NCERT Solutions for Class 7 Maths Chapter 9

Rational Numbers Class 7

Chapter 9 Rational Numbers Exercise 9.1, 9.2 Solutions

Exercise 9.1 : Solutions of Questions on Page Number : **182**

Q1 :

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 :

(i) - 1 and 0

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

(ii) - 2 and - 1

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

Five rational numbers are

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

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

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

Five rational numbers are

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

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

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

Five rational numbers are

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

Q2 :

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

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

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

Answer :

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

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

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

$\frac{-3\times 5}{5\times 5}, \frac{-3\times 6}{5\times 6}, \frac{-3\times 7}{5\times 7}, \frac{-3\times 8}{5\times 8} \ldots$

$\frac{-15}{25}, \frac{-18}{30}, \frac{-21}{35}, \frac{-24}{40} \ldots$

(ii)

$\frac{-1}{4}, \frac{-2}{8}, \frac{-3}{12} \ldots$

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

The next four rational numbers in this pattern are

$\frac{-1\times 4}{4\times 4}, \frac{-1\times 5}{4\times 5}, \frac{-1\times 6}{4\times 6}, \frac{-1\times 7}{4\times 7} \ldots$

$\frac{-4}{16}, \frac{-5}{20}, \frac{-6}{24}, \frac{-7}{28} \ldots$

(iii)

$\frac{-1}{6}, \frac{2}{-12}, \frac{3}{-18}, \frac{4}{-24} \ldots$

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

The next four rational numbers in this pattern are

$\frac{1\times 5}{-6\times 5}, \frac{1\times 6}{-6\times 6}, \frac{1\times 7}{-6\times 7}, \frac{1\times 8}{-6\times 8} \ldots$

$\frac{5}{-30}, \frac{6}{-36}, \frac{7}{-42}, \frac{8}{-48} \ldots$

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

$\frac{-2}{3}, \frac{2}{-3}, \frac{2\times2}{-3\times2}, \frac{2\times3}{-3\times3} \ldots$

The next four rational numbers in this pattern are

$\frac{2\times4}{-3\times4}, \frac{2\times5}{-3\times5}, \frac{2\times6}{-3\times6}, \frac{2\times7}{-3\times7} \ldots$

$\frac{8}{-12}, \frac{10}{-15}, \frac{12}{-18}, \frac{14}{-21} \ldots$

Q3 :

Give four rational numbers equivalent to:

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

Answer :

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

Four rational numbers are

$\frac{-2\times2}{7\times2}, \frac{-2\times3}{7\times3}, \frac{-2\times4}{7\times4}, \frac{-2\times5}{7\times5}$

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

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

Four rational numbers are

$\frac{5\times2}{-3\times2}, \frac{5\times3}{-3\times3}, \frac{5\times4}{-3\times4}, \frac{5\times5}{-3\times5}$

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

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

Four rational numbers are

$\frac{4\times2}{9\times2}, \frac{4\times3}{9\times3}, \frac{4\times4}{9\times4}, \frac{4\times5}{9\times5}$

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

Q4 :

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

(i) $\frac{3}{4}$ **(ii)** $\frac{-5}{8}$

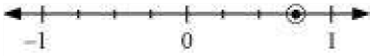
(iii) $\frac{-7}{4}$ **(iv)** $\frac{7}{8}$

Answer :

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

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.

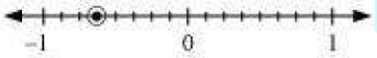
$\frac{3}{4}$ can be represented as



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

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.

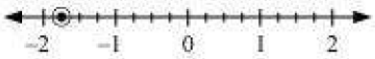
$\frac{-5}{8}$ can be represented as



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

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.

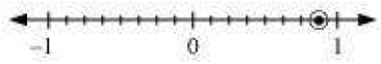
$\frac{-7}{4}$ can be represented as



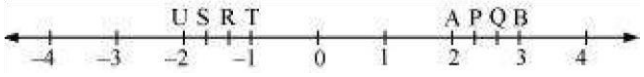
(iv) $\frac{7}{8}$

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.

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



Q5 :



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 :

Distance between U and T = 1 unit

It is divided into 3 equal parts.

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

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

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

Similarly,

AB = 1 unit

It is divided into 3 equal parts.

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

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

Q6 :

Which of the following pairs represent the same rational number?

(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 :

, therefore, it does not represent same rational numbers.

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

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

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

As $\frac{-1}{3}\neq\frac{1}{3}$

Therefore, it represents same rational numbers.

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

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

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

Therefore, it represents same rational numbers.

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

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

Therefore, it represents same rational numbers.

(iv) $-1\frac{-3}{5}$ and $\frac{-12}{20}$

$\frac{20}{5}$

Therefore, it represents same rational numbers.

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

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

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

, therefore, it does not represent same rational numbers.

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

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

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

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

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

Q7 :

Rewrite the following rational numbers in the simplest form:

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

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

Answer :

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

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

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

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

Q8 :

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 :

(i)

$$\frac{-5}{7}=\frac{-5\times3}{7\times3}=\frac{-15}{21}$$
$$\frac{2}{3}=\frac{2\times7}{3\times7}=\frac{14}{21}$$

As - 15 < 14,

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

(ii)

$$\frac{-4}{5}=\frac{-4\times7}{5\times7}=\frac{-28}{35}$$
$$\frac{-5}{7}=\frac{-5\times5}{7\times5}=\frac{-25}{35}$$

As - 28 < - 25

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

(iii) Here, $\frac{14}{-16}=\frac{7\times2}{-8\times2}=\frac{7}{-8}=\frac{-7}{8}$

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

(iv)

$$\frac{-8}{5}=\frac{-8\times4}{5\times4}=\frac{-32}{20}$$
$$\frac{-7}{4}=\frac{-7\times5}{4\times5}=\frac{-35}{20}$$

As - 32 > - 35,

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

(v)

$$\frac{-1}{3}=\frac{-1\times4}{3\times4}=\frac{-4}{12}$$
$$\frac{-1}{4}=\frac{-1\times3}{4\times3}=\frac{-3}{12}$$

As - 4 < - 3,

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

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

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

Q9 :

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 :

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

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

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

(iii)

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

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

By converting these into like fractions,

$$\frac{-3}{4}=\frac{-3\times3}{4\times3}=\frac{-9}{12}$$
$$\frac{-2}{3}=\frac{-2\times4}{3\times4}=\frac{-8}{12}$$

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,

$$\frac{-23}{7}=\frac{-23\times5}{7\times5}=\frac{-115}{35}$$
$$\frac{-19}{5}=\frac{-19\times7}{5\times7}=\frac{-133}{35}$$

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

Q10 :

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 :

(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,

$$\frac{-1\times3}{3\times3},\frac{-2}{9},\frac{-4\times3}{3\times3}$$
$$\frac{-3}{9},\frac{-2}{9},\frac{-12}{9}$$

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,

$$\frac{-3\times4}{7\times4},\frac{-3\times14}{2\times14},\frac{-3\times7}{4\times7}$$
$$\frac{-12}{28},\frac{-42}{28},\frac{-21}{28}$$

As - 42 < - 21 < - 12,

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

Exercise 9.2 : Solutions of Questions on Page Number : **190**

Q1 :

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 :

(i)$45+(-11\ 4)=45-11\ 4=16-5520=-39\ \ 20$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Q2 :
Find

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

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

Answer :

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

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

$$\frac{7}{24}-\frac{17}{36}=\frac{7\times3}{24\times3}-\frac{17\times2}{36\times2}=\frac{21}{72}-\frac{34}{72}=\frac{21-34}{72}=\frac{-13}{72}$$

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

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

$$\frac{5}{63}+\frac{2}{7}=\frac{5}{63}+\frac{2\times9}{7\times9}=\frac{5}{63}+\frac{18}{63}=\frac{5+18}{63}=\frac{23}{63}$$

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

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

$$\frac{-6}{13}+\frac{7}{15}=\frac{-6\times15}{13\times15}+\frac{7\times13}{15\times13}=\frac{-90}{195}+\frac{91}{195}=\frac{-90+91}{195}=\frac{1}{195}$$

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

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

$$\frac{-3}{8}-\frac{7}{11}=-\frac{3\times11}{8\times11}-\frac{7\times8}{11\times8}=-\frac{33}{88}-\frac{56}{88}=\frac{-33-56}{88}=\frac{-89}{88}$$

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

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

$$-\frac{19}{9}-\frac{6}{1}=-\frac{19}{9}-\frac{6\times9}{1\times9}=-\frac{19}{9}-\frac{54}{9}=\frac{-19-54}{9}=\frac{-73}{9}$$

Q3 :

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 :

(i) $\frac{9}{2}\times\left(\frac{-7}{4}\right)=\frac{9\times(-7)}{2\times4}=\frac{-63}{8}$

(ii) $\frac{3}{10}\times(-9)=\frac{3}{10}\times\frac{(-9)}{1}=\frac{3\times(-9)}{10\times1}=\frac{-27}{10}$

(iii) $\frac{-6}{5}\times\frac{9}{11}=\frac{-6\times9}{5\times11}=\frac{-54}{55}$

(iv) $\frac{3}{7}\times\left(\frac{-2}{5}\right)=\frac{3\times(-2)}{7\times5}=\frac{-6}{35}$

(v) $\frac{3}{11}\times\frac{2}{5}=\frac{3\times2}{11\times5}=\frac{6}{55}$

(vi) $\frac{3}{-5}\times\frac{-5}{3}=\frac{3\times(-5)}{(-5)\times3}=\frac{-15}{-15}=1$

Q4 :

Find the value of:

(i) $(-4)\div\frac{2}{3}$ (ii) $\frac{-3}{5}\div2$ (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 :

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

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

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

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

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

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

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