac{3\times3}{5\times3}=\dfrac{25}{15}+\dfrac{9}{15}=\dfrac{25+9}{15}=\dfrac{34}{15}$

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

L.C.M of 10 and 15 is 30.

$\dfrac{-9}{10}+\dfrac{22}{15}=\dfrac{-9\times3}{10\times3}+\dfrac{22\times2}{15\times2}=\dfrac{-27}{30}+\dfrac{44}{30}=\dfrac{-27+44}{30}=\dfrac{17}{30}$

(iv) $\dfrac{-3}{-11}+\dfrac{5}{9}=\dfrac{3}{11}+\dfrac{5}{9}$

L.C.M of 11 and 9 is 99.

$\dfrac{3}{11}+\dfrac{5}{9}=\dfrac{3\times9}{11\times9}+\dfrac{5\times11}{9\times11}=\dfrac{27}{99}+\dfrac{55}{99}=\dfrac{27+55}{99}=\dfrac{82}{99}$

(v) $\dfrac{-8}{19}+\dfrac{(-2)}{57}=-\dfrac{8}{19}-\dfrac{2}{57}$

L.C.M of 19 and 57 is 57.

$-\dfrac{8}{19}-\dfrac{2}{57}=-\dfrac{8\times3}{19\times3}-\dfrac{2}{57}=-\dfrac{24}{57}-\dfrac{2}{57}=\dfrac{-24-2}{57}=\dfrac{-26}{57}$

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

(vii) $-2\dfrac{1}{3}+4\dfrac{3}{5}=\dfrac{-7}{3}+\dfrac{23}{5}$

L.C.M of 3 and 5 is 15.

$\dfrac{-7}{3}+\dfrac{23}{5}=\dfrac{-7\times5}{3\times5}+\dfrac{23\times3}{5\times3}=\dfrac{-35}{15}+\dfrac{69}{15}=\dfrac{-35+69}{15}=\dfrac{34}{15}$

Question 2:

Find

(i) $\dfrac{7}{24}-\dfrac{17}{36}$ (ii) $\dfrac{5}{63}-\left(\dfrac{-6}{21}\right)$ (iii) $\dfrac{-6}{13}-\left(\dfrac{-7}{15}\right)$

(iv) $\dfrac{-3}{8}-\dfrac{7}{11}$ (v) $-2\dfrac{1}{9}-6$

Answer 2:

(i) $\dfrac{7}{24} - \dfrac{17}{36}$

L.C.M of 24 and 36 is 72.

$\dfrac{7}{24} - \dfrac{17}{36} = \dfrac{7 \times 3}{24 \times 3} - \dfrac{17 \times 2}{36 \times 2} = \dfrac{21}{72} - \dfrac{34}{72} = \dfrac{21 - 34}{72} = \dfrac{-13}{72}$

(ii) $\dfrac{5}{63} - \left(\dfrac{-6}{21}\right) = \dfrac{5}{63} + \dfrac{2}{7}$

L.C.M of 63 and 7 is 63.

$\dfrac{5}{63} + \dfrac{2}{7} = \dfrac{5}{63} + \dfrac{2 \times 9}{7 \times 9} = \dfrac{5}{63} + \dfrac{18}{63} = \dfrac{5 + 18}{63} = \dfrac{23}{63}$

(iii) $\dfrac{-6}{13} - \left(\dfrac{-7}{15}\right) = \dfrac{-6}{13} + \dfrac{7}{15}$

L.C.M of 13 and 15 is 195.

$\dfrac{-6}{13} + \dfrac{7}{15} = \dfrac{-6 \times 15}{13 \times 15} + \dfrac{7 \times 13}{15 \times 13} = \dfrac{-90}{195} + \dfrac{91}{195} = \dfrac{-90 + 91}{195} = \dfrac{1}{195}$

(iv) $\dfrac{-3}{8} - \dfrac{7}{11}$

L.C.M of 8 and 11 is 88.

$\dfrac{-3}{8} - \dfrac{7}{11} = \dfrac{3 \times 11}{8 \times 11} - \dfrac{7 \times 8}{11 \times 8} = -\dfrac{33}{88} - \dfrac{56}{88} = \dfrac{-33 - 56}{88} = \dfrac{-89}{88}$

(v) $-2\dfrac{1}{9} - 6 = -\dfrac{19}{9} - \dfrac{6}{1}$

L.C.M of 9 and 1 is 9.

$-\dfrac{19}{9} - \dfrac{6}{1} = -\dfrac{19}{9} - \dfrac{6 \times 9}{1 \times 9} = -\dfrac{19}{9} - \dfrac{54}{9} = \dfrac{-19 - 54}{9} = \dfrac{-73}{9}$

Question 3:

Find the product:

(i) $\dfrac{9}{2} \times \left(\dfrac{-7}{4}\right)$ (ii) $\dfrac{3}{10} \times (-9)$ (iii) $\dfrac{-6}{5} \times \dfrac{9}{11}$

(iv) $\dfrac{3}{7} \times \left(\dfrac{-2}{5}\right)$ (v) $\dfrac{3}{11} \times \dfrac{2}{5}$ (vi) $\dfrac{3}{-5} \times \dfrac{-5}{3}$

Answer 3:

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

(ii) $\dfrac{3}{10} \times (-9) = \dfrac{3}{10} \times \dfrac{(-9)}{1} = \dfrac{3 \times (-9)}{10 \times 1} = \dfrac{-27}{10}$

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

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

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

(vi) $\dfrac{3}{-5} \times \dfrac{-5}{3} = \dfrac{3 \times (-5)}{(-5) \times 3} = \dfrac{-15}{-15} = 1$

Question 4:

Find the value of:

(i) $(-4) \div \dfrac{2}{3}$ (ii) $\dfrac{-3}{5} \div 2$ (iii) $\dfrac{-4}{5} \div (-3)$

(iv) $\dfrac{-1}{8} \div \dfrac{3}{4}$ (v) $\dfrac{-2}{13} \div \dfrac{1}{7}$ (vi) $\dfrac{-7}{12} \div \left(\dfrac{-2}{13}\right)$

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

Answer 4:

(i) $-4 \div \dfrac{2}{3} = -4 \times \dfrac{3}{2} = \dfrac{-12}{2} = -6$

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

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

(iv) $\dfrac{-1}{8} \div \dfrac{3}{4} = \dfrac{-1}{8} \times \dfrac{4}{3} = \dfrac{-1 \times 4}{8 \times 3} = \dfrac{-4}{24} = -\dfrac{1}{6}$

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

(vi) $\dfrac{-7}{12} \div \left(\dfrac{-2}{13}\right) = \dfrac{-7}{12} \times \dfrac{13}{-2} = \dfrac{(-7) \times 13}{12 \times (-2)} = \dfrac{-91}{-24} = \dfrac{91}{24}$

(vii) $\dfrac{3}{13} \div \left(\dfrac{-4}{65}\right) = \dfrac{3}{13} \times \dfrac{65}{-4} = \dfrac{3 \times 65}{13 \times (-4)} = \dfrac{195}{-52} = -\dfrac{15}{4}$