Fractions and Decimals

EXERCISE : 2.1

1.

i) Total 8 parts, 2 were shaded

$\therefore \frac{2}{8}$ th part is shaded i.e $\frac{2}{8} = \frac{1}{4}$.

ii) Total 10 parts, 3 were shaded

$\therefore \frac{3}{10}$ th part is shaded.

iii) Total 12 parts, 5 were shaded.

$\therefore \frac{5}{12}$ th part is shaded.

iv) Total 13 parts, 7 were shaded

$\therefore \frac{7}{13}$ th part is shaded.

2. Let the fraction be x

$$x \times 60 = 35$$

$$x = \frac{35}{60_{12}}^{7}$$

$x = \frac{7}{12}$ th fraction.

3.

i) $2\frac{7}{9} = 2 + \frac{7}{9} = \frac{2\times9+7}{9} = \frac{25}{9}$

ii) $5\frac{4}{11} = 5 + \frac{4}{11} = \frac{5\times11+4}{11} = \frac{59}{11}$.

4.

i) $\frac{73}{8} = \frac{9\times8+1}{8} = 9 + \frac{1}{8} = 9\frac{1}{8}$.

$8\overline{)73}\,(9$
$\underline{72}$
1

ii) $\frac{94}{13} = \frac{13\times7+3}{13} = 7 + \frac{3}{13} = 7\frac{3}{13}$.

$13\overline{)94}\,(7$
$\underline{91}$
3

5.

i) $\frac{3}{7} = \frac{x}{35}$

$3\times35 = 7\times x$

$x = \frac{3\times35}{7}$

$x = 15$ is Missing number

ii) $\frac{5}{x} = \frac{30}{18}$

$5\times18 = 30\times x$

$x = \frac{8\times183}{30_61}$

$x = 3$ is Missing number

iii) $\frac{x}{9} = \frac{56}{72}$

$x \times 72 = 9 \times 56$

$x = \frac{9 \times 56}{72}$

$x = 7$ is missing number

6

i) $\frac{48}{72}$

HCF of 48 and 72 is 24.

Divide the numerator and Denominator of given fraction by 24.

$\frac{48}{72} = \frac{48 \div 24}{72 \div 24} = \frac{2}{3}$.

ii) $\frac{276}{115}$

HCF of 276, 115 is 23.

Divide the numerator and Denominator by 23

$\frac{276}{115} = \frac{276 \div 23}{115 \div 23} = \frac{12}{5}$.

iii) $\frac{72}{336}$

HCF of 72, 336 is 24

Divide numerator and denominator by 24.

$\frac{72}{336} = \frac{72 \div 24}{336 \div 24} = \frac{3}{14}$.

7

i) LCM of 4, 6, 8 is 24

$\frac{3}{4} = \frac{3 \times 6}{4 \times 6} = \frac{18}{24}$

$\frac{5}{6} = \frac{5 \times 4}{6 \times 4} = \frac{20}{24}$

$\frac{7}{8} = \frac{7 \times 3}{8 \times 3} = \frac{21}{24}$.

$2 \mid 4, 6, 8$

$2 \mid 2, 3, 4$

$1, 3, 2$

$= 2 \times 2 \times 2 \times 3$

$= 24$

Thus the given fractions are equivalent to $\frac{18}{24}, \frac{20}{24}, \frac{21}{24}$.

ii) LCM of 25, 10, 40 is 200.

$\frac{7}{25} = \frac{7 \times 8}{25 \times 8} = \frac{56}{200}$

$\frac{9}{10} = \frac{9 \times 20}{10 \times 20} = \frac{180}{200}$

$\frac{19}{40} = \frac{19 \times 5}{40 \times 5} = \frac{95}{200}$.

$5 \mid 25, 10, 40$

$2 \mid 5, 2, 8$

$5, 1, 4$

$= 5 \times 4 \times 5 \times 2$.

$= 200$

Thus the given fractions are equivalent to $\frac{56}{200}, \frac{180}{200}, \frac{95}{200}$ resp

8.

i) LCM of 9, 3, 21 is 63.

$$\frac{2}{9} = \frac{2\times7}{9\times7} = \frac{14}{63}$$

$$\frac{2}{3} = \frac{2\times21}{3\times21} = \frac{42}{63}$$

$$\frac{8}{21} = \frac{8\times3}{21\times3} = \frac{24}{63}.$$

Descending order is $\frac{2}{3}, \frac{8}{21}, \frac{2}{9}$

$3 \mid 9, 3, 21$

$3, 1, 7$

$= 3\times3\times7$

$= 63$

ii) LCM of 5, 7, 10 = 70

$$\frac{1}{5} = \frac{1\times14}{5\times14} = \frac{14}{70}$$

$$\frac{3}{7} = \frac{3\times10}{7\times10} = \frac{30}{70}$$

$$\frac{7}{10} = \frac{7\times7}{10\times7} = \frac{49}{70}$$

Descending order is $\frac{7}{10}, \frac{3}{7}, \frac{1}{5}$.

$5 \mid 5, 7, 10$

$1, 7, 2$

$= 5\times2\times7$

$= 70$

9

i) LCM of 7, 8, 14, 21 is 168

$$\frac{5}{7} = \frac{5\times24}{7\times24} = \frac{120}{168}$$

$$\frac{3}{8} = \frac{3\times21}{8\times21} = \frac{63}{168}.$$

$7 \mid 7, 8, 14, 21$

$2 \mid 1, 8, 2, 3$

$1, 4, 1, 3$

$= 7\times2\times4\times3$

$= 168$

$\frac{9}{14} = \frac{9 \times 12}{14 \times 12} = \frac{108}{168}$

$\frac{20}{21} = \frac{20 \times 8}{21 \times 8} = \frac{160}{168}$

Ascending order is $\frac{3}{8}, \frac{9}{14}, \frac{5}{7}, \frac{20}{21}$.

ii) LCM of 18, 15, 24, 12 is 360.

$\frac{13}{18} = \frac{13 \times 20}{18 \times 20} = \frac{260}{360}$

$\frac{8}{15} = \frac{8 \times 24}{15 \times 24} = \frac{192}{360}$

$\frac{17}{24} = \frac{17 \times 15}{24 \times 15} = \frac{255}{360}$

$\frac{7}{12} = \frac{7 \times 30}{12 \times 30} = \frac{210}{360}$

Ascending order is $\frac{8}{15}, \frac{7}{12}, \frac{17}{24}, \frac{13}{18}$.

3	12, 15, 18, 24
2	4, 5, 6, 8
2	2, 5, 3, 4
	1, 5, 3, 2

$= 3 \times 2 \times 2 \times 5 \times 3 \times 2$

$= 360$

EXERCISE : 2.2

1.

i) $\frac{4}{3} + \frac{7}{8}$

LCM of 3, 8 is 24

$= \frac{4 \times 8 + 7 \times 3}{24}$

$= \frac{32 + 21}{24} = \frac{53}{24}$.

ii) $8\frac{1}{2} - 3\frac{5}{8}$

$8\frac{1}{2} = 8 + \frac{1}{2} = \frac{8 \times 2 + 1}{2} = \frac{16+1}{2} = \frac{17}{2}$

$3\frac{5}{8} = 3 + \frac{5}{8} = \frac{3 \times 8 + 5}{8} = \frac{24+5}{8} = \frac{29}{8}$.

$= \frac{17}{2} - \frac{29}{8}$

$= \frac{17 \times 4 - 29 \times 1}{8}$

$= \frac{68 - 29}{8}$

$= \frac{39}{8}$.

iii) $\frac{5}{12} + \frac{1}{18} - \frac{2}{9}$

LCM of 12, 18, 9 is 36

3	12, 18, 9
3	4, 6, 3
2	4, 2, 1
	2, 1, 1

$$= \frac{5\times3 + 1\times2 - 2\times4}{36}$$

$$= \frac{15+2-8}{36}$$

$$= \frac{9}{36}$$

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

2

i) $7\frac{3}{4} = 7 + \frac{3}{4} = \frac{7\times4+3}{4} = \frac{28+3}{4} = \frac{31}{4}.$

$3\frac{5}{6} = 3 + \frac{5}{6} = \frac{3\times6+5}{6} = \frac{18+5}{6} = \frac{23}{6}.$

$$= \frac{31}{4} - \frac{23}{6} + \frac{7}{8}$$

$$= \frac{31\times6 - 23\times4 + 7\times3}{24}$$

$$= \frac{186 - 92 + 21}{24}$$

$$= \frac{207-92}{24}$$

$$= \frac{115}{24}.$$

2	4, 6, 8
2	2, 3, 4
	1, 3, 2

Lcm = 24

ii) $6\frac{1}{8} = 6 + \frac{1}{8} = \frac{6\times8+1}{8} = \frac{49}{8}$

$2\frac{1}{12} = 2 + \frac{1}{12} = \frac{2\times12+1}{12} = \frac{25}{12}.$

$5\frac{1}{10} = 5 + \frac{1}{10} = \frac{5\times10+1}{10} = \frac{51}{10}$.

$3\frac{7}{25} = 3 + \frac{7}{25} = \frac{3\times25+7}{25} = \frac{75+7}{25} = \frac{82}{25}$.

$= \frac{49}{8} - \frac{25}{12} - \frac{51}{10} + \frac{82}{25}$

$= \frac{49\times75 - 25\times50 - 51\times60 + 82\times24}{600}$

$= \frac{1373}{600}$

2	8, 10, 12, 25
5	4, 5, 6, 25
2	4, 1, 6, 5
	2, 1, 3, 5

LCM = 600.

3. Jaishree studies daily for $5\frac{2}{3}$ hours

i.e $5 + \frac{2}{3} = \frac{5\times3+2}{3} = \frac{17}{3}$ hours

She devotes her time for science and

mathematics $= 2\frac{4}{5} = 2 + \frac{4}{5} = \frac{2\times5+4}{5} = \frac{14}{5}$ hours

Total Time = $\frac{17}{3}$ hrs

Let the time for other subjects be x

$$\frac{14}{5} + x = \frac{17}{3}$$

$$x = \frac{17}{3} - \frac{14}{5}$$

$$x = \frac{17\times5 - 14\times3}{15}$$

$$x = \frac{85 - 42}{15}$$

$x = \frac{43}{15}$ hrs for other subjects

4. Ramesh solved $\frac{2}{7}$ part of an exercise

Reshma solved $\frac{4}{5}$ part

Lcm of 7, 5 is 35

$$\frac{2}{7} = \frac{2 \times 5}{7 \times 5} = \frac{10}{35} \quad ; \quad \frac{4}{5} = \frac{4 \times 7}{5 \times 7} = \frac{28}{35}$$

$$\frac{4}{5} > \frac{2}{7}$$

i.e Ramesh solved lesser part & by $\frac{28}{35} - \frac{10}{35}$ i.e $\frac{18}{35}$ part

5. Sohali had ₹ $35\frac{3}{5}$ i.e $\frac{35 \times 5 + 3}{5} = ₹\frac{178}{5}$

She got ₹ $16\frac{1}{15}$ from her mother

i.e $\frac{16 \times 15 + 1}{15} = ₹\frac{241}{15}$

She spent on food ₹ $28\frac{2}{3} = \frac{28 \times 3 + 2}{3}$

$\therefore$ ₹ $\frac{86}{3}$.

Money left = ?

Total Money she had = ₹ $\frac{178}{5} + \frac{241}{15}$

$= \frac{178 \times 3 + 241 \times 1}{15}$

$= \frac{534 + 241}{15}$

$= \frac{775}{15}$

Out of which she spent ₹ on food i.e $\frac{86}{3}$

∴ Money left = ₹ $\frac{775}{15} - \frac{86}{3}$

$= ₹ \frac{775 \times 1 - 86 \times 5}{15}$

$= ₹ \frac{775 - 430}{15}$

$= \frac{345}{15}$

$= ₹ 23$

∴ She had left with ₹ 23 with her.

EXERCISE : 2.3

1

i) $7 \times \frac{3}{5} = \frac{7 \times 3}{5} = \frac{21}{5}$

ii) $\frac{\cancel{21}}{\cancel{3}} \times \frac{\cancel{3}}{\cancel{14}_2} = \frac{3 \times 3}{2} = \frac{9}{2}$

iii) $3\frac{2}{5} \times 8 = \frac{17}{5} \times 8 = \frac{136}{5}$.

iv) $5 \times 6\frac{3}{4} = 5 \times \frac{27}{4} = \frac{135}{4}$.

2

i) $\frac{2}{\cancel{3}_1} \times \cancel{18}^{6} = 2 \times 6 = 12$

ii) $\frac{1}{2} \times 4\frac{2}{9} = \frac{1}{2} \times \frac{\cancel{38}^{19}}{9} = \frac{19}{9}$

iii) $\frac{5}{8} \times 9\frac{2}{3} = \frac{5}{8} \times \frac{29}{3} = \frac{145}{24}$.

3.

i) $\frac{\cancel{3}}{7} \times \frac{5}{\cancel{9}3} = \frac{5}{7 \times 3} = \frac{5}{21}$

ii) $\frac{2}{5} \times 5\frac{1}{4} = \frac{\cancel{2}^{1}}{5} \times \frac{21}{\cancel{4}2} = \frac{21}{10}$.

iii) $2\frac{1}{3} \times 3\frac{4}{21} = \frac{\cancel{7}}{3} \times \frac{109}{\cancel{21}3} = \frac{109}{9}$

iv) $3\frac{1}{6} \times 7\frac{4}{23} = \frac{19}{\cancel{6}_2} \times \frac{\cancel{165}^{55}}{23} = \frac{19 \times 55}{2 \times 23} = \frac{1045}{46}$.

4.

i) $\frac{1}{3} \times 42 = ₹14$

ii) $\frac{3}{7} \times 5\frac{1}{4} = \frac{3}{7} \times \frac{21}{4} = \frac{3 \times 3}{4} = \frac{9}{4}$ kg

iii) $4\frac{1}{2} \times 5\frac{1}{2} = \frac{9}{2} \times \frac{11}{2} = \frac{99}{4}$ metres

5

i) $\frac{2}{7} \times \frac{3}{42}$; $\frac{3}{8} \times \frac{8}{8}$

$= \frac{3}{7 \times 2}$; $\frac{3 \times 1}{1 \times 8}$

$= \frac{3}{14}$; $\frac{3}{8}$

$2 \mid 8, 14$

$4, 7$

LCM = 56.

$\frac{3}{14} = \frac{3 \times 4}{14 \times 4} = \frac{12}{56}$; $\frac{3}{8} = \frac{3 \times 7}{8 \times 7} = \frac{21}{56}$.

$\therefore 21 > 12$.

$\therefore \frac{3}{8}$ is greater than $\frac{3}{14}$

ii) $\frac{1}{7} \times \frac{3}{7}$; $\frac{2}{8} \times \frac{3}{7}$

$= \frac{1 \times 3}{7}$; $\frac{2 \times 1}{7}$

$= \frac{3}{7}$; $\frac{2}{7}$

As $\frac{3}{7} > \frac{2}{7}$ $(\because 3 > 2)$.

6. Given, 1 metre cloth costs ₹ $31\frac{3}{4} = \frac{31\times4+3}{4} = ₹\frac{127}{4}$

$5\frac{1}{2}$ metres cloth costs = ?

Let it be equal = x.

$5\frac{1}{2} = \frac{5\times2+1}{2} = \frac{11}{2}$.

$$\frac{11/2}{1} = \frac{x}{(127/4)}$$

$$\frac{11}{2} = \frac{x\times4}{127}$$

$$x = \frac{11\times127}{2\times4}$$

$$x = ₹\frac{1397}{8} = ₹174\frac{5}{8}$$

$\therefore 5\frac{1}{2}$ metre cloth costs ₹ $174\frac{5}{8}$.

7 Speed of a car = $105\frac{1}{5}$ kmph

$= \frac{526}{5}$ kmph

Time taken = $3\frac{3}{5}$ hours = $\frac{18}{5}$ hours

Distance = Speed × Time

$= \frac{526}{5} \times \frac{18}{5}$ km

Distance $= \frac{9468}{25}$ km

8. For 1 litre of petrol, the car runs 16 km

For $2\frac{3}{4}$ litres of petrol, the car runs 9 km

Let the car runs be x km

$2\frac{3}{4} = \frac{11}{4}$

i.e $\frac{x}{16} = \frac{11/4}{1}$

$\frac{x}{16} = \frac{11}{4}$

$x = \frac{11 \times 16^{4}}{4}$

$\boxed{x = 44 \text{ km}}$

9. In one hour, Sushant reads $\frac{1}{3}$ part of book

Let In $2\frac{1}{5} = \frac{11}{5}$ hours, he reads x part of book

i.e $\frac{x}{(1/3)} = \frac{(11/5)}{(1)}$

$3x = \frac{11}{5}$

$x = \frac{11}{3 \times 5}$

$\boxed{x = \frac{11}{15}}$ part of book

10.

Gold and Copper Ornament weighs = 52 grams.

Out of which, part of copper is $\frac{2}{13}$ th

Then the Copper weighs = $\frac{2}{\cancel{13}_1} \times \overset{4}{52}$

= 8 gms

Remaining Gold weighs = 52 − 8

= 44 grams

11.

Total no. of Students in a Class = 40.

i) Out of them, Students like to study English = $\frac{1}{5}$ th of Total

$= \frac{1}{5} \times 40$

$= 8$

ii) Students like to study Mathematics = $\frac{2}{5}$ th of Total

$= \frac{2}{\cancel{5}_1} \times \overset{8}{40}$

$= 16.$

iii) Fraction of Total no. of students like to study Science = $1 - \left\{\frac{1}{5} + \frac{2}{5}\right\}$

$= 1 - \left\{\frac{1+2}{5}\right\}$

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

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

$$= \frac{2}{5}.$$

Fraction of Students who like to study Science = $\frac{2}{5}$th of Total

12 A rectangular sheet is having length = $12\frac{1}{2}$ cm = $\frac{25}{2}$ cm = L

Width = B = $10\frac{2}{3}$ cm = $\frac{32}{3}$ cm

i) We know perimeter of rectangle = 2 x (Length + width)

$$= 2 \times \left(\frac{25}{2} + \frac{32}{3}\right)$$

$$= 2 \times \left(\frac{25 \times 3 + 32 \times 2}{6}\right)$$

$$= 2 \times \left(\frac{75 + 64}{6}\right)$$

$$= 2 \times \left(\frac{139}{63}\right)$$

∴ perimeter of Rectangle = $\frac{139}{3}$ cm

ii) Area of rectangle = Length x width

$$= \frac{25}{\cancel{2}_1} \times \frac{\cancel{32}^{16}}{3}$$

$$= \frac{25 \times 16}{3 \times 1}$$

$= \frac{400}{3}$

$= 133\frac{1}{3}\ cm^2$

$3\overline{)400}\,(133$

$\frac{3}{10}$

$\frac{9}{10}$

$\frac{9}{1}$

$\therefore$ Area of rectangle $= 133\frac{1}{3}\ cm^2$.

13.

Part of students are girls $= \frac{25}{54}$.

Then part of students are boys $= 1 - \frac{25}{54}$

$= \frac{54-25}{54}$

$= \frac{29}{54}$.

Given number of boys is 2030.

Let Total no. of students $= x$

Now, $\frac{29}{54} \times x = 2030$.

$x = \frac{2030 \times 54}{29}$

$x = 3780$

$\therefore$ Total no. of students $= 3780$.

No. of girls $=$ Total $-$ No. of boys

$= 3780 - 2030 = 1750$.

14. Let the number of Trees in an orchard = "x"

Given Banana Trees are 148 in number.

Also Orange Trees are $\frac{1}{5}$ th Total

Mango Trees are $\frac{3}{13}$ th Total.

Now, The part of banana Trees $= 1 - \left\{\frac{1}{5} + \frac{3}{13}\right\}$

$$= 1 - \frac{13 + 3\times 5}{65}$$

$$= 1 - \frac{13+15}{65}$$

$$= 1 - \frac{28}{65}$$

$$= \frac{65-28}{65}$$

$$= \frac{37}{65}$$

Now, as banana Trees = 148

$\frac{37}{65}$ th of Total = 148

i.e $\frac{37}{65} \times x = 148$

$$x = \frac{148 \times 65}{37} = 260.$$

$\therefore$ Total no. of Trees in an orchard = 260.

EXERCISE 12.4.

1

i) Reciprocal of $\frac{3}{7} = \frac{1}{(3/7)} = \frac{7}{3}$.

ii) Reciprocal of $\frac{13}{9} = \frac{1}{(\frac{13}{9})} = \frac{9}{13}$.

iii) Reciprocal of $8 = \frac{1}{8}$.

2

i) $14 \div \frac{5}{6} = \frac{14}{(5/6)}$

$= \frac{14 \times 6}{5}$

$= \frac{84}{5} = 16\frac{4}{5}$.

5) 84 (16
5
34
30
4

ii) $5 \div 3\frac{4}{7} = 5 \div \frac{25}{7}$

$= \frac{5}{(25/7)}$

$= \frac{\cancel{5} \times 7}{\cancel{25}5}$

$= \frac{7}{5}$.

iii) $3\frac{1}{5} \div 1\frac{2}{3} = \frac{16}{5} \div \frac{5}{3}$.

$= \frac{16/5}{5/3}$

$= \frac{16}{5} \times \frac{3}{5}$

$= \frac{48}{25} = 1\frac{23}{25}$

25)48 (1
$\frac{25}{23}$

Mixed fraction
= Quotient $\frac{\text{Remainder}}{\text{Divisor}}$

iv) $2\frac{5}{8} \div 1\frac{1}{6} = \frac{21}{8} \div \frac{7}{6}$

$= \frac{21/8}{7/6}$

$= \frac{21^3}{8_4} \times \frac{6^3}{7}$

$= \frac{9}{4} = 2\frac{1}{4}$.

4)9 (2
$\frac{8}{1}$

3. Total length of cloth = $77\frac{1}{2}$ metres

$= \frac{155}{2}$

Each piece of cloth length required = $5\frac{1}{6}$

$= \frac{31}{6}$.

Now Total no. of pieces of cloth = $\frac{155/2}{31/6}$

$= \frac{\overset{5}{\cancel{155}}}{\underset{1}{\cancel{2}}} \times \frac{6^3}{\underset{1}{\cancel{31}}}$

= 15 pieces.

4. Let the number multiplied to $4\frac{7}{8}$ be x

$$4\frac{7}{8} = 4 + \frac{7}{8} = \frac{4\times8+7}{8} = \frac{32+7}{8} = \frac{39}{8}.$$

Required answer $= 87\frac{3}{4}$

i.e $\frac{39}{8} \times x = 87 + \frac{3}{4}$

$$\frac{39x}{8} = \frac{87\times4+3}{4}$$

$$\frac{39x}{8} = \frac{351}{4}$$

$$x = \frac{351 \times 8^{2}}{4_{1} \times 39_{1}}$$

$$x = 9\times2$$

$$\boxed{x = 18}$$

$\therefore$ Number Multiplied = 18

5.

Part of Milk each student gets = $\frac{1}{3}$th of Total

Total Consumption of Milk = $57\frac{2}{3}$ litres

$$= \frac{57\times3+2}{3}$$

$$= \frac{173}{3}.$$

Let the number of students in hostel be 'x'

$\frac{1}{3}$ rd of Total $= 57\frac{2}{3}$.

$$\frac{1}{3} \times x = \frac{173}{3}$$

$$x = \frac{173 \times 3}{3 \times 1}$$

$$x = 173.$$

$\therefore$ Total number of students in hostel $= 173$.

6.

Given Cost of $5\frac{1}{4}$ kg apples $= ₹ 336$.

Let Cost of 1 kg apples $= x$

$$5\frac{1}{4} = 5 + \frac{1}{4} = \frac{5 \times 4 + 1}{4} = \frac{21}{4}.$$

$$\frac{x}{336} = \frac{1}{(21/4)}$$

$$\frac{x}{336} = \frac{4}{21}$$

$$x = \frac{4 \times 336}{21}$$

$$x = 64.$$

$\therefore$ Cost of apples $= ₹64$ per kg

7 Given Area of rectangular plot $= 68\frac{3}{4}$ sq.m

$$= \frac{68 \times 4 + 3}{4}$$

$$= \frac{275}{4} \text{ sq.m}$$

Also Length of Rectangular plot $= 12\frac{1}{2}$ m

$$= \frac{12 \times 2 + 1}{2}$$

$$= \frac{25}{2} \text{ m.}$$

We know Area of rectangle A = Length x width

$$\text{Width} \times \frac{25}{2} = \frac{275}{4}$$

$$\text{width} = \frac{\overset{11}{\cancel{275}} \times \cancel{2}}{\cancel{25} \times \cancel{4}_{2}}$$

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

$\therefore$ Width $= 5\frac{1}{2}$ m

8.

Given Cost of $5\frac{1}{2} = \frac{11}{2}$ kg of sugar $= ₹ 206\frac{1}{4}$

$$= \frac{206 \times 4 + 1}{4}$$

$$= ₹ \frac{825}{4}$$

Let Cost of $8\frac{1}{4} = \frac{33}{4}$ kg of sugar be 'x'.

$$\frac{x}{\left(\frac{825}{4}\right)} = \frac{33/4}{11/2}$$

$$\frac{4x}{825} = \frac{33}{4} \times \frac{2}{11}$$

$$x = \frac{\cancel{33}^{3}}{\underset{2}{\cancel{4}}} \times \frac{\cancel{2}}{\underset{1}{\cancel{11}}} \times \frac{825}{4}$$

$$x = \frac{3 \times 825}{2 \times 4}$$

$$x = 2\frac{2475}{8} = 2\ 309\frac{3}{8}$$

8) 2475 (309
240
75
72
3

$\therefore$ Cost of $8\frac{1}{4}$ kg Sugar = ₹ $309\frac{3}{8}$

9.

In 2 hours, Renu Completed $\frac{2}{3}$ part of work.

Let In $1\frac{1}{4}$ hours, Renu Completes 'x' part of work

$1\frac{1}{4}$ $\quad 1 + \frac{1}{4} = \frac{1 \times 4 + 1}{4} = \frac{5}{4}$

i.e $\quad \frac{x}{(2/3)} = \frac{5/4}{2}$

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

$$\boxed{x = \frac{5}{12}}$$

EXERCISE : 2.5

1

i) $20.03 = 2\times10 + 0\times1 + 0\times\frac{1}{10} + 3\times\frac{1}{100}$

ii) $200.03 = 2\times100 + 0\times10 + 0\times1 + 0\times\frac{1}{10} + 3\times\frac{1}{100}$.

iii) $2.034 = 2\times1 + 0\times\frac{1}{10} + 3\times\frac{1}{100} + 4\times\frac{1}{1000}$.

2

i) place value of digit 2 in 2.56 is $2\times1 = 2$

ii) place value of digit 2 in 21.39 is $2\times10 = 20$

iii) place value of digit 2 in 10.25 is $2\times\frac{1}{10} = \frac{2}{10}$.

iv) place value of digit 2 in 63.352 is $2\times\frac{1}{1000} = \frac{2}{1000}$.

3.

i) $0.8 = \frac{8}{10} = \frac{4}{5}$

ii) $0.225 = \frac{225}{1000} = \frac{9}{40}$

iii) $0.0092 = \frac{92}{10000} = \frac{23}{2500}$

iv) $3.025 = \frac{3025}{1000} = \frac{121}{40}$.

4.

i) $5.05 = \frac{505}{100} = 5 + \frac{5}{100} = 5 + \frac{1}{20} = 5\frac{1}{20}$.

ii) $63.125 = 63 + \frac{125}{1000} = 63 + \frac{1}{8} = 63\frac{1}{8}$.

iii) $17.075 = 17 + \frac{75}{1000} = 17 + \frac{3}{40} = 17\frac{3}{40}$.

iv) $317.0006 = 317 + \frac{6}{10000} = 317 + \frac{3}{5000} = 317\frac{3}{5000}$.

5.

i) $\frac{3}{5} = \frac{3 \times 2}{5 \times 2} = \frac{6}{10} = 0.6$

ii) $\frac{7}{8} = \frac{7 \times 125}{8 \times 125} = \frac{875}{1000} = 0.875$.

iii) $3\frac{5}{16} = \frac{3 \times 16 + 5}{16} = \frac{53}{16} = \frac{53 \times 625}{16 \times 10000} = \frac{33125}{10000} = 3.3125$

iv) $137\frac{13}{625} = 137 + \frac{13}{625} = 137 + \frac{13 \times 16}{625 \times 16} = 137 + \frac{208}{10000}$

$= 137 + 0.0208$

$= 137.0208$.

6.

i) 0.5 or 0.05 are like decimal numbers.

We know that whole number parts of given numbers are equal.

Let us their, digits at tenth place

In both numbers, digits at tenth place in 0.5 is 5 and digits at tenth place in 0.05 is 0.

Since $5 > 0$, so $0.5 > 0.05$.

ii) Given numbers are 7, 0.7

Whole numbers parts of given numbers are not equal

In number 7, the whole number is 7

In number 0.7, the whole number is 0.

Since $7 > 0$, so $7 > 0.7$.

iii) Given numbers are 2.03 or 2.30.

We note that whole number parts of given numbers are equal.

Let us Compare their tenth digits

In 2.03, digit at tenth place is 0

In 2.30, digit at tenth place is 3.

Since $3 > 0$, so $2.30 > 2.03$.

iv) Given numbers are 0.80 or 0.88.

We know that whole number parts of given numbers are equal.

Let us Compare their tenths digits

In both numbers, digits at tenth place = 8

So, we Compare their hundredth place

In 0.80, digit at hundredth place = 0

In 0.88, digit at hundredth place = 8

Since $8 > 0$, so $0.88 > 0.80$.

7 i) Compare whole numbers.

$83 > 38 > 3$ (or) $3 < 38 < 83$.

Compare Tenth digits numbers in 38.02, 38.021, 38.002

In 38.02, the tenth digit is 0

In 38.021, 38.002, the tenth digit is 0

Compare hundredth digits

In 38.02, 38.021, the hundredth digit is 2

But In 38.002, the hundredth digit is 0

Since $0 < 2$, $38.002 < (38.02, 38.021)$

Compare Thousandth's place in 38.020, 38.021

In 38.020, the ~~hundredth~~ Thousandth place is 0

In 38.021, the thousandth place is 1

Since $0 < 1$, so $38.020 < 38.021$

∴ So the ascending order is $3.802 < 38.002 < 38.020 < 38.021 < 83.02$

ii) In all the given numbers except 64.542, all are having 46 as their whole number

So 64.542 is the highest (or) largest number

Comparing tenth digits

In 46.542, the tenth digit is 5

In 46.452, the tenth digit is 4

In 46.254, the tenth digit is 2

Since $2 < 4 < 5$, so $46.254 < 46.452 < 46542$.

Compare hundredth and thousandth place in 46.05, 46.0542

In both numbers hundredth and Tenth digits is same 5, 0

In 46.050, the ~~hundredth~~ thousandth digit is 0

In 46.0542, the thousandth digit is 4

Since $0 < 4$, so $46.050 < 46.0542$

∴ Ascending order is $46.050 < 46.0542 < 46.254 < 46.452 < 46.542 < 64.542$.

8

(i) we know that $5 > 1 > 0$ · (whole numbers)

Now In 1·87, 1·9, 1·78

The tenth digits are 8, 9, 7

Since $9 > 8 > 7$, so $1·9 > 1·87 > 1·78$.

Now In 0·93, 0·39

The tenth digits are 9, 3

Since $9 > 3$, so $0·93 > 0·39$

∴ Descending order is $5·6 > 1·9 > 1·87 > 1·78 > 0·93 > 0·39$

ii) We know that $71 > 20 > 3 > 2 > 0$ in whole number

Compare Tenth digits in 2·01, 2·14

In 2·01, the tenth digit is 0

In 2·14, the tenth digit is 1

Since $1 > 0$, so $2·14 > 2·01$

∴ Descending order is $71·201 > 20·1 > 3·1 > 2·14 > 2·01 > 0·652$.

9

(i) 1 Rupee = 100 paise

So 1 paise = $\frac{1}{100}$ rupee

7 paise = $7 \times \frac{1}{100}$ rupee = $\frac{7}{100}$ rupee

= 0.07 rupee

ii) 77 rupees 77 paise

$= \left[77 + 77 \times \frac{1}{100}\right]$ rupee

$= \left[77 + \frac{77}{100}\right]$ rupee

$= [77 + 0.77]$ rupee

= 77.77 rupee.

iii) 235 paise = $235 \times \frac{1}{100}$ rupee = 2.35 rupee

10. We know 1m = 100cm $\Rightarrow$ 1cm = $\frac{1}{100}$ m

1 km = 1000 m $\Rightarrow$ 1m = $\frac{1}{1000}$ km

5cm = $5 \times \frac{1}{100}$ m = 0.05 m

0.05 m = $\frac{5}{100}$ m = $\frac{5}{100} \times \frac{1}{1000}$ km = 0.00005 km

11. We know $1kg = 1000g$

So $1g = \frac{1}{1000} kg$

i) $200g = 200 \times \frac{1}{1000} kg = \frac{2}{10} kg = 0.2 kg$

ii) $3470g = 3470 \times \frac{1}{1000} kg = \frac{347}{100} kg = 3.47 kg$

iii) $4kg\ 8g = (4 + \frac{8}{1000}) kg = (4 + 0.008) kg = 4.008 kg$

12 i) Sum = $5.765 + 9.2 + 3.08$

$$\begin{array}{r} {\scriptstyle ①\ ①} \\ 5.765 \\ +\ 9.200 \\ +\ 3.080 \\ \hline 18.045 \end{array}$$

ii)

$$\begin{array}{r} {\scriptstyle ②②\ ①①} \\ 15.4900 \\ +\ 8.3572 \\ +\ 0.9030 \\ +\ 7.8000 \\ \hline 32.5502 \end{array}$$

13.

i)

$$\begin{array}{r} 72.530 \\ -\ 46.782 \\ \hline 25.748 \end{array}$$

ii) Group the positive and negative numbers seperately

Positive numbers

18.376

Negative numbers

$$\begin{array}{r} {\scriptstyle ①\ ①} \\ 5.4300 \\ +8.8976 \\ \hline 14.3276 \end{array}$$

$$\begin{array}{r} 18.3760 \\ -\ 14.3276 \\ \hline \end{array}$$

Ans = 4.0484

iii) Positive number

28.5

Negative numbers

$$\begin{array}{r} 9.\overset{①}{7}08 \\ +\ 6.234 \\ \hline 15.942 \end{array}$$

$$\begin{array}{r} 28.500 \\ -\ 15.942 \\ \hline \end{array}$$

Ans = 12.558

iv) Positive numbers

$$\begin{array}{r} 8.20 \\ 2.67 \\ \hline 10.87 \end{array}$$

Negative Numbers

$$\begin{array}{r} {\scriptstyle ①\ ①} \\ 4.5600 \\ +0.7912 \\ \hline 5.3512 \end{array}$$

$$\begin{array}{r} 10.8700 \\ -\ 5.3512 \\ \hline \end{array}$$

Ans = 5.5188

14

i) Let the number added = x

$$x + 3.56 = 13.016$$

$$x = 13.016 - 3.56$$

$$\begin{array}{r} 13.016 \\ -\ 3.560 \\ \hline 9.456 \end{array}$$

$$\boxed{x = 9.456}$$

ii) Let the number substracted be x

$$30 - x = 23.709$$

$$x = 30 - 23.709$$

$$\begin{array}{r} 30.000 \\ -\ 23.709 \\ \hline 6.291 \end{array}$$

$$\boxed{x = 6.291}$$

iii) Excess of 20.4 over 9.9403 is

$$= 20.4 - 9.9403$$

$$\begin{array}{r} 20.4000 \\ -\ 9.9403 \\ \hline 10.4597 \end{array}$$

EXERCISE : 2.6 .

1

i) $2.7 \times 4 = \frac{27}{10} \times 4$

$= \frac{108}{10} = 10.8$.

$\begin{array}{r} 27 \\ \times 4 \\ \hline 108 \end{array}$

ii) $2.31 \times 5 = \frac{231}{100} \times 5$

$= \frac{1155}{100} = 13.55$.

$\begin{array}{r} 231 \\ \times 5 \\ \hline 1155 \end{array}$ 3

iii. $2.5 \times 0.3 = \frac{25}{10} \times \frac{3}{10}$

$= \frac{75}{100} = 0.75$

iv) $2.3 \times 4.35 = \frac{23}{10} \times \frac{435}{100}$

$= \frac{10005}{1000} = 10.005$.

$\begin{array}{r} 435 \\ \times 23 \\ \hline 1305 \\ 870\times \\ \hline 10005 \end{array}$ x1 1

v) $238.06 \times 7.5 = \frac{23806}{100} \times \frac{75}{10} = \frac{1785450}{1000} = 1785.45$.

vi) $0.79 \times 32.4 = \frac{79}{100} \times \frac{324}{10} = \frac{25,596}{1000} = 25.596$.

vii) $1.07 \times 0.02 = \frac{107}{100} \times \frac{2}{100} = \frac{214}{10000} = 0.0214$.

viii) $10.05 \times 1.05 = \frac{1005}{100} \times \frac{105}{100} = \frac{105525}{10000} = 10.5525$.

2

i)
$$4\overline{)10.8} = 2.7$$
$$\begin{array}{r} 2.7 \\ 4\overline{)10.8} \\ 8 \\ \hline 2.8 \\ 28 \\ \hline 0 \end{array}$$

ii) $126.35 \div 7$

$$\begin{array}{r} 18.05 \\ 7\overline{)126.35} \\ 7 \\ \hline 563 \\ 560 \\ \hline 35 \\ 35 \\ \hline 0 \end{array}$$

Ans = 18.05

iii) $22.5 \div 1.5 = \frac{22.5}{1.5} \times \frac{10}{10} = \frac{225}{15}$

$$\begin{array}{r} 15 \\ 15\overline{)225} \\ 15 \\ \hline 75 \\ 75 \\ \hline 0 \end{array}$$

Hence, $22.5 \div 1.5 = 15$.

iv) $4.28 \div 0.02 = \frac{4.28}{0.02} \times \frac{100}{100} = \frac{428}{2}$

$$\begin{array}{r} 214 \\ 2\overline{)428} \\ 4 \\ \hline 2 \\ 2 \\ \hline 8 \\ 8 \\ \hline 0 \end{array}$$

Hence, $4.28 \div 0.02 = 214$.

v) $3.645 \div 1.35 = \frac{3.645}{1.350} \times \frac{1000}{1000} = \frac{3645}{1350}$

$$
\begin{array}{r}
2.7 \\
1350\overline{)3645} \\
\underline{2700} \\
9450 \\
\underline{9450} \\
0
\end{array}
$$

Hence, $3.645 \div 1.35 = 2.7$

vi. $0.728 \div 0.04 = \frac{0.728}{0.040} \times \frac{1000}{1000} = \frac{728}{40}$

$$= \frac{182}{10}$$

$$= 18.2$$

vii. $13.06 \div 0.08 = \frac{13.06}{0.08} \times \frac{100}{100} = \frac{1306}{8}$

$$
\begin{array}{r}
163.25 \\
8\overline{)1306} \\
\underline{8} \\
50 \\
\underline{48} \\
26 \\
\underline{24} \\
20 \\
\underline{16} \\
40 \\
\underline{40} \\
0
\end{array}
$$

Hence, $13.06 \div 0.08 = 163.25$.

viii) $58.635 \div 4.5 = \frac{58.635}{4.500} \times \frac{1000}{1000} = \frac{58635}{4500}$

$$
\begin{array}{r}
13.03 \\
4500\overline{)58635} \\
4500 \\
\hline
13635 \\
13500 \\
\hline
13500 \\
13500 \\
\hline
0
\end{array}
$$

Hence, $58.635 \div 4.5 = 13.03$.

3.

i) $5.9 \times 10 = 59$ To Multiply by 10, shift decimal point to the right by one place

$5.9 \times 100 = 590$

$5.9 \times 1000 = 5900$

ii) $3.76 \times 10 = 37.6$

$3.76 \times 100 = 376$

$3.76 \times 1000 = 3760$

iii) $0.549 \times 10 = 5.49$

$0.549 \times 100 = 54.9$

$0.549 \times 1000 = 549$

4. To divide a decimal number by 10, 100, 1000, shift decimal point to the left by one, Two, three places.

i) $4.8 \div 10 = 0.48$ $4.8 \div 1000 = 0.0048$

$4.8 \div 100 = 0.048$

ii) $38.53 \div 10 = 3.853$

$38.53 \div 100 = 0.3853$

$38.53 \div 1000 = 0.03853$

iii) $128.9 \div 10 = 12.89$

$128.9 \div 100 = 1.289$

$128.9 \div 1000 = 0.1289$

5. Given Length = 5.7 cm ; Breadth = 3.5 cm

Area of Rectangle A = Length x Breadth

$= 5.7 \times 3.5$

$= \frac{57}{10} \times \frac{35}{10}$

$= \frac{1995}{100}$

$= 19.95 \text{ cm}^2$.

6. Given, Cost of one metre cloth is ₹ 38.50

Cost of 3.6 metre cloth is 3.6×38.5

$= \frac{36}{10} \times \frac{385}{10}$

$= \frac{13860}{100}$

$= ₹ 138.60$.

7. One litre of petrol covers distance = 45.3 km

5.9 litres of petrol covers distance = 5.9×45.3 km

$= \frac{59}{10} \times \frac{453}{10}$ km

$= \frac{26727}{100}$ km

$= 267.27$ km.

8. 1 kg of pure milk contains = 0.245 kg fat

12.8 kg of milk contains = 12.8×0.245

$= \frac{128}{10} \times \frac{245}{1000}$

$= \frac{31360}{10000}$

$= 3.136$ kg

9. 6 children shared equally.

Total rupees with them are ₹ 242.46.

Then each children shared = ₹ $\frac{242.46}{6}$

$= \frac{(\frac{24246}{100})}{6}$

$= ₹ \frac{24246}{100 \times 6}$

$= ₹ \frac{4041}{100}$

$= ₹ 40.41$

$$\begin{array}{r} 4041 \\ 6\overline{)24246} \\ \underline{240} \\ 24 \\ \underline{24} \\ 6 \\ \underline{6} \\ 0 \end{array}$$

∴ Each Children shared ₹ 40.41.

10. 2.4 litres of petrol covers a distance = 43.2 km.

one litre of petrol covers a distance = $\frac{43.2}{2.4}$ km

$= \frac{432/10}{24/10}$

$= \frac{432}{10} \times \frac{10}{24}$

$= \frac{432}{24}$

$= 18$ km

$$\begin{array}{r} 18 \\ 24\overline{)432} \\ \underline{24} \\ 192 \\ \underline{192} \\ 0 \end{array}$$

11. Total 8.4 litres of ice cream.

one cone can be filled with 35 millilitres of ice cream

Number of ice cream cones can be filled

$= \frac{8.4 \times 1000 \text{ ml}}{35 \text{ ml}}$ (As 1 litre = 1000 ml)

$= \frac{8400}{35}$

$$
\begin{array}{r}
240 \\
35 \overline{)8400} \\
70 \\
\hline
1400 \\
1400 \\
\hline
0 \\
\hline
\end{array}
$$

Number of ice cream cones = 240.

12. Product of two decimal numbers = 38.745

one of the number is 2.7

Let the other number be x

i.e $x \times 2.7 = 38.745$

$$x = \frac{38.745}{2.7}$$

$$x = \frac{38745/1000}{27/10}$$

$$x = \frac{38745}{1000} \times \frac{10}{27}$$

$$
\begin{array}{r}
1435 \\
27 \overline{)38745} \\
27 \\
\hline
117 \\
108 \\
\hline
94 \\
81 \\
\hline
135 \\
135 \\
\hline
\end{array}
$$

$$x = \frac{1435}{100}$$

$$x = 14.35$$

The other number is 14.35.

13. Let the number be "x"

Given $\frac{2}{3}$ of a number is 10

i.e $\frac{2}{3} \times x = 10$

$$x = \frac{10^5 \times 3}{2}$$

$$x = 15$$

The number $x = 15$

∴ Now 1.35 times of number $= 1.35 \times 15$

$$= \frac{135}{100} \times 15$$

$$= \frac{2625}{100}$$

$$= 20.25.$$

EXERCISE : 2.7

1

i) $1\frac{1}{9} = 1 + \frac{1}{9} = \frac{9+1}{9} = \frac{10}{9}$

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

$\frac{3}{5}$ of $1\frac{1}{9} = \frac{3^{1}}{81} \times \frac{10^{2}}{93} = \frac{2}{3}$

So $\frac{2}{3} + \frac{7}{2} = \frac{2\times2 + 7\times3}{6} = \frac{4+21}{6} = \frac{25}{6} = 4\frac{1}{6}$.

ii) $2\frac{3}{8} = 2 + \frac{3}{8} = \frac{16+3}{8} = \frac{19}{8}$

$\frac{4}{5} \times 2\frac{3}{8} = \frac{4^{1}}{5} \times \frac{19}{8_{2}} = \frac{19}{10}$.

$2 \times \frac{3}{5} = \frac{6}{5} \times \frac{2}{2} = \frac{12}{10}$.

So, $\frac{19}{10} - \frac{12}{10} = \frac{19-12}{10} = \frac{7}{10}$.

iii) $\frac{4}{5} + 2 = \frac{4 + 2\times5}{5} = \frac{4+10}{5} = \frac{14}{5}$

$3 - \frac{2}{3} = \frac{3\times3 - 2}{3} = \frac{9-2}{3} = \frac{7}{3}$.

So, $\frac{14}{5} \times \frac{7}{3} = \frac{98}{15} = 6\frac{8}{15}$.

15)98(6
90
8

2

i) $2\frac{2}{7} = 2 + \frac{2}{7} = \frac{2\times7+2}{7} = \frac{16}{7}$.

$\frac{1}{4}$ of $\frac{22}{7} = \frac{1}{4} \times \frac{16^{4}}{7} = \frac{4}{7}$.

So, $\frac{4}{7} \div \frac{3}{5} = \frac{4/7}{3/5}$

$= \frac{4}{7} \times \frac{5}{3} = \frac{20}{21}$.

ii) $\frac{3}{7} \div \frac{1}{2} = \frac{3/7}{1/2} = \frac{3}{7} \times 2 = \frac{6}{7}$.

So $\frac{6}{7} \div \frac{7}{8} = \frac{6/7}{7/8} = \frac{6}{7} \times \frac{8}{7} = \frac{48}{49}$.

iii) $\frac{5}{8} \div \frac{3}{4} = \frac{5/8}{3/4} = \frac{5}{8_{2}} \times \frac{4}{3} = \frac{5}{6}$.

So, $\frac{5}{6} + \frac{2}{5} = \frac{5\times5+2\times6}{30} = \frac{25+12}{30} = \frac{37}{30} = 1\frac{7}{30}$.

3

i) $4\frac{1}{2} = 4 + \frac{1}{2} = \frac{4\times2+1}{2} = \frac{9}{2}$.

$2\frac{2}{3} = 2 + \frac{2}{3} = \frac{2\times3+2}{3} = \frac{8}{3}$.

$5\frac{1}{2} = 5 + \frac{1}{2} = \frac{5\times2+1}{2} = \frac{11}{2}$.

$3\frac{5}{6} = 3 + \frac{5}{6} = \frac{3\times6+5}{6} = \frac{18+5}{6} = \frac{23}{6}$.

$(4\frac{1}{2} - 2\frac{2}{3}) = \frac{9}{2} - \frac{8}{3} = \frac{9\times3 - 8\times2}{6} = \frac{27-16}{6} = \frac{11}{6}$.

$5\frac{1}{2}$ of $3\frac{5}{6} = \frac{11}{2} \times \frac{23}{6} = \frac{253}{12}$.

So, therefore $\frac{11}{6} \div \frac{7}{12} + \frac{253}{12}$

$= \frac{11}{\cancel{6}} \times \frac{\cancel{12}^{2}}{7} + \frac{253}{12}$

$= \frac{22}{7} + \frac{253}{12}$

$= \frac{22\times12 + 253\times7}{84}$

$= \frac{2075}{84}$

$= 24\frac{19}{84}$.

ii) $5\frac{1}{3} = 5 + \frac{1}{3} = \frac{5\times3+1}{3} = \frac{16}{3}$.

$2\frac{1}{2} = 2 + \frac{1}{2} = \frac{2\times2+1}{2} = \frac{5}{2}$.

$\left(\frac{1}{2} + \frac{1}{3}\right) \div \left(\frac{1}{4} - \frac{1}{6}\right) - \left[8 - \left\{5\frac{1}{3} - \left(3 - 2\frac{1}{2}\right)\right\}\right]$

$= \left(\frac{3+2}{6}\right) \div \left(\frac{3-2}{12}\right) - \left[8 - \left\{\frac{16}{3} - \left(3 - \frac{5}{2}\right)\right\}\right]$

$= \left(\frac{5}{6}\right) \div \left(\frac{1}{12}\right) - \left[8 - \left\{\frac{16}{3} - \left(\frac{6-5}{2}\right)\right\}\right]$

$(4\frac{1}{2} - 2\frac{2}{3}) = \frac{9}{2} - \frac{8}{3} = \frac{9\times3 - 8\times2}{6} = \frac{27-16}{6} = \frac{11}{6}$.

$5\frac{1}{2}$ of $3\frac{5}{6} = \frac{11}{2} \times \frac{23}{6} = \frac{253}{12}$.

So, therefore $\frac{11}{6} \div \frac{7}{12} + \frac{253}{12}$

$= \frac{11}{\cancel{6}} \times \frac{12^{2}}{7} + \frac{253}{12}$

$= \frac{22}{7} + \frac{253}{12}$

$= \frac{22\times12 + 253\times7}{84}$

$= \frac{2075}{84}$

$= 24\frac{19}{84}$.

ii) $5\frac{1}{3} = 5 + \frac{1}{3} = \frac{5\times3+1}{3} = \frac{16}{3}$.

$2\frac{1}{2} = 2 + \frac{1}{2} = \frac{2\times2+1}{2} = \frac{5}{2}$.

$\left(\frac{1}{2} + \frac{1}{3}\right) \div \left(\frac{1}{4} - \frac{1}{6}\right) - \left[8 - \left\{5\frac{1}{3} - \left(3 - 2\frac{1}{2}\right)\right\}\right]$

$= \left(\frac{3+2}{6}\right) \div \left(\frac{3-2}{12}\right) - \left[8 - \left\{\frac{16}{3} - \left(3 - \frac{5}{2}\right)\right\}\right]$

$= \left(\frac{5}{6}\right) \div \left(\frac{1}{12}\right) - \left[8 - \left\{\frac{16}{3} - \left(\frac{6-5}{2}\right)\right\}\right]$

$= \frac{5/6}{1/12} - \left[8 - \left(\frac{16}{3} - \frac{1}{2}\right)\right]$

$= \frac{5}{6} \times 12^{2} - \left[8 - \left(\frac{16 \times 2 - 3 \times 1}{6}\right)\right]$

$= 10 - \left[8 - \left(\frac{32-3}{6}\right)\right]$

$= 10 - \left[8 - \frac{29}{6}\right]$

$= 10 - \left[\frac{8 \times 6 - 29}{6}\right]$

$= 10 - \frac{48-29}{6}$

$= 10 - \frac{19}{6}$

$= \frac{60-19}{6}$

$= \frac{41}{6} = 6\frac{5}{6}$

4

(i) $2.3 - \left[1.89 - \left\{3.6 - (2.7 - 0.8 - 0.03)\right\}\right]$

$= 2.3 - \left[1.89 - \left\{3.6 - (2.7 - 0.77)\right\}\right]$

$= 2.3 - \left[1.89 - \left\{3.6 - 1.93\right\}\right]$

$= 2.3 - \left[1.89 - 1.67\right]$

$= 2.3 - 0.22$

$= 2.08$

$0.80 - 0.03 = 0.77$

$2.70 - 0.77 = 1.93$

$3.60 - 1.93 = 1.67$

$1.89 - 1.67 = 0.22$

ii) $4.5 - \frac{1}{2}$ of $(7.6 - 3.5) + 2.3 \times 4.05$

$= 4.5 - \frac{1}{2} \times (4.1) + 2.3 \times 4.05$

$= 4.5 - \frac{4.1}{2} + 9.315$

$= 4.5 + 9.315 - 2.05$

$= 13.815 - 2.05$

$= 11.765$

$7.6 - 3.5 = 4.1$

$2.3 \times 4.05 = 9.315$

$2 \overline{)41} \; 20.5$ (40, 10, 10)

$4.500 + 9.315 = 13.815$

$13.815 - 2.050 = 11.765$

5

i) $2\frac{1}{2} = \frac{5}{2}$

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

$= \frac{5 \times 5 + 1 \times 2}{10} = \frac{27}{10}$

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

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

So, $\frac{2\frac{1}{2} + \frac{1}{5}}{2\frac{1}{2} \div \frac{1}{5}} = \frac{27/10}{25/2}$

$= \frac{27}{10} \times \frac{2}{25}$ (10 → 5)

$= \frac{27}{125}$

ii) $\frac{3.5 \times 0.24}{0.21} - 0.037$

$3.5 = \frac{35}{10} = \frac{7}{2}$.

$0.24 = \frac{24^{6}}{\cancel{100}_{25}} = \frac{6}{25}$

$0.21 = \frac{21}{100}$

$= \frac{\frac{7}{2} \times \frac{6}{25}}{\frac{21}{100}} - \frac{37}{1000}$

$= \frac{\cancel{7}}{\cancel{2}_{1}} \times \frac{\cancel{6}^{2}}{\cancel{25}_{1}} \times \frac{\cancel{100}^{4^{2}}}{\cancel{21}_{1}} - \frac{37}{1000}$

$= 4 - \frac{37}{1000}$

$= 4 - 0.037$

$= 3.963$.