

## Exercise - 2A

1. Rational Numbers: - The numbers which are in the form  $\frac{p}{q}$ ,  $q \neq 0$  and  $p, q$  are integers, are known as rational numbers.

Positive Rational nos.  $\rightarrow \frac{1}{6}, \frac{-2}{-5}, \frac{11}{6}, \frac{-2}{-3}$

Negative Rational nos.  $\rightarrow \frac{-2}{3}, \frac{-4}{-5}, \frac{3}{-2}, \frac{6}{-11}$

A rational no. which is neither positive nor negative is 0.

2. (vi)  $\frac{8}{0}$  and (vii)  $\frac{0}{0}$  are not rational nos., rest all the numbers are rational numbers.

3. (iv)  $\frac{7}{1}$  Here Numerator is 7  
Denominator is 1.

4. (i)  $\frac{-7}{8} \rightarrow$  Negative Rational no.

(ii)  $\frac{-13}{17} \rightarrow$  Negative Rational no.

(iii)  $\frac{-8}{-11} \rightarrow$  Positive rational no.

(iv)  $\frac{0}{8} \rightarrow$  Neither +ve nor -ve rational no.

(v)  $\frac{0}{-7} \rightarrow$  Neither +ve nor -ve rational no.

3

Q. 6. (i) Four equivalent rational no. of  $\frac{3}{10}$  are -

$$\frac{3}{10} \times \frac{2}{2} = \frac{6}{20}$$

$$\frac{3}{10} \times \frac{4}{4} = \frac{12}{40}$$

$$\frac{3}{10} \times \frac{3}{3} = \frac{9}{30}$$

$$\frac{3}{10} \times \frac{5}{5} = \frac{15}{50}$$

(ii) Four ~~real~~ equivalent rational nos. of  $\frac{6}{-13}$  are

$$\frac{6}{-13} = \frac{-13}{-6} \times \frac{2}{2} = \frac{-26}{-12}$$

$$\frac{-13}{-6} \times \frac{3}{3} = \frac{-39}{-18}$$

$$\frac{13}{-6} \times \frac{4}{4} = \frac{52}{-24}$$

$$\frac{13}{-6} \times \frac{5}{5} = \frac{65}{-30}$$

Q. 7. (i)  $\frac{16}{-24} \times \frac{-1}{-1} = \frac{-16}{24}$

(ii)  $\frac{-7}{-12} \times \frac{-1}{-1} = \frac{7}{12}$

8. (i)  $\frac{4}{9}$  with Numerator 24 is

$$\frac{4}{9} \times \frac{6}{6} = \frac{24}{54}$$

(ii)  $\frac{4}{9}$  with Numerator -20 is,

$$\frac{4}{9} \times \frac{-5}{-5} = \frac{-20}{-45}$$

Q. 9.  $\frac{3}{8}$  as rational no. with Denominator 48  
(1)  $\frac{3}{8}$  (D<sup>r</sup>)

$$\frac{3}{8} \times \frac{6}{6} = \frac{18}{48}$$

(2)  $\frac{3}{8}$ , with Denominator -32  
(D<sup>r</sup>)

$$\frac{3}{8} \times \frac{-4}{-4} = \frac{-12}{-32}$$

Q. 12. (1)  $\frac{-48}{36}$  as a rational number

with Numerator -4

Dividing both N<sup>r</sup> and D<sup>r</sup> by 12.

$$\frac{-48}{36} = \frac{-4}{3}$$

$$\begin{array}{r} 2 \overline{) 48} \\ \underline{4} \phantom{0} \\ 2 \phantom{0} \\ \underline{2} \phantom{0} \\ 0 \phantom{0} \\ 12 \end{array}$$

(2)  $\frac{-48}{36}$  as a rational no. with N<sup>r</sup> 8

∴ Dividing both N<sup>r</sup> and D<sup>r</sup>  
by 6

$$\frac{-48}{36} = \frac{-8}{6}$$

$$\begin{array}{r} 2 \overline{) 48} \\ \underline{4} \phantom{0} \\ 2 \phantom{0} \\ \underline{2} \phantom{0} \\ 0 \phantom{0} \\ 12 \end{array}$$

13.  $\frac{78}{-117}$  as a rational number with N<sup>r</sup> -6  
N<sup>r</sup> and D<sup>r</sup>

Dividing both ~~no.~~ by -13

$$\frac{78}{-117} = \frac{-6}{9}$$

$$\begin{array}{r} 2 \overline{) 78} \\ \underline{39} \\ 39 \\ \underline{39} \\ 0 \end{array}$$

$$14. \text{ (vii) } \frac{-69}{115}$$

$$\begin{array}{r} 3 \overline{) 69} \\ \underline{23} \phantom{0} \\ 23 \phantom{0} \\ \underline{23} \\ 0 \end{array} \quad \begin{array}{r} 5 \overline{) 115} \\ \underline{23} \phantom{0} \\ 23 \phantom{0} \\ \underline{23} \\ 0 \end{array}$$

$$= \frac{-3 \times 23}{5 \times 23}$$

$$= -\frac{3}{5}$$

$$\text{(viii) } \frac{155}{-217}$$

$$\begin{array}{r} 5 \overline{) 155} \\ \underline{31} \phantom{0} \\ 31 \phantom{0} \\ \underline{31} \\ 0 \end{array} \quad \begin{array}{r} 7 \overline{) 217} \\ \underline{31} \phantom{0} \\ 31 \phantom{0} \\ \underline{31} \\ 0 \end{array}$$

$$= \frac{5 \times 31}{-7 \times 31} = -\frac{5}{7}$$

$$15. \text{ (i) } -\frac{2}{3} = \frac{14}{x}$$

$$\text{(ii) } \frac{8}{-3} = \frac{x}{6}$$

$$\Rightarrow -2 \times x = 14 \times 3$$

$$\Rightarrow 8 \times 6 = x \times (-3)$$

$$\Rightarrow x = \frac{14 \times 3}{-2}$$

$$\Rightarrow \frac{8 \times 6}{-3} = x$$

$$\Rightarrow x = -21$$

$$\Rightarrow -16 = x$$

$$\Rightarrow x = -16$$

$$\text{(iii) } \frac{5}{9} = \frac{x}{-27}$$

$$\text{(iv) } \frac{-36}{x} = 2$$

$$\Rightarrow 5 \times (-27) = 9 \times x$$

$$\Rightarrow -36 = 2 \times x$$

$$\Rightarrow \frac{-5 \times 27}{9} = x$$

$$\Rightarrow \frac{-36}{2} = x$$

$$\Rightarrow -15 = x$$

$$\Rightarrow -18 = x$$

$$\Rightarrow x = -15$$

$$\Rightarrow x = -18$$

⑥

Exercise - 2B

1.  $\frac{3}{-7}$  or  $\frac{1}{7}$

$\Rightarrow \frac{1}{7} > \frac{3}{-7}$

(ii)  $\frac{11}{-18}$ ,  $\frac{-5}{18}$

$\Rightarrow \frac{-11}{18}$ ,  $\frac{-5}{18}$

$\Rightarrow \frac{-5}{18} > \frac{-11}{18}$

(iii)  $\frac{7}{10}$ ,  $\frac{-9}{10}$

$\Rightarrow \frac{7}{10} > \frac{-9}{10}$

(iv) 0,  $\frac{-3}{4}$

$\Rightarrow 0 > \frac{-3}{4}$

(v)  $\frac{1}{12}$ , 0

$\Rightarrow \frac{1}{12} > 0$

(vi)  $\frac{18}{-19}$ , 0

$\Rightarrow 0 > \frac{18}{-19}$

(vii)  $\frac{7}{8}$ ,  $\frac{11}{16}$

$\Rightarrow \frac{7}{8} \times \frac{2}{2}$ ,  $\frac{11}{16}$

$\Rightarrow \frac{14}{16}$ ,  $\frac{11}{16}$

$\Rightarrow \frac{14}{16} > \frac{11}{16}$

$\Rightarrow \frac{7}{8} > \frac{11}{16}$

(viii)  $\frac{11}{-12}$ ,  $\frac{-10}{11}$

$\Rightarrow \frac{11}{-12} \times \frac{11}{11}$ ,  $\frac{-10}{11} \times \frac{12}{12}$

( $\because$  LCM of 11 & 12 =  $11 \times 12$ )

$\Rightarrow \frac{121}{-132}$ ,  $\frac{-120}{132}$

$\Rightarrow \frac{-120}{132} > \frac{-121}{132}$

$\Rightarrow \frac{-10}{11} > \frac{11}{-12}$

(ix)  $\frac{-13}{5}$  or -4

$\Rightarrow \frac{-13}{5}$ ,  $-4 \times \frac{5}{5}$

$\Rightarrow \frac{-13}{5}$ ,  $\frac{-20}{5}$

$\Rightarrow \frac{-13}{5} > \frac{-20}{5}$

$\Rightarrow \frac{-13}{5} > -4$

(x)  $\frac{17}{-6}$ ,  $\frac{-13}{4}$

$\Rightarrow \frac{17}{-6} \times \frac{2}{2}$ ,  $\frac{-13}{4} \times \frac{3}{3}$

$\Rightarrow \frac{-34}{12}$ ,  $\frac{-39}{12}$

$\Rightarrow \frac{-34}{12} > \frac{-39}{12}$

$\Rightarrow \frac{17}{-6} > \frac{-13}{4}$

$$1. (x1) \frac{7}{-9} \text{ or } \frac{-5}{8}$$

$$\Rightarrow \frac{7}{-9} \times \frac{8}{8} \text{ or } \frac{-5}{8} \times \frac{9}{9}$$

$$\Rightarrow \frac{-56}{72} \text{ or } \frac{-45}{72}$$

$$2) \frac{-45}{72} > \frac{-56}{72}$$

$$2) \frac{-5}{8} > \frac{-7}{9}$$

$$Q.2. (i) \frac{-17}{4} < \frac{-15}{4} \quad (iv) \frac{-5}{12} \geq \frac{7}{-16}$$

$$(ii) 0 < \frac{-1}{-2}$$

$$(iii) \frac{4}{-3} < \frac{-8}{7}$$

$$[2) \frac{4}{-3} \times \frac{7}{7}, \frac{-8}{7} \times \frac{3}{3}$$

$$2) \frac{-28}{21}, \frac{-24}{21}$$

$$2) \frac{-28}{21} < \frac{-24}{21}$$

$$(v) \frac{-7}{8} \geq \frac{-8}{9}$$

$$\Rightarrow \frac{-7}{8} \times \frac{9}{9}, \frac{-8}{9} \times \frac{8}{8}$$

$$\Rightarrow \frac{-63}{72}, \frac{-64}{72}$$

$$2) \frac{-63}{72} > \frac{-64}{72}$$

$$(iv) \frac{-5}{12} \geq \frac{7}{-16}$$

$$[ \text{LCM of } 12, 16 = 48$$

$$\frac{-5}{12} \times \frac{4}{4}, \frac{7}{-16} \times \frac{3}{3}$$

$$\Rightarrow \frac{-20}{48}, \frac{-21}{48}$$

$$2) \frac{-20}{48} > \frac{-21}{48}$$

$$(vi) \frac{1}{-10} < \frac{-4}{-5}$$

$$\Rightarrow \frac{1}{-10}, \frac{4}{-5} \times \frac{2}{2}$$

$$\Rightarrow \frac{1}{-10}, \frac{8}{-10}$$

8

Q.3. (i)  $\frac{3}{4}, \frac{5}{8}, \frac{11}{16}, \frac{21}{32}$  (Ascending order)

LCM of 4, 8, 16, 32 = 32

$\therefore \frac{3}{4} \times \frac{8}{8}, \frac{5}{8} \times \frac{4}{4}, \frac{11}{16} \times \frac{2}{2}, \frac{21}{32}$

$\Rightarrow \frac{24}{32}, \frac{20}{32}, \frac{22}{32}, \frac{21}{32}$

$\Rightarrow \frac{20}{32} < \frac{21}{32} < \frac{22}{32} < \frac{24}{32}$

$\Rightarrow \frac{5}{8} < \frac{21}{32} < \frac{11}{16} < \frac{3}{4}$

(ii)  $-\frac{2}{5}, \frac{7}{-10}, \frac{-8}{15}, \frac{17}{-30}$

LCM of 5, 10, 15, 30 = 30

$\therefore -\frac{2}{5} \times \frac{6}{6}, \frac{7}{-10} \times \frac{3}{3}, \frac{-8}{15} \times \frac{2}{2}, \frac{17}{-30}$

$\Rightarrow \frac{-12}{30}, \frac{-21}{30}, \frac{-16}{30}, \frac{-17}{30}$

$\Rightarrow \frac{-21}{30} < \frac{-17}{30} < \frac{-16}{30} < \frac{-12}{30}$

$\Rightarrow \frac{7}{-10} < \frac{17}{-30} < \frac{-8}{15} < \frac{-2}{5}$

4. (ii)  $\frac{-11}{20}, \frac{3}{-10}, \frac{17}{-30}, \frac{-7}{15}$  (Descending)

LCM of 20, 10, 30, 15 = 60

$$\therefore \frac{-11}{20} \times \frac{3}{3}, \frac{-3}{10} \times \frac{6}{6}, \frac{-17}{30} \times \frac{2}{2}, \frac{-7}{15} \times \frac{4}{4}$$

$$\Rightarrow \frac{-33}{60}, \frac{-18}{60}, \frac{-34}{60}, \frac{-28}{60}$$

$$\Rightarrow \frac{-18}{60} > \frac{-28}{60} > \frac{-33}{60} > \frac{-34}{60}$$

$$\Rightarrow \frac{3}{-10} > \frac{-7}{15} > \frac{-11}{20} > \frac{17}{-30}$$

(iii)  $\frac{9}{-24}, -1, \frac{2}{-3}, \frac{-7}{-6}$  (Descending)

$$= \frac{-9}{24}, \frac{-1}{1}, \frac{-2}{3}, \frac{7}{6}$$

LCM of 24, 1, 3, 6 = 24.

$$\therefore \frac{-9}{24}, \frac{-1}{1} \times \frac{24}{24}, \frac{-2}{3} \times \frac{8}{8}, \frac{7}{6} \times \frac{4}{4}$$

$$\Rightarrow \frac{-9}{24}, \frac{-24}{24}, \frac{-16}{24}, \frac{28}{24}$$

$$\Rightarrow \frac{28}{24} > \frac{-9}{24} > \frac{-16}{24} > \frac{-24}{24}$$

$$\Rightarrow \frac{7}{6} > \frac{-9}{24} > \frac{2}{-3} > -1$$



⑤

Exercise - 2c

1. (i)  $\frac{5}{11} + \frac{4}{11}$

$$= \frac{5+4}{11}$$

$$= \frac{9}{11}$$

(ii)  $\frac{-6}{13} + \frac{8}{13}$

$$= \frac{-6+8}{13}$$

$$= \frac{2}{13}$$

(iv)  $\frac{-8}{15} + \frac{-7}{15}$

$$= \frac{-8+(-7)}{15}$$

$$= \frac{-8-7}{15}$$

$$= \frac{-15}{15}$$

$$= -1$$

(vi)  $\frac{-3}{8} + \frac{5}{-8}$

$$= \frac{-3}{8} + \frac{-5}{8}$$

$$= \frac{-3+(-5)}{8}$$

$$= \frac{-3-5}{8}$$

$$= \frac{-8}{8} = -1$$

Q. 2<sup>(v)</sup>  $\frac{-2}{3} + \frac{3}{4}$

$$= \frac{-2 \times 4 + 3 \times 3}{12} \quad (\text{LCM of 3 and 4} = 12)$$

$$= \frac{-8+9}{12} = \frac{1}{12}$$

(iii)  $\frac{-5}{18} + \frac{11}{27}$

LCM of 18 and 27 = 54

$$= \frac{-5}{18} \times \frac{3}{3} + \frac{11}{27} \times \frac{2}{2}$$

$$= \frac{-15}{54} + \frac{22}{54}$$

$$= \frac{-15+22}{54} = \frac{7}{54}$$

(ii)  $\frac{-4}{9} + \frac{5}{6}$

LCM of 9 and 6 = 18

$$= \frac{-4}{9} \times \frac{2}{2} + \frac{5}{6} \times \frac{3}{3}$$

$$= \frac{-8}{18} + \frac{15}{18}$$

$$= \frac{-8+15}{18} = \frac{7}{18}$$

3. Evaluate:

$$\begin{aligned} \text{(i)} \quad & \frac{2}{-3} + \frac{-4}{9} \\ & = \frac{-2}{3} + \frac{-4}{9} \\ & = \frac{-2 \times 3 + (-4)}{9} \\ & = \frac{-6 - 4}{9} \\ & = \frac{-10}{9} \end{aligned}$$

$$\begin{aligned} \text{(ii)} \quad & \frac{-1}{2} + \frac{-3}{4} \\ & = \frac{-2 + (-3)}{4} \\ & = \frac{-2 - 3}{4} \\ & = \frac{-5}{4} \end{aligned}$$

$$\begin{aligned} \text{(iii)} \quad & \frac{7}{-9} + \frac{-5}{6} \\ & = \frac{-7}{9} \times \frac{2}{2} + \frac{-5}{6} \times \frac{3}{3} \\ & = \frac{-14}{18} + \frac{-15}{18} \\ & = \frac{-14 + (-15)}{18} \\ & = \frac{-14 - 15}{18} = \frac{-29}{18} \end{aligned}$$

$$\begin{aligned} \text{(iv)} \quad & 3 + \frac{-5}{6} \\ & = 3 \times \frac{6}{6} + \frac{-5}{6} \\ & = \frac{18}{6} + \frac{-5}{6} \\ & = \frac{18 - 5}{6} = \frac{13}{6} \end{aligned}$$

$$\begin{aligned} \text{(v)} \quad & -4 + \frac{2}{3} \\ & = -4 \times \frac{3}{3} + \frac{2}{3} \\ & = \frac{-12}{3} + \frac{2}{3} \\ & = \frac{-12 + 2}{3} = \frac{-10}{3} \end{aligned}$$

$$\begin{aligned} \text{4. (i)} \quad & \frac{-3}{8} + \frac{5}{8} + \frac{7}{8} \\ & = \frac{-3 + 5 + 7}{8} \\ & = \frac{9}{8} \end{aligned}$$

$$\begin{aligned} \text{(ii)} \quad & \frac{11}{3} + \frac{-5}{3} + \frac{-2}{3} \\ & = \frac{11 + (-5) + (-2)}{3} \\ & = \frac{11 - 5 - 2}{3} \\ & = \frac{4}{3} \end{aligned}$$

$$4. (iii) -1 + \frac{2}{-3} + \frac{5}{6}$$

$$= -\frac{1}{1} + \frac{-2}{3} + \frac{5}{6}$$

LCM of 1, 3, 6 = 6

$$\therefore -\frac{1}{1} \times \frac{6}{6} + \frac{-2}{3} \times \frac{2}{2} + \frac{5}{6}$$

$$= \frac{-6 - 4 + 5}{6}$$

$$= -\frac{5}{6}$$

$$(iv) \frac{7}{26} + \frac{-11}{13} + 2$$

$$= \frac{7 - 11 \times 2 + 2 \times 26}{26}$$

$$= \frac{7 - 22 + 52}{26}$$

$$= \frac{63 - 22}{26}$$

$$= \frac{41}{26}$$

$$(v) 3 + \frac{-7}{8} + \frac{-3}{4}$$

$$= \frac{3 \times 8 - 7 - 3 \times 2}{8}$$

$$= \frac{24 - 7 - 6}{8}$$

$$= \frac{24 - 13}{8} = \frac{11}{8}$$

$$(vi) \frac{-13}{8} + \frac{7}{16} + \frac{-3}{4}$$

$$= \frac{-13 \times 2 + 7 - 3 \times 4}{16}$$

$$= \frac{-26 + 7 - 12}{16}$$

$$= \frac{-38 + 7}{16}$$

$$= -\frac{31}{16}$$

Exercise - 2A

1. (i) Additive inverse of 9 is -9.

(ii) Additive inverse of  $-\frac{8}{13}$  is  $\frac{8}{13}$ .

(iii) Additive inverse of 0 is 0.

(iv) Additive inverse of  $\frac{5}{-6}$  is  $\frac{5}{6}$ .

Q.2. Subtraction:

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

$$\begin{aligned} & \therefore \frac{1}{2} - \frac{3}{5} \\ & = \frac{5 - 3 \times 2}{10} \\ & = \frac{5 - 6}{10} \\ & = \frac{-1}{10} \end{aligned}$$

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

$$\begin{aligned} & = \frac{2}{3} + \frac{4}{7} \\ & = \frac{2 \times 7 + 4 \times 3}{21} \\ & = \frac{14 + 12}{21} \\ & = \frac{26}{21} \end{aligned}$$

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

$$\begin{aligned} & = \frac{-3}{4} + \frac{5}{6} \\ & = \frac{-9 + 10}{12} \\ & = \frac{1}{12} \end{aligned}$$

(iv)  $0 - \frac{-7}{9}$

$$= 0 + \frac{7}{9} = \frac{7}{9}$$

(v)  $\frac{-6}{11} - 4$

$$\begin{aligned} & = \frac{-6 - 4 \times 11}{11} \\ & = \frac{-6 - 44}{11} = \frac{-50}{11} \end{aligned}$$

Q.3. Evaluate:

(i)  $\frac{5}{6} - \frac{7}{8}$

$$\begin{aligned} & = \frac{5 \times 4 - 7 \times 3}{24} \\ & = \frac{20 - 21}{24} \\ & = \frac{-1}{24} \end{aligned}$$

(ii)  $\frac{11}{15} - \frac{13}{20}$

$$\begin{aligned} & = \frac{11 \times 4 - 13 \times 3}{60} \\ & = \frac{44 - 39}{60} \\ & = \frac{5}{60} \end{aligned}$$

(iii)  $\frac{6}{11} - \frac{-3}{4}$

$$\begin{aligned} & = \frac{6}{11} + \frac{3}{4} \\ & = \frac{6 \times 4 + 3 \times 11}{44} \\ & = \frac{24 + 33}{44} \\ & = \frac{57}{44} \end{aligned}$$

Q.3. (v)  $-\frac{2}{3} - \frac{3}{4}$   
 $= \frac{-2 \times 4 - 3 \times 3}{12}$   
 $= \frac{-8 - 9}{12}$   
 $= \frac{-17}{12}$

Q.4. Sum of two rational nos. =  $-\frac{5}{8}$   
 one no. =  $\frac{7}{16}$   
 $\therefore$  other no. =  $-\frac{5}{8} - \frac{7}{16}$   
 $= \frac{-5 \times 2 - 7}{16}$   
 $= \frac{-10 - 7}{16}$   
 $= \frac{-17}{16}$

Q.6. The sum of two rational nos. =  $-\frac{5}{4}$   
 one no. =  $-3$   
 $\therefore$  other no. =  $-\frac{5}{4} - (-3)$   
 $= -\frac{5}{4} + 3$   
 $= \frac{-5 + 12}{4} = \frac{7}{4}$

Q.7. ATQ,  $-\frac{2}{3} = (-\frac{5}{6})$   
 $= -\frac{2}{3} + \frac{5}{6}$   
 $= \frac{-2 \times 2 + 5}{6}$   
 $= \frac{-4 + 5}{6} = \frac{1}{6}$

Q.8. ATQ,  $-\frac{3}{4} = (-\frac{5}{6})$   
 $= -\frac{3}{4} + \frac{5}{6}$   
 $= \frac{-3 \times 3 + 5 \times 2}{12}$   
 $= \frac{-9 + 10}{12}$   
 $= \frac{1}{12}$

so,  $\frac{1}{6}$  should be added to  $-\frac{5}{6}$  to get  $-\frac{2}{3}$ .

so,  $\frac{1}{12}$  should be subtracted from  $-\frac{3}{4}$  to get  $-\frac{5}{6}$ .

(17)

## Exercise - 2 E

1. Multiply:-

$$(i) \frac{2}{3} \times \frac{4}{5}$$

$$= \frac{2 \times 4}{3 \times 5}$$

$$= \frac{8}{15}$$

$$(ii) \frac{5}{6} \times 35$$

$$= 5 \times 5$$

$$= 25$$

$$(iii) \frac{-3}{4} \times \frac{8}{7}$$

$$= \frac{-3 \times 2}{7}$$

$$= \frac{-6}{7}$$

$$(iv) 7\frac{16}{9} \times \frac{12}{5}$$

$$= \frac{16}{9} \times \frac{12}{5}$$

$$= \frac{16 \times 4}{3 \times 5} = \frac{64}{15}$$

$$(v) \frac{35}{-8} \times \frac{12}{-5}$$

$$= \frac{7 \times 3 \times 2}{8 \times 5}$$

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

$$(vi) 7\frac{32}{5} \times \frac{15}{16}$$

$$= 2 \times 3$$

$$= 6$$

$$(vii) \frac{-8}{15} \times \frac{-15}{3 \times 4}$$

$$= \frac{5}{3 \times 4} = \frac{5}{12}$$

$$Q.2. (i) \frac{7}{3} \times \frac{5}{6}$$

$$= \frac{7}{3 \times 6}$$

$$= \frac{7}{18}$$

$$(ii) \frac{7}{-18} \times \frac{-9}{12}$$

$$= \frac{1}{2} \times \frac{1}{2}$$

$$= \frac{1}{4}$$

$$(iii) -2\frac{4}{7} \times -\frac{8}{7}$$

$$= 4 \times 8$$

$$= 32$$

$$(iv) \frac{8}{-21} \times \frac{-14}{3}$$

$$= \frac{8 \times 2}{3 \times 3} = \frac{16}{9}$$

Q. 3. Simplify:-

(i)  $\frac{5}{12} \times (-36)^{-3}$

=  $5 \times (-3)$   
 $= -15$

(ii)  $\frac{-17}{18} \times 12^2$

=  $\frac{-17 \times 12}{3}$   
 $= \frac{-34}{3}$

(iv)  $-\frac{14}{9} \times \frac{9}{38}$

=  $\frac{-14 \times 9}{4 \times 2}$   
 $= \frac{-9}{2}$

(v)  $-\frac{12}{5} \times (-15)^3$

=  $-12 \times (-3)$   
 $= +36$

(vi)  $-\frac{8}{18} \times \frac{-25}{32}$

=  $\frac{-1 \times (-5)}{3 \times 4}$   
 $= \frac{5}{12}$

4. Simplify:

(i)  $(\frac{2}{5} \times \frac{8}{8}) + (-\frac{3}{7} \times \frac{14}{-15})$

=  $\frac{1}{4} + \frac{2}{5}$   
 $= \frac{5 + 2 \times 4}{20}$   
 $= \frac{5 + 8}{20} = \frac{13}{20}$

(ii)  $(-\frac{14}{3} \times \frac{-12}{7}) + (\frac{-6}{28} \times \frac{3}{8})$

=  $8 + \frac{(-3 \times 3)}{5 \times 4}$   
 $= 8 - \frac{9}{20}$   
 $= \frac{8 \times 20 - 9}{20}$   
 $= \frac{160 - 9}{20}$   
 $= \frac{151}{20}$

(iii)  $(\frac{6^3}{25} \times \frac{-15}{8}) - (\frac{13}{100} \times \frac{-25}{26})$

=  $\frac{3 \times (-3)}{5 \times 4} - \frac{-1}{4 \times 2}$   
 $= \frac{-9}{20} + \frac{1}{8}$   
 $= \frac{-9 \times 2 + 5}{40} = \frac{-18 + 5}{40} = \frac{-13}{40}$

Q.5. Cost of  $3\frac{1}{3}$  kg of rice at the rate Rs  $40\frac{1}{2}$ /kg

$$= \text{Rs } 3\frac{1}{3} \times 40\frac{1}{2}$$

$$= \text{Rs } \frac{10^5}{3} \times \frac{81}{2}$$

$$= \text{Rs } 5 \times 27$$

$$= \text{Rs } 135$$

Q.6. Time =  $2\frac{2}{5}$  hrs.

Speed =  $46\frac{2}{5}$  km/h.

∴ Distance travelled by car = Speed × Time

$$= 46\frac{2}{5} \times 2\frac{2}{5} \text{ km}$$

$$= \frac{28}{8} \times \frac{124}{5} \text{ km}$$

$$= 28 \times 4 \text{ km}$$

$$= 112 \text{ km}$$

Q.7. (i) Multiplicative inverse of  $\frac{5}{6} = \frac{6}{5}$ .

(ii) multiplicative inverse of  $-\frac{3}{7} = -\frac{7}{3}$ .

(iii) multiplicative inverse of  $-8 = -\frac{1}{8}$ .

### Exercise - 2F

1. (i) multiplicative inverse of  $-\frac{23}{16} = -\frac{16}{23}$ .

(ii) multiplicative inverse of  $12 = \frac{1}{12}$ .

(iii) multiplicative inverse of  $-\frac{7}{9} = -\frac{9}{7}$ .



8

Q.2. Evaluate:

$$(i) \frac{7}{12} \div \frac{-4}{3}$$

$$= \frac{7}{12} \times \frac{-3}{4}$$

$$= \frac{-7}{4 \times 4} = \frac{-7}{16}$$

$$(ii) \frac{-12}{25} \div \frac{-5}{6}$$

$$= \frac{-12}{25} \times \frac{-6}{5}$$

$$= \frac{72}{125}$$

$$(iii) \frac{-27}{32} \div \frac{-9}{16}$$

$$= \frac{-27}{32} \times \frac{-16}{9}$$

$$= \frac{-3 \times (-1)}{2} = \frac{3}{2}$$

$$(iv) -18 \div \frac{5}{6}$$

$$= -18 \times \frac{6}{5}$$

$$= \frac{-18 \times 6}{5}$$

$$= \frac{-108}{5}$$

$$(v) \frac{1}{25} \div -5$$

$$= \frac{1}{25} \times \frac{-1}{5}$$

$$= \frac{-1}{125}$$

$$(vi) 26 \div \frac{-1}{13}$$

$$= 26 \times (-13)$$

$$= -338$$

Q.3. Product of two numbers =  $\frac{2}{5}$

One number =  $\frac{-8}{25}$

$$\therefore \text{The other no.} = \frac{2}{5} \div \left(\frac{-8}{25}\right)$$

$$= \frac{2}{5} \times \frac{-25}{8}$$

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

Q. 4. The product of two rational nos. =  $-\frac{2}{3}$

$$\text{One number} = \frac{16}{39}$$

$$\therefore \text{The other number} = -\frac{2}{3} \div \frac{16}{39}$$

$$= -\frac{2}{3} \times \frac{39}{16}$$

$$= -\frac{13}{8}$$

Q. 5. A.T.Q.,  $\frac{3}{5} \div -\frac{9}{35}$

$$= \frac{3}{5} \times \frac{-35}{9}$$

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

So,  $-\frac{9}{35}$  should be multiplied by  $-\frac{7}{3}$  to

get  $\frac{3}{5}$

Q. 6. A.T.Q.,  $-\frac{20}{7} \div \frac{25}{8}$

$$= -\frac{20}{7} \times \frac{8}{25}$$

$$= \frac{-4 \times 8}{7} = \frac{-32}{7}$$

So,  $\frac{25}{8}$  should be multiplied by  $-\frac{32}{7}$

to get  $-\frac{20}{7}$

$$\text{Q. 7. Cost of 17 pencils} = \text{Rs } 59 \frac{1}{2}$$

$$= \text{Rs } \frac{119}{2}$$

$$\therefore \text{Cost of 1 pencil} = \frac{119}{2} \div 17$$

$$= \frac{119}{2} \times \frac{1}{17}$$

$$= \frac{7}{2} = \text{Rs } 3 \frac{1}{2}$$

$$\text{Q. 8. Cost of 20m of ribbon} = \text{Rs } 335$$

$$\therefore \text{ " " " 1m " " } = 335 \div 20$$

$$= \frac{335}{20}$$

$$= \frac{67}{4} = \text{Rs } 16 \frac{3}{4}$$

$$\text{Q. 9. No. of pieces can be cut} = 66 \text{ m} \div 2 \frac{3}{4} \text{ m}$$

$$= 66 \div \frac{11}{4}$$

$$= 66 \times \frac{4}{11}$$

$$= \frac{264}{11}$$

$$= 6 \times 4$$

$$= 24$$

$$\text{Q. (i) } \frac{25}{-5} \div \left( \frac{-5}{6} \right) = -30$$

$$\Rightarrow \frac{x}{-5} \times \frac{-6}{5} = -30$$

$$\Rightarrow x = \frac{5 \times 30 \times 5}{+6}$$

$$= 5 \times 5 = 25$$

$$(13) \frac{6}{4} \div (-8) = -\frac{3}{4}$$

$$[x \div (-8) = -\frac{3}{4}]$$

$$\Rightarrow x \times \frac{-1}{8} = -\frac{3}{4}$$

$$\Rightarrow x = \frac{-3}{4} \times \cancel{-8}^2$$
$$= -3 \times (-2) = 6]$$

$$(14) \frac{-15}{14} \div \frac{-3}{2} = \frac{5}{2} \quad (15) -16 \div \frac{-8}{3} = 6$$

$$\Rightarrow \frac{-15}{14} \div x = \frac{5}{2}$$

$$\Rightarrow \frac{-15}{14} \times \frac{1}{x} = \frac{5}{2}$$

$$\Rightarrow \frac{1}{x} = \frac{5}{2} \times \frac{-14}{15}$$

$$\Rightarrow \frac{1}{x} = -\frac{7}{3}$$

$$\Rightarrow x = -\frac{3}{7}]$$

$$\Rightarrow -16 \div x = 6$$

$$\Rightarrow -16 \times \frac{1}{x} = 6$$

$$\Rightarrow \frac{1}{x} = \frac{6}{-16}$$

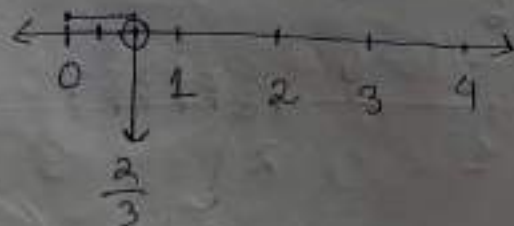
$$\Rightarrow x = \frac{-16}{6} = -\frac{8}{3}$$

$$\Rightarrow x = -\frac{8}{3}]$$

### Exercise - 20

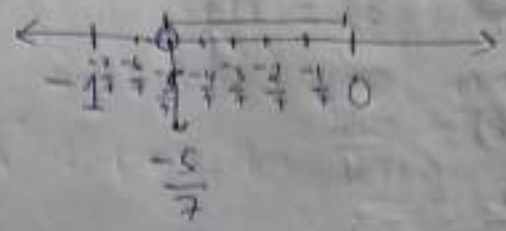
1. Represent on Number line:

1.  $\frac{2}{3}$

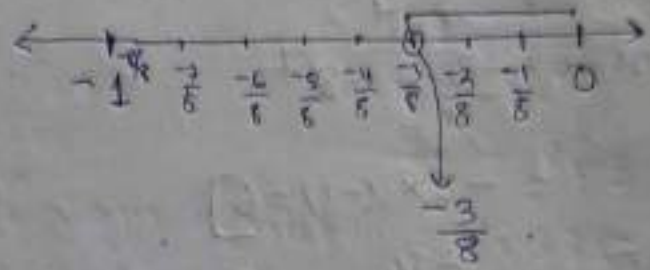


23

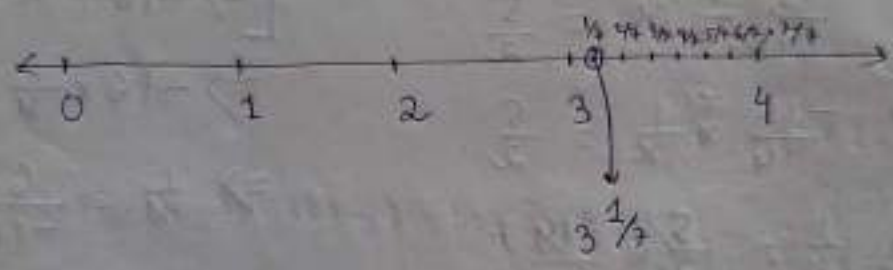
2.  $-\frac{5}{7}$



4.  $-\frac{3}{8}$



5.  $\frac{23}{7} = 3\frac{1}{7}$



6.  $\frac{23}{-5} = -\frac{23}{5} = -4\frac{3}{5}$



9.  $\frac{13}{6} = 2\frac{1}{6}$

