(ii) $\frac{11}{6} + \frac{-2}{5} + \frac{-13}{10}$

$= \frac{55 + (-12) + (-39)}{30}$

$= \frac{55 + (-51)}{30}$

$= \frac{4}{30}$

$= \frac{2}{15}$

2	6, 5, 10
3	3, 5, 5
5	1, 5, 5
	1, 1, 1

LCM = 2 × 3 × 5 = 30.

(iii) $-2 + \frac{-5}{6} + \frac{-7}{18} = \frac{-2}{1} + \frac{-5}{6} + \frac{-7}{18}$

$= \frac{(-36) + (-15) + (-7)}{18}$ (LCM = 18)

$= -\frac{58}{18}$

$= -\frac{58}{18} = -\frac{29}{9}$

(iv) $\frac{11}{3} + \frac{-3}{7} + \frac{-4}{9}$

$= \frac{(11 \times 21) + (-3 \times 9) + (-4 \times 7)}{63}$

$= \frac{231 - 27 - 28}{63}$

$= \frac{231 - 55}{63} = \frac{176}{63}$

LCM

3	3, 7, 9
3	1, 7, 3
7	1, 7, 1
	1, 1, 1

LCM = 3 × 3 × 7 = 63

(V) $\frac{-5}{28} + \frac{4}{7} + \frac{-3}{4}$

$= \frac{(-5)+(4\times4)+(-3\times7)}{28}$

$= \frac{(-5)+16+(-21)}{28}$

$= \frac{16-26}{28}$

$= \frac{-10}{28} = \frac{-10}{28} \; \frac{5}{14}$

$= \frac{-5}{14}$

LCM

4 | 28, 7, 4

7 | 7, 7, 1

1, 1, 1

LCM = 4 x 7

= 28

(VI) $\frac{4}{3} + \frac{-1}{6} + \frac{13}{12}$

$= \frac{(4\times4)+(-1\times2)+13}{12}$

$= \frac{16+(-2)+13}{12}$

$= \frac{29-2}{12}$

$= \frac{27}{12} \; \frac{9}{4} = \frac{9}{4}$

LCM

3 | 3, 6, 12

2 | 1, 2, 4

2 | 1, 1, 2

1, 1, 1

LCM = 3 x 2 x 2

= 12

4: Evaluate:

i. $\left(\frac{-3}{4} + \frac{5}{-4}\right) + \left(\frac{7}{16} + \frac{-9}{16}\right)$

$= \left(\frac{-3}{4} + \frac{(-5)}{4}\right) + \left(\frac{7+(-9)}{16}\right) \quad \left(\because \frac{5}{-4} = \frac{-5}{4}\right)$

$= \frac{(-3)+(-5)}{4} + \frac{7-9}{16}$

$$= \frac{-3-5}{4} + \frac{-2}{16}$$

$$= \frac{-8}{4} + \frac{-2}{16}$$

$$= \frac{(-8 \times 4) + (-2)}{16}$$

$$= \frac{-32-2}{16}$$

$$= \frac{-34}{16} \quad \begin{matrix} 17 \\ 8 \end{matrix}$$

$$= \frac{-17}{8}.$$

(ii) $\left(\frac{11}{5} + \frac{4}{5}\right) + \left(\frac{3}{19} + \frac{16}{19}\right)$

$$= \left(\frac{11+4}{5}\right) + \left(\frac{3+16}{19}\right)$$

$$= \frac{3}{1} + \frac{19}{19} \quad \begin{matrix} 15 \\ 5 \end{matrix} \quad \begin{matrix} 1 \\ 1 \end{matrix}$$

$$= 3 + 1 = 4$$

(iii) $\left(\frac{12}{17} + \frac{9}{-17}\right) + \left(\frac{-4}{5} + \frac{4}{-5}\right)$

$$= \left(\frac{12}{17} + \frac{-9}{17}\right) + \left(\frac{(-4)}{5} + \frac{(-4)}{5}\right)$$

$$= \frac{12-9}{17} + \frac{(-4)+(-4)}{5}$$

$$= \frac{3}{17} + \frac{-8}{5}$$

$$\frac{15 + (-8 \times 17)}{85} = \frac{15 - 136}{85}$$

$$= \frac{-121}{85}$$

(iv) $\left(\frac{1}{7}+\frac{8}{-5}\right)+\left(\frac{-3}{14}+\frac{6}{-35}\right)$

$=\left(\frac{1}{7}+\frac{(-8)}{5}\right)+\left(\frac{-3}{14}+\frac{(-6)}{35}\right)$

$=\left(\frac{5+(-56)}{35}\right)+\frac{-15+(-12)}{70}$

7|14,3
2,5
LCM=7

$=\frac{-51}{35}+\frac{-27}{70}$

$=\frac{(-102)+(-27)}{70}$

$=\frac{-129}{70}$

(5) Fill in the blanks:

(i) $\frac{2}{7}+\frac{\square}{7}=\frac{-9}{7}$

$\frac{2+\square}{7}=\frac{-9}{7}$

$\therefore 2+\square=-9$

$\therefore \square=-9-2=-11$

$\therefore \frac{2}{7}+\frac{-11}{7}=\frac{-9}{7}$

(ii) $\frac{-3}{17}+\frac{4}{17}=\frac{\square}{17}$

$\frac{(-3)+4}{17}=\frac{\square}{17}$

$\therefore (-3)+4=\square$

$\therefore \square=4-3=1$

$\therefore \frac{-3}{17}+\frac{4}{17}=\frac{1}{\square}$

(iii) $\frac{2}{5} + \frac{\square}{15} = \frac{8}{15}$

$\frac{2 \times 3}{5 \times 3} + \frac{\square}{15} = \frac{8}{15}$

$\frac{6}{15} + \frac{\square}{15} = \frac{8}{15}$

$\frac{6 + \square}{15} = \frac{8}{15}$

$\therefore 6 + \square = 8$

$\therefore \square = 8 - 6 = 2$

$\therefore \frac{2}{5} + \frac{\boxed{2}}{15} = \frac{8}{15}$

(iv) $\frac{-3}{7} + \frac{\square}{14} = \frac{-13}{14}$

$\frac{-3 \times 2}{7 \times 2} + \frac{\square}{14} = \frac{-13}{14}$

$\frac{-6}{14} + \frac{\square}{14} = \frac{-13}{14}$

$\frac{-6 + \square}{14} = \frac{-13}{14}$

$\therefore -6 + \square = -13$

$\therefore \square = -13 - (-6)$

$= -13 + 6$

$= 6 - 13$

$= -7$

$\therefore \frac{-6}{14} + \frac{\boxed{-7}}{14} = \frac{-13}{14}$

EXERCISE-4.3

1. Subtract :

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

$$\frac{3}{2} - \frac{2}{5} = \frac{3}{2} + \left(\frac{-2}{5}\right)$$
$$= \frac{15 + (-4)}{10}$$
$$= \frac{11}{10}.$$

(ii) $-\frac{7}{20} - \left(\frac{-14}{5}\right) = -\frac{7}{20} + \frac{14}{5}$
$$= \frac{(-7) + (14 \times 4)}{20}$$
$$= \frac{(-7) + (56)}{20}$$
$$= \frac{49}{20}.$$

(iii) $-\frac{4}{9} - (-6) = -\frac{4}{9} + 6 = -\frac{4}{9} + \frac{6}{1}$
$$= \frac{(-4) + 54}{9}$$
$$= \frac{54 - 4}{9} = \frac{50}{9}$$

(iv) $-\frac{5}{14} - \frac{3}{7} = \frac{-5 - 6}{14} = \frac{-11}{14}$

(v) $\frac{4}{27} - \left(\frac{-13}{9}\right) = \frac{4}{27} + \frac{13}{9} = \frac{4 + 39}{27} = \frac{43}{27}$

(vi) $\frac{-5}{24} - \left(\frac{-9}{16}\right) = \frac{-5}{24} + \frac{9}{16}$
$$= \frac{-10 + 27}{48}$$
$$= \frac{27 - 10}{48} = \frac{17}{48}$$

LCM
8 | 24, 16
2 | 3, 2
3 | 3, 1
1, 1
LCM = 48

(2) Fill in the blanks:

(i) $\frac{6}{11} + \left(\frac{-10}{11}\right) = \frac{\square}{11}$

$\frac{6 + (-10)}{11} = \frac{\square}{11}$

$\therefore 6 - 10 = \square$

$\therefore \square = -4$

$\therefore \frac{6}{11} + \left(\frac{-10}{11}\right) = \frac{\boxed{-4}}{11}$

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

$\frac{-4}{7} + \left(\frac{-\square}{7}\right) = \frac{3}{7}$

$\therefore -4 + (-\square) = 3$

$-4 - \square = 3$

$-\square = 3 - (-4) = 3 + 4 = 7$

$\therefore \square = -7$

$\therefore -\frac{4}{7} - \frac{\boxed{-7}}{7} = \frac{3}{7}$

(iii) $\frac{2}{5} - \frac{\square}{\square} = \frac{-8}{5}$

$\therefore \frac{2}{5} = \frac{-8}{5} + \frac{\square}{\square}$

$\therefore \frac{\square}{\square} = \frac{2}{5} - \left(\frac{-8}{5}\right)$

$\frac{\square}{\square} = \frac{2}{5} + \frac{8}{5} = \frac{2+8}{5} = \frac{10}{5}$

$\therefore \frac{2}{5} - \frac{\boxed{10}}{\boxed{5}} = \frac{-8}{5}$

(iv) $\frac{-16}{5} + \frac{\square}{\square} = 0$.

$$\frac{\square}{\square} = 0 - \left(\frac{-16}{5}\right)$$

$$= 0 + \frac{16}{5}$$

$$= \frac{16}{5}$$

$\therefore \frac{-16}{5} + \boxed{\frac{16}{5}} = 0$.

(v) $\frac{4}{-11} + \left(\frac{-7}{11}\right) = \frac{\square}{\square}$

$\therefore \frac{-4}{11} + \left(\frac{-7}{11}\right) = \frac{\square}{\square}$

$\therefore \frac{(-4) + (-7)}{11} = \frac{\square}{\square}$

$\therefore \frac{-11}{11} = \frac{\square}{\square}$

$\therefore \frac{4}{-11} + \left(\frac{-7}{11}\right) = \boxed{\frac{-11}{11}}$.

(vi)

~~(i)~~ $\frac{-4}{61}$ + Additive inverse of $\frac{-4}{61} = 0$

$\therefore$ Additive inverse of $\frac{-4}{61} = 0 + \frac{4}{61}$

$$= \boxed{\frac{4}{61}}$$

(vii) $0 - \frac{\square}{\square} = \frac{-16}{7}$

$\therefore -\frac{\square}{\square} = \frac{-16}{7} - 0 = \frac{-16}{7}$

$\therefore \frac{\square}{\square} = \frac{16}{7} \Rightarrow 0 - \frac{16}{7} = \frac{-16}{7}$

(viii) $\frac{11}{9} + \frac{\square}{9} = \frac{-15}{9}$

$\therefore \frac{\square}{9} = \frac{-15}{9} - \frac{11}{9}$

$= \frac{-15}{9} + \frac{(-11)}{9}$

$= \frac{-15 + (-11)}{9}$

$= \frac{-15-11}{9} = \frac{-26}{9}$

$\therefore \frac{11}{9} + \frac{(-26)}{9} = \frac{-15}{9}$

(ix) $\frac{2}{3} - \frac{\square}{6} = \frac{11}{6}$

$\frac{2}{3} - \frac{\square}{6} = \frac{11}{6} - \frac{2}{3}$

$= \frac{11}{6} - \frac{2 \times 2}{3 \times 2}$

$= \frac{11}{6} - \frac{4}{6}$

$= \frac{11-4}{6} = \frac{7}{6}$

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

$\therefore \frac{2}{3} - \frac{(-7)}{6} = \frac{11}{6}$

(X) Additive inverse of $0 = 0 - 0 = 0$

0 + Additive inverse of $0 = 0$

$\therefore$ Additive inverse of $0 = 0 - 0$

$= \boxed{0}$

3) Evaluate :

i) $\frac{2}{3} + \frac{6}{7} - \frac{3}{14}$

$= \frac{(2 \times 14) + (6 \times 6) - (3 \times 3)}{42}$

$= \frac{28 + 36 - 9}{42}$

$= \frac{64 - 9}{42} = \frac{55}{42}$

LCM

7 | 3, 7, 14

2 | 3, 1, 2

3 | 3, 1, 1

1, 1, 1

$\therefore$ LCM $= 7 \times 2 \times 3$

$= 42$

ii) $\frac{9}{16} + \left(\frac{-5}{8}\right) - \left(\frac{-3}{4}\right)$

$= \frac{9}{16} - \frac{5}{8} + \frac{3}{4}$

$= \frac{9 - (5 \times 2) + (3 \times 4)}{16}$

$= \frac{9 - 10 + 12}{16}$

$= \frac{21 - 10}{16}$

$= \frac{11}{16}$

LCM

4 | 16, 8, 4

2 | 4, 2, 1

2 | 2, 1, 1

1, 1, 1

$\therefore$ LCM of 16, 8, 4

$= 4 \times 2 \times 2$

$= 16$

iii) $\frac{-4}{25} - \left(\frac{-3}{5}\right) - \frac{7}{10}$

$= \frac{\quad}{50}$

$= \frac{-4}{25} + \frac{3}{5} - \frac{7}{10}$

$= \frac{(-4\times2) + (3\times10) - (7\times5)}{50}$

$= \frac{-8 + 30 - 35}{50}$

$= \frac{-8 - 5}{50} = \frac{-13}{50}$

LCM

5 | 25, 5, 10

2 | 5, 1, 2

5 | 5, 1, 1

1, 1, 1

∴ LCM of 25, 5, 10

$= 5\times2\times5$

$= 50$

iv) $\frac{-5}{7} - \frac{15}{14} + \frac{-9}{28}$

$= \frac{(-5\times4) - (15\times2) + (-9)}{28}$

$= \frac{-20 - 30 - 9}{28}$

$= \frac{-59}{28}$

LCM

7 | 7, 14, 28

2 | 1, 2, 4

2 | 1, 1, 2

1, 1, 1

∴ LCM of 7, 14, 28

$= 2\times2\times7$

$= 28$

v) $\frac{-6}{13} + \frac{7}{13} - \frac{1}{26}$

$= \frac{(-6\times2) + (7\times2) - 1}{26}$

$= \frac{-12 + 14 - 1}{26}$

$= \frac{-13 + 14}{26}$

$= \frac{1}{26}$

LCM

13 | 13, 13, 26

2 | 1, 1, 2

1, 1, 1

∴ LCM of 13, 26

$= 26$

vi, $\frac{-3}{8} - \frac{4}{3} + \frac{7}{-12}$

$= \frac{-3}{8} - \frac{4}{3} - \frac{7}{12}$

$= \frac{(-3\times3) - (4\times8) - (7\times2)}{24}$

$= \frac{-9 - 32 - 14}{24}$

$= \frac{-55}{24}$

LCM

3 | 8, 3, 12

4 | 8, 1, 4

2 | 2, 1, 1

1, 1, 1

$\therefore$ LCM $= 3\times4\times2 = 24$

(4) Sum of $\frac{-2}{3}$ and $\frac{-7}{9} = \frac{-2}{3} + \left(\frac{-7}{9}\right)$

$= \frac{-2}{3} - \frac{7}{9}$

$= \frac{(-2\times3) - 7}{9}$

$= \frac{-6-7}{9}$

$= \frac{-13}{9}$

Sum of $\frac{8}{3}$ and $\frac{-5}{18} = \frac{8}{3} + \left(\frac{-5}{18}\right)$

$= \frac{8}{3} - \frac{5}{18}$

$= \frac{(8\times6) - 5}{18}$

$= \frac{48-5}{18}$

$= \frac{43}{18}$

$\therefore \frac{43}{18} - \left(\frac{-13}{9}\right) = \frac{43}{18} + \frac{13}{9}$

$$= \frac{43 + (13 \times 2)}{18}$$

$$= \frac{43 + 26}{18}$$

$$= \frac{69}{18} \begin{matrix} 23 \\ 6 \end{matrix}$$

$$= \frac{23}{6}$$

5, i) $\frac{-2}{7} + \text{Number} = \frac{9}{14}$

$\therefore$ Number $= \frac{9}{14} - \left(\frac{-2}{7}\right)$

$$= \frac{9}{14} + \frac{2}{7}$$

$$= \frac{9 + (2 \times 2)}{14}$$

$$= \frac{9 + 4}{14}$$

$$= \frac{13}{14}$$

ii) $\frac{-3}{11} + \text{Number} = \frac{-5}{22}$

$\therefore$ Number $= \frac{-5}{22} - \left(\frac{-3}{11}\right)$

$$= \frac{-5}{22} + \frac{3}{11}$$

$$= \frac{-5 + (3 \times 2)}{22}$$

$$= \frac{-5 + 6}{22}$$

$$= \frac{1}{22}$$

(iii) $\frac{-7}{19} + \text{Number} = \frac{3}{38}$

$\therefore \text{Number} = \frac{3}{38} - \left(\frac{-7}{19}\right)$

$= \frac{3}{38} + \frac{7}{19}$

$= \frac{3 + (7 \times 2)}{38}$

$= \frac{3 + 14}{38}$

$= \frac{17}{38}$

(6) $\frac{6}{7} + \text{other number} = \frac{-15}{28}$

$\therefore \text{other number} = \frac{-15}{28} - \frac{6}{7}$

$= \frac{-15 - (4 \times 6)}{28}$

$= \frac{-15 - 24}{28}$

$= \frac{-39}{28}$

7) Rational number $= \frac{-7}{33} - \left(\frac{-9}{11}\right)$

$= -\frac{7}{33} + \frac{9}{11}$

$= \frac{-7 + (9 \times 3)}{33}$

$= \frac{-7 + 27}{33} = \frac{20}{33}$

8) Rational number $= \frac{-7}{4} - \left(\frac{-15}{28}\right)$

$= \frac{-7}{4} + \frac{15}{28}$

$= \frac{(-7 \times 7) + 15}{28}$

$= \frac{-49 + 15}{28}$

$= \frac{-34}{28}$

$= \frac{-17}{14}$

EXERCISE – 4.4

1) Multiply:

i) $\frac{2}{7} \times \frac{3}{5} = \frac{2 \times 3}{7 \times 5} = \frac{6}{35}$

ii) $6 \times \frac{9}{7} = \frac{6}{1} \times \frac{9}{7} = \frac{6 \times 9}{1 \times 7} = \frac{54}{7}$

iii) $\frac{-1}{2} \times \frac{3}{4} = \frac{-1 \times 3}{2 \times 4} = \frac{-3}{8}$

iv) $\frac{-11}{9} \times \frac{9}{11} = \frac{-11 \times 9}{9 \times 11}$

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

$= -1$

(v) $\frac{17}{35} \times \frac{5}{17} = \frac{\cancel{17} \times \cancel{5}^{1}}{\cancel{35}_{7} \times \cancel{17}_{1}} = \frac{1 \times 1}{7 \times 1} = \frac{1}{7}$

(vi) $\frac{8}{35} \times \frac{45}{16} = \frac{\cancel{8}^{1} \times \cancel{45}^{9}}{\cancel{35}_{7} \times \cancel{16}_{2}} = \frac{1 \times 9}{7 \times 2} = \frac{9}{14}$

(2) Simplify:

(i) $\frac{15}{24} \times \left(\frac{-3}{5}\right) \times \frac{12}{7} = \frac{\cancel{3}^{1} \cancel{15} \times (-3) \times \cancel{12}^{1}}{\cancel{12}_{2} \times \cancel{5}_{1} \times 7} = \frac{3 \times (-3) \times 1}{2 \times 1 \times 7} = \frac{-9}{14}$

(ii) $25 \times \left(\frac{-9}{5}\right) \times \frac{30}{18} = \frac{\cancel{5}^{5} \cancel{25} \times (-9) \times \cancel{30}^{10}}{1 \times \cancel{5}_{1} \times \cancel{18}_{6}} = \frac{5 \times (-9) \times 10^{5}}{1 \times 1 \times 6_{3}} = \frac{-\cancel{45}^{15} \times 5}{1 \times \cancel{3}_{1} \times 1} = \frac{-15 \times 5}{1 \times 1 \times 1} = \frac{-75}{1} = -75$

iii, $\frac{27}{16} \times \left(\frac{-24}{9}\right) = \frac{\overset{3}{\cancel{27}} \times \overset{-3}{\cancel{(-24)}}}{\underset{2}{\cancel{16}} \times \underset{1}{\cancel{9}}}$

$= \frac{3 \times -3}{2 \times 1} = \frac{-9}{2}$

iv, $\frac{15}{8} \times \left(\frac{-24}{5}\right) \times \left(\frac{-16}{3}\right) = \frac{\overset{3}{\cancel{15}} \times (-24) \times \overset{-2}{\cancel{(-16)}}}{\underset{1}{\cancel{8}} \times \underset{1}{\cancel{5}} \times \underset{1}{\cancel{2}}}$

$= \frac{1 \times (-24) \times (-2)}{1 \times 1 \times 1} = 48$

v, $\frac{10}{3} \times \frac{81}{5} \times \left(\frac{-125}{2}\right) = \frac{\overset{2}{\cancel{10}} \times 81 \times (-125)}{\underset{1}{\cancel{3}} \times \underset{1}{\cancel{5}} \times \underset{1}{\cancel{2}}}$

$= 1 \times 27 \times (-125)$

$= -3375$

vi, $\frac{17}{35} \times \left(\frac{-5}{34}\right) \times (-4) = \frac{\overset{1}{\cancel{17}} \times \overset{-1}{\cancel{(-5)}} \times \overset{-2}{\cancel{(-4)}}}{\underset{7}{\cancel{35}} \times \underset{2}{\cancel{34}} \times 1}$

$= \frac{1 \times (-1) \times (-2)}{7 \times 1}$

$= \frac{2}{7}$.

3, Evaluate :

i, $\left(\frac{1}{3} + \frac{3}{4}\right) \times \left(\frac{6}{5} + \frac{2}{3}\right)$

$= \left(\frac{4+9}{12}\right) \times \left(\frac{18+10}{15}\right)$

$$= \frac{13}{\cancel{12}_{3}} \times \frac{\cancel{28}^{7}}{15}$$

$$= \frac{13 \times 7}{3 \times 15} = \frac{91}{45}$$

(ii), $\left[\frac{2}{5} \times \left(\frac{-10}{7}\right)\right] + \left[\frac{-7}{2} + \left(\frac{-3}{5}\right)\right]$

$$= \left[\frac{2 \times \cancel{(-10)}^{-2}}{\cancel{5}_{1} \times 7}\right] + \left[\frac{-7}{2} - \frac{3}{5}\right]$$

$$= \left[\frac{2 \times -2}{1 \times 7}\right] + \left[\frac{-35-6}{10}\right]$$

$$= \frac{-4}{7} + \frac{-41}{10}$$

$$= \frac{-4}{7} - \frac{41}{10}$$

$$= \frac{-40-287}{70} = \frac{-327}{70}$$

(iii), $\left[\frac{6}{11} - \left(\frac{2}{55}\right)\right] \times \left[\frac{7}{5} + \left(\frac{-3}{10}\right)\right]$

$$= \left[\frac{6}{11} + \frac{2}{55}\right] \times \left[\frac{7}{5} - \frac{3}{10}\right]$$

$$= \left[\frac{30+2}{55}\right] \times \left[\frac{14-3}{10}\right]$$

$$= \frac{32}{55} \times \frac{11}{10} = \frac{\overset{16}{\cancel{32}} \times 11}{\cancel{55}_{5} \times \cancel{10}_{5}^{1}}$$

$$= \frac{16 \times 1}{5 \times 5} = \frac{16}{25}$$

(iv) $\left[\frac{22}{-9} \times \left(\frac{-6}{11}\right)\right] - \left[\frac{3}{22} \times \frac{8}{11}\right]$

$= \left[\frac{\overset{2}{\cancel{22}} \times \overset{-2}{\cancel{(-6)}}}{\underset{-3}{\cancel{(-9)}} \times \underset{1}{\cancel{11}}}\right] - \left[\frac{3 \times \cancel{8}\,4}{\underset{11}{\cancel{22}} \times 11}\right]$

$= \left[\frac{2 \times (-2)}{(-3) \times 1}\right] - \left[\frac{3 \times 4}{11 \times 11}\right]$

$= \frac{-4}{-3} - \frac{12}{121}$

$= \frac{4}{3} - \frac{12}{121}$

$= \frac{484 - 36}{363}$

$= \frac{448}{363}$

(v) $\left(\frac{11}{12} - \frac{5}{36}\right) \times \left[\frac{-2}{7} - \left(\frac{-5}{4}\right)\right]$

$= \left(\frac{33 - 5}{36}\right) \times \left[\frac{-2}{7} + \frac{5}{4}\right]$

$= \frac{\overset{7}{\cancel{28}}}{\underset{9}{\cancel{36}}} \times \cancel{\left[\frac{-8 + 35}{28}\right]}$

$= \frac{7}{9} \times \frac{27}{28} = \frac{\overset{1}{\cancel{7}} \times \cancel{27}^{3}}{1 \times \cancel{28}_{4}}$

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

vi, $\left(\frac{8}{-5} - \frac{7}{10}\right) \times \left(\frac{-3}{25} + \frac{1}{4}\right)$

$= \left(\frac{-8}{5} - \frac{7}{10}\right) \times \left(\frac{-3}{25} + \frac{1}{4}\right)$

$= \left(\frac{-16-7}{10}\right) \times \left(\frac{-12+25}{100}\right)$

$= \frac{-23}{10} \times \frac{13}{100}$

$= \frac{-23 \times 13}{10 \times 100} = \frac{-299}{1000}$

4. Find the product :

i, $\left(1-\frac{1}{2}\right)\left(1-\frac{1}{3}\right)\left(1-\frac{1}{4}\right) \cdots\cdots \left(1-\frac{1}{10}\right)$

$= \left(\frac{2-1}{2}\right)\left(\frac{3-1}{3}\right)\left(\frac{4-1}{4}\right) \cdots\cdots \left(\frac{10-1}{10}\right)$

$= \frac{1}{2} \times \frac{2}{3} \times \frac{3}{4} \times \cdots\cdots \times \frac{9}{10}$

$= \frac{1 \times 1 \times 1 \times 1 \times \cdots\cdots \times 9}{1 \times 2 \times 3 \times 4 \times \cdots\cdots \times 10}$

$= \frac{1 \times 1 \times 1 \times 1 \times \cdots\cdots \times 1}{1 \times 1 \times 1 \times 1 \times \cdots\cdots \times 10}$

$= \frac{1}{10}$

ii, $\left(1+\frac{1}{2}\right)\left(1+\frac{1}{3}\right)\left(1+\frac{1}{4}\right) \cdots\cdots \left(1+\frac{1}{10}\right)$

$= \left(\frac{2+1}{2}\right)\left(\frac{3+1}{3}\right)\left(\frac{4+1}{4}\right) \cdots\cdots \left(\frac{10+1}{10}\right)$

$$= \frac{3}{2} \times \frac{4}{3} \times \frac{5}{4} \times \cdots\cdots\cdots \times \frac{11}{10}$$

$$= \frac{1 \times 1 \times 1 \times 1 \times \cdots\cdots\cdots \times 1 \times 11}{2 \times 1 \times 1 \times 1 \times \cdots\cdots\cdots \times 1 \times 1}$$

$$= \frac{11}{2}$$

(5) cost of 1 litre milk = ₹ $18\frac{3}{4}$

∴ cost of $4\frac{4}{5}$ litres milk = ₹ $18\frac{3}{4} \times 4\frac{4}{5}$

$$= ₹ \frac{75}{4} \times \frac{24}{5}$$

$$= ₹ \frac{15}{\cancel{75}} \times \frac{\cancel{24}^{6}}{\cancel{4}_{1} \times \cancel{5}_{1}}$$

$$= ₹ 15 \times 6$$

$$= ₹ 90$$

(6) Speed of a car = $55\frac{1}{2}$ km/hr

∴ Distance covered in $12\frac{2}{3}$ hours = $12\frac{2}{3} \times 55\frac{1}{2}$ km

$$= \frac{\cancel{38}^{19}}{\cancel{3}_{1}} \times \frac{\overset{37}{\cancel{111}}}{\cancel{2}} \text{ km}$$

$$= 19 \times 37 \text{ km}$$

$$= 703 \text{ km}.$$

7. Weight of one box $= 24\frac{2}{3}$ kg

$\therefore$ Weight of 9 boxes $= 24\frac{2}{3}$ kg $\times 9$

$= \frac{74}{3} \times 9$ kg

$= \frac{74 \times 9^{3}}{3_{1}}$ kg

$= 74 \times 3$ kg

$= 222$ kg.

EXERCISE – 4.5

1. Divide:

i) $\frac{-4}{7}$ by $\frac{-22}{35} = \frac{-4}{7} \div \frac{-22}{35}$

$= \frac{-4}{7} \times \frac{35}{-22}$

$= \frac{-4}{7} \times \frac{-35}{22}$

$= \frac{(-4) \times (-35)}{7 \times 22}$

$= \frac{{}^{2}\cancel{4} \times \cancel{35}^{5}}{1 \cancel{7} \times \cancel{22}_{11}}$

$= \frac{2 \times 5}{1 \times 11} = \frac{10}{11}$

ii) $\frac{9}{15}$ by $-3 = \frac{9}{15} \div (-3)$.

$= \frac{9}{15} \div \frac{(-3)}{1} = \frac{9}{15} \times \frac{1}{(-3)}$

$= \frac{9}{15} \times \left(\frac{-1}{3}\right)$

$= \frac{3\cancel{9} \times (-1)}{15 \times \cancel{3}_{1}} = \frac{\cancel{3} \times (-1)}{\cancel{15}_{5} \times 1}$

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

(iii) $\frac{-35}{28}$ by $\frac{-10}{49} = \frac{-35}{28} \div \frac{-10}{49}$

$= \frac{-35}{28} \times \frac{49}{-10}$

$= \frac{-35}{25} \times \frac{-49}{10}$

$= \frac{(-\cancel{35}^{-7}) \times (-49)}{\cancel{5}\ \cancel{25} \times 10}$

$= \frac{(-7) \times (-49)}{5 \times 10}$

$= \frac{343}{50}$

(iv) $\frac{4}{-9}$ by $\frac{16}{81} = \frac{4}{-9} \div \frac{16}{81}$

$= \frac{-4}{9} \times \frac{81}{16}$

$= \frac{-1(-\cancel{4}) \times \cancel{81}^{9}}{\cancel{16}\ 4}$

$= \frac{(-1) \times 9}{1 \times 4}$

$= \frac{-9}{4}$

v) ~~$\frac{-48}{5}$~~ $\frac{-48}{5} \div \frac{-16}{15}$

$= \frac{-48}{5} \times \frac{15}{-16}$

$= \frac{-48}{5} \times \frac{-15}{16}$

$= \frac{3\cancel{48} \times \cancel{15}^{3}}{1\cancel{5} \times \cancel{16}_{1}}$

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

vi) $\frac{63}{14} \div \frac{-7}{6} = \frac{63}{14} \times \frac{6}{-7}$

$= \frac{63}{14} \times \frac{(-6)}{7}$

$= \frac{\overset{9}{\cancel{63}} \times (-6)}{7\cancel{14} \times \cancel{7}_{1}}^{-3}$

$= \frac{9 \times (-3)}{7 \times 1} = \frac{-27}{7}$

2. Evaluate:

i) $\left(\frac{5}{11} \times \frac{16}{10}\right) \div \frac{16}{55} = \left(\frac{5}{11} \times \frac{16}{10}\right) \times \frac{55}{16}$

$= \frac{1\cancel{5} \times \cancel{16} \times \cancel{55}^{5}}{1\cancel{1} \times \cancel{10}_{2} \times \cancel{16}_{1}}$

$= \frac{1 \times 1 \times 5}{1 \times 2 \times 1} = \frac{5}{2}$

(ii) $\left(\frac{2}{3}+\frac{7}{6}\right) \div \left(\frac{-5}{18}\right)$

$= \left(\frac{4+7}{6}\right) \div \left(\frac{-5}{18}\right)$

$= \frac{11}{6} \times \frac{18}{-5}$

$= \frac{11 \times \cancel{18}^{3}}{\cancel{6} \times (-5)}$

$= \frac{11 \times 3}{1 \times (-5)} = \frac{33}{-5}$

$= \frac{-33}{5}$

(iii) $\left[\frac{\cancel{35}}{\cancel{18}} \times \left(\frac{-9}{\cancel{5}}\right)\right] \div \left[\frac{-49}{63} \times \left(\frac{-\cancel{18}}{\cancel{24}_{21}}\right)\right]$

$= \left[\frac{\overset{7}{\cancel{35}} \times \overset{-1}{(-9)}}{\underset{2}{\cancel{18}} \times \underset{1}{\cancel{5}}}\right] \div \left[\frac{\overset{-7}{(-49)} \times \overset{-2}{(-18)}}{\underset{7}{63} \times \underset{3}{\cancel{21}}}\right]$

$= \left[\frac{7 \times (-1)}{2 \times 1}\right] \div \left[\frac{(-7) \times (-2)}{7 \times 3}\right]$

$= \frac{-7}{2} \div \frac{14}{21}$

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

$= \frac{-1(-7) \times 21}{2 \times \cancel{14}_{2}}$

$= \frac{(-1) \times 21}{2 \times 2} = \frac{-21}{4}$.