

Chapter - 2

Fractions

Exercises - 2.1

1 Evaluate :-

(1) $8\frac{2}{7} + 11\frac{5}{7} + 2\frac{1}{7}$

$= \frac{58}{7} + \frac{82}{7} + \frac{15}{7}$

$= \frac{58+82+15}{7} = \frac{155}{7}$

$= \frac{155}{7} = 22\frac{1}{7}$

(2) $5\frac{4}{7} - 2\frac{5}{8} - 1\frac{3}{8}$

$= \frac{41}{7} - \frac{17}{6} - \frac{5}{3}$

$= \frac{246-118-70}{42} = \frac{246-188}{42}$

$= \frac{58}{42} = 1\frac{15}{42}$

(3) $2\frac{3}{14} + 5\frac{2}{7} - 4\frac{3}{7}$

$= \frac{31}{14} + \frac{37}{7} - \frac{19}{4}$

$= \frac{62+148-133}{28} = \frac{310-133}{28}$

$= \frac{177}{28} = 6\frac{9}{28}$

(1) $8\frac{4}{5} - 2\frac{2}{5} - 1\frac{4}{5}$

$= \frac{44}{5} - \frac{12}{5} - \frac{9}{5}$

$= \frac{44-12-9}{5} = \frac{44-21}{5}$

$= \frac{23}{5} = 4\frac{3}{5}$

(2) $7\frac{1}{6} + 8\frac{4}{5} - 9\frac{2}{3}$

$= \frac{43}{6} + \frac{44}{5} - \frac{29}{3}$

$= \frac{215+264-290}{30} = \frac{419-290}{30}$

$= \frac{129}{30} = 4\frac{9}{30}$

(3) $12\frac{1}{2} - 3\frac{9}{14} + 4\frac{5}{7}$

$= \frac{25}{2} - \frac{51}{14} + \frac{27}{7}$

$= \frac{175-51+54}{14} = \frac{241-51}{14}$

$= \frac{190}{14} = 13\frac{8}{14}$

(4) What should be subtracted from $1\frac{1}{5}$ to get $\frac{1}{5}$?

Solution of the above question = $\frac{5}{14} + \frac{3}{7}$

$= \frac{5+6}{14} = \frac{11}{14}$

Fraction subtracted to get $\frac{1}{5} = 1\frac{1}{5} - \frac{1}{5}$

$$= \frac{56 + 14}{70}$$

$$\text{Ans.} = \frac{41}{10}$$

② From what should $(\frac{2}{7} + \frac{4}{21})$ be subtracted to get $\frac{5}{6}$?

$$\text{Sum of the two fractions} = \frac{2}{7} + \frac{4}{21}$$

$$= \frac{6 + 4}{21} = \frac{10}{21}$$

$$\text{Equation subtracted to get } \frac{5}{6} = \frac{10}{21} - \frac{5}{6} = \frac{13}{42}$$

$$= \frac{35 - 26}{42}$$

$$\text{Ans.} = \frac{9}{42}$$

③ Jim ran - - - - - m?

$$\text{Weight of sweet} = \frac{7}{6} \text{ kg}$$

$$\text{Weight of milk} = \frac{5}{2} \text{ kg}$$

$$\text{Weight of fruits} = \frac{1}{3} \text{ kg} = \frac{2}{3} \text{ kg}$$

$$\text{Total weight} = \frac{7}{6} + \frac{5}{2} + \frac{2}{3} \text{ (kg)}$$

$$= \frac{7 + 15 + 4}{6} \text{ (kg)}$$

$$= \frac{26}{6} \text{ kg}$$

$$= 4 \frac{5}{6} \text{ kg}$$

⑤ Jim ran - - - - - m.

② The total number of hours she produced.

$$\text{Time spent in first week} = 6 \frac{2}{3} \text{ hrs} = \frac{62}{10} \text{ hrs}$$

$$\text{Time spent in second week} = 7 \frac{5}{6} \text{ hrs} = \frac{47}{6} \text{ hrs}$$

$$\text{Total time} = \frac{62}{10} + \frac{47}{6} \text{ (hrs)}$$

$$\text{Ans.} = \frac{184 + 141}{18} = \frac{325}{18} = 18 \frac{13}{18}$$

③ The week in which she produced more and by how much?

$$\text{Time spent in first week} = 6 \frac{2}{3} \text{ hrs} = \frac{62}{10} \text{ hrs}$$

$$\text{Time spent in second week} = 7 \frac{5}{6} = \frac{47}{6} \text{ hrs}$$

$$\text{Comparison} = \frac{62}{10} - \frac{47}{6} = \frac{174 - 735}{30} = \frac{124}{30} = \frac{62}{15} \text{ (hrs)}$$

$$\frac{62}{15} \times \frac{60}{60} = \frac{124}{15} \text{ min}$$

So, in second week she produced more by

$$= \frac{124}{15} = 8 \frac{4}{15}$$

$$= \frac{141 - 124}{18} = \frac{17}{18} \text{ hrs}$$



⑥ A centipede - - - - - starting point?

Existing, centipede crawled in straight = $0\frac{3}{4}$ inch

$$= \frac{59}{7} \text{ inches}$$

Then, centipede crawled in reverse = $5\frac{5}{8}$ inches

$$= \frac{45}{8} \text{ inches}$$

Then, secondly, centipede crawled in straight = $11\frac{7}{8}$ inch

$$= \frac{95}{8} \text{ inches}$$

According to question, distance it moved ahead

$$= \frac{59}{7} + \frac{23}{2} - \frac{45}{8} \text{ (inches)}$$

$$= \frac{472 + 529 - 315}{56}$$

$$= \frac{686}{56} = 12\frac{1}{4}$$

$$\text{Ans.} = \frac{604}{56} = 14\frac{17}{14} \text{ inch}$$

Correct

⑦ Angeli - - - - - bus.

She read book when she sat in bus = $\frac{2}{3}$

$$\text{Left part} = 1 - \frac{2}{3}$$

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

Part of book left when she got off bus = $\frac{1}{4}$

Part of book she read in bus = $\frac{1}{3} - \frac{1}{4}$

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

$$\text{Ans.} = \frac{1}{12}$$

⑧ Meghana - - - - - clothes?

Meghana bought clothes for curtains = $6\frac{1}{2} \text{ m} = 13\frac{1}{2} \text{ m}$

She bought clothes for table = $4\frac{2}{5} \text{ m} = 8\frac{4}{5} \text{ m}$

Total clothes she bought = $(13\frac{1}{2} + 8\frac{4}{5}) \text{ m}$

$$= \frac{(65+44)}{10} \text{ m}$$

$$= \frac{109}{10} \text{ m}$$

$$= 10\frac{9}{10}$$

Length of spoiled curtain clothes = $3\frac{3}{4}$

$$= \frac{15}{4} \text{ m}$$

Left curtain clothes = $(12 - \frac{15}{4})$ m

= $(\frac{36-15}{4})$ m

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

Length of ironed table clothes = $2\frac{1}{5} = \frac{11}{5}$ m

Left clothes for table = $(\frac{22}{5} - \frac{11}{5})$ m

= $\frac{22-11}{5}$ m

= $\frac{11}{5}$ m

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

~~Correct~~

23/4/19

Exercise 22

1- Evaluate:-

a) $21 \times \frac{45}{49}$

= $\frac{21^3 \times 45}{49^3}$

= $\frac{135}{7}$

b) $4\frac{5}{7} \times 3$

= $\frac{33}{7} \times 3$

= $\frac{99}{7}$

c)

$\frac{14}{25} \times \frac{20}{49}$

= $\frac{14^2 \times 20^2}{25 \times 49^2}$

=

$\frac{8}{35}$

d)

$3\frac{5}{8} \times \frac{24}{49}$

=

$\frac{29 \times 24^3}{8 \times 49}$

=

$\frac{81}{49} = 1\frac{30}{49}$

$$a) \frac{34}{9} \times \frac{34}{25}$$

$$= \frac{34}{9} \times \frac{34}{25}$$

$$= \frac{1156}{225} = 5 \frac{11}{25}$$

$$b) 3 \times 1 \frac{3}{7} \times 2 \frac{3}{13}$$

$$= 3 \times \frac{10}{7} \times \frac{28}{13}$$

$$= 72 \text{ or } 12$$

$$g) 5 \frac{1}{3} \times 0 \frac{1}{4} \times 2 \frac{3}{5}$$

$$= \frac{16}{3} \times \frac{25}{4} \times \frac{13}{5}$$

$$= \frac{260}{3} = 86 \frac{2}{3}$$

$$h) \frac{5}{16} \times 1 \frac{13}{36} \times 1 \frac{1}{16}$$

$$= \frac{5}{16} \times \frac{49}{36} \times \frac{17}{16}$$

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

② Find :-

$$a) \frac{2}{6} \text{ of } 3 \text{ kg } 600 \text{ g}$$

$$= \frac{2}{6} \text{ of } 3600 \text{ g}$$

$$= \frac{2}{6} \times \frac{3600}{1000} \text{ g}$$

$$= 1200 \text{ g}$$

$$b) \frac{5}{6} \text{ of } 1 \text{ week } 4 \text{ days}$$

$$= \frac{5}{6} \text{ of } 11 \text{ days}$$

$$= \frac{5}{6} \times 11 \text{ days}$$

$$= 9 \frac{1}{2} \text{ days or } 9 \frac{1}{2}$$

4. a) What fraction is 200 ml of $1 \frac{1}{2}$ litre

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

$$= \frac{3}{2} \times \frac{1000}{1000} \text{ ml}$$

$$= 1500 \text{ ml}$$

$$\text{Fraction} = \frac{200 \text{ ml}}{1500 \text{ ml}} = \frac{1}{7.5} \text{ Ans.}$$

b) What fraction of $2 \frac{1}{2}$ days is 12

$$= \frac{5}{2} \text{ days}$$

$$= \frac{5}{2} \times \frac{24}{24} \text{ hours}$$

$$= 60 \text{ hours}$$



5. Which is greater: $\frac{5}{6}$ of $\frac{3}{4}$ or $\frac{3}{12}$ of $\frac{11}{9}$?

$$\frac{5}{6} \text{ of } \frac{3}{4} \text{ or } \frac{3}{12} \text{ of } \frac{11}{9}$$

$$= \frac{5}{6} \times \frac{3}{4} \quad \text{or} \quad \frac{3}{12} \times \frac{11}{9}$$

$$= \frac{5}{8} \quad \text{or} \quad \frac{11}{36}$$

$$= 5 \times 36 \quad \text{or} \quad 11 \times 8$$

$$= 180 \quad \text{or} \quad 88$$

Ans: 180

$$6. a) \frac{5}{8}$$

Reciprocal of $\frac{5}{8}$ is $\frac{8}{5}$, such that $\frac{5}{8} \times \frac{8}{5} = 1$

$$b) \frac{17}{7}$$

Reciprocal of $\frac{17}{7}$ is $\frac{7}{17}$, such that $\frac{17}{7} \times \frac{7}{17} = 1$

⑦ What kind of a fraction is the reciprocal of an improper fraction?

Ans: Proper fraction.

⑧ Can any fraction have a natural number as its reciprocal?

Ans: Unit fraction.

⑨ A number when divided by $3\frac{4}{5}$, gives $\frac{7}{24}$.

Find the number.

Reciprocal Number = $3\frac{4}{5} \times \frac{7}{24}$

$$= \frac{192}{48} \times \frac{7}{24}$$

$$= \frac{8}{7} = 1\frac{1}{7}$$

⑩ A ----- answer

Speed of train = $55\frac{1}{5}$ km/h

Time = ~~6 hrs~~ 40 min

$$= 6 + \frac{40}{60}$$

$$= 6 + \frac{2}{3} \text{ h}$$

$$= 6\frac{2}{3} \text{ h}$$

Distance = Speed $\times$ Time

$$= \frac{276}{5} \times \frac{20}{3} \text{ km}$$

$$= 368 \text{ km}$$

⑪ A train ----- Train

Speed of Train = $66\frac{1}{2}$ km/h

Time = 6 h 40 min

$$= 1 \text{ min} = \frac{1}{6} \text{ h}$$

$$= 40 \text{ m} = \frac{40}{60} = \frac{2}{3}$$

$$\begin{aligned}\text{distance} &= \text{speed} \times \text{time} \\ &= 55 \frac{11}{5} \times 6 \frac{2}{3} \\ &= \frac{92}{5} \times \frac{202}{31} \\ &= 368 \text{ km}\end{aligned}$$

2- What ----- August?

Sanjay uses part of work everyday = $\frac{1}{8}$

Total no. of days in month of July and Aug = $31 + 31 = 62$

He will use total time in July and Aug = $62 \times \frac{1}{8}$

$$= \frac{31}{4}$$

$$\text{Ans} = 7 \frac{3}{4}$$

3- Ashu ----- hours?

Ashu started swim in 1 hour = $\frac{1}{3}$

He will swim in $2 \frac{2}{3}$ h = $\frac{1}{3} \times 2 \frac{2}{3}$

$$= \frac{1}{3} \times \frac{8}{3}$$

Ans. = $\frac{8}{9}$ of swim

14- Mathur ----- dinner?

Mathur and Jyoti brought juice = 4 l.

Mathur drank juice = $\frac{2}{5}$ of juice

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

Since he drank = $\frac{2}{5}$ of 4 l.

$$= \frac{2}{5} \text{ of } 4000 \text{ ml}$$

$$= 2400 \text{ ml}$$

$$\text{Ans} = 2.4 \text{ uooml}$$

Exercise 2.3

1- Find:

$$\text{a) } 20 \div \frac{46}{11}$$

$$= \frac{20 \times 11}{46}$$

$$= \frac{22}{3}$$

$$\text{b) } 20 \frac{5}{6} \div 15$$

$$= \frac{20 \frac{5}{6} \times 1}{15}$$

$$= \frac{25}{18}$$

$$\text{c) } \frac{16}{26} \div \frac{36}{15}$$



$$= \frac{49}{28} \times \frac{15}{86} \times \frac{1}{21}$$

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

$$d) \frac{9}{25} \div \frac{16}{35}$$

$$= \frac{9}{25} \times \frac{35}{16}$$

$$= \frac{7}{20}$$

$$e) \frac{21}{32} \div 1 \frac{14}{35}$$

$$= \frac{21}{32} \times \frac{35}{49} \times \frac{5}{1}$$

$$= \frac{35}{32}$$

$$f) 1 \frac{13}{5} \div 1 \frac{5}{7}$$

$$= \frac{18}{5} \times \frac{7}{12}$$

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

2- simplify :-

$$a) \left(\frac{4}{7} + \frac{36}{49} \right) - \frac{1}{2}$$

$$= \left(\frac{4}{7} \times \frac{7}{7} + \frac{36}{49} \right) - \frac{1}{2}$$

$$= \frac{7}{9} - \frac{1}{2}$$

$$= \frac{14-9}{18}$$

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

$$b) \frac{5}{9} \div \left(\frac{3}{10} \times \frac{6}{12} \right)$$

$$= \frac{5}{9} \div \left(\frac{2}{10} \times \frac{5}{12} \right)$$

$$= \frac{5}{9} \div \frac{1}{6}$$

$$= \frac{5}{9} \times \frac{6}{1}$$

$$= \frac{10}{3}$$

$$c) \frac{3}{5} \text{ of } \left(\frac{1}{16} \times 3 \frac{2}{5} \right)$$

$$= \frac{3}{5} \times \left(\frac{1}{16} \times \frac{17}{5} \right)$$

$$= \frac{3}{5} \times \frac{17}{80}$$

$$= \frac{17}{125}$$

$$d) \frac{1}{6} \text{ of } \left(1 \frac{1}{9} \div 7 \frac{1}{2} \right)$$

$$= \frac{1}{6} \times \left(\frac{10}{9} \times \frac{2}{13} \right)$$

$$= \frac{1}{6} \times \frac{20}{117} \times \frac{1}{2}$$

$$= \frac{10}{81}$$

$$9) \frac{5}{3} \times \frac{3}{8} - \frac{7}{9} \div 2\frac{1}{10}$$

$$= \frac{15}{24} \times \frac{3}{8} - \frac{7}{9} \times \frac{10}{21}$$

$$= 7 - \frac{10}{27}$$

$$= \frac{54-10}{27}$$

$$= \frac{44}{27}$$

$$8) \frac{13}{7} + 4\frac{1}{5} \times \frac{3}{4} \div \frac{7}{15}$$

$$= \frac{13}{7} + \frac{24}{5} \times \frac{3}{4} \times \frac{15}{7}$$

$$= \frac{13}{7} + \frac{24}{5} \times \frac{45}{28}$$

$$= \frac{13}{7} + \frac{54}{7}$$

$$= \frac{67}{7}$$

$$7) \left(\frac{3}{8} \times \frac{2}{15} \right) + \left(\frac{4}{9} \div \frac{3}{27} \right)$$

$$= \left(\frac{3}{8} \times \frac{2}{15} \right) + \left(\frac{4}{9} \times \frac{27}{3} \right)$$

$$= \frac{1}{20} + \frac{12}{8}$$

$$= \frac{2+15}{40} = \frac{17}{40}$$

$$11) \left(\frac{6}{7} \div \frac{2}{5} \right) + \left(\frac{8}{9} \times \frac{27}{25} \right)$$

$$= \left(\frac{6}{7} \times \frac{5}{2} \right) + \left(\frac{8}{9} \times \frac{27}{25} \right)$$

$$= \frac{15}{7} + \frac{3}{5}$$

$$= \frac{15+21}{35}$$

$$= \frac{36}{35}$$

$$12) \left(1\frac{5}{7} \times \frac{7}{10} \right) - \left(\frac{3}{5} \div \frac{9}{10} \right)$$

$$= \left(\frac{12}{7} \times \frac{7}{10} \right) - \left(\frac{3}{5} \times \frac{10}{9} \right)$$

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

$$= \frac{18-10}{15}$$

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

$$13) \left(\frac{21}{20} \times \frac{2}{14} \right) - \left(\frac{1}{7} \div \frac{26}{28} \right)$$

$$= \left(\frac{21}{20} \times \frac{2}{14} \right) - \left(\frac{1}{7} \times \frac{28}{26} \right)$$

$$= \frac{3}{10} - \frac{1}{9}$$

$$= \frac{27-10}{90}$$

$$= \frac{17}{90}$$

3- Amy - - - - - buy?

Cost of chocolate = ₹ 91.1 or ₹ 195
Cost of each chocolate = ₹ 9.3 or ₹ 2.9

Number of chocolates = $\frac{195}{2.9} \div 39$ (Ans)

$$= \frac{195 \times 10}{2.9 \times 39}$$

$$= 10 \text{ Ans.}$$

4- One - - - - - ₹ 91.3

Cost of one banana = ₹ 5.3 or ₹ 2.3

Money given = ₹ 81.3 or ₹ 391

Bananas can be purchased = $\frac{391}{2.3} \div 23$

$$= \frac{17}{1} \times \frac{23}{1}$$

$$= 17 \text{ Ans.}$$

5- A - - - - - box?

A box of candies weigh = 610.1 g or 1881 g
Each candy weighs = 45.3 g or 183 g

No. of candies = $\frac{1881}{183} \div 10$ (Ans)

$$= 10.81 \times 10 = 108.1 \text{ Ans.}$$

6- Bury - - - - - ground.

Weight of sweets = 5000 g
No. of boxes = 40

Quantity of sweets in each box = 5000 ÷ 40

$$= \frac{5000}{40} = 125 \text{ g}$$

7- Burman covers $2\frac{1}{2}$ km in $1\frac{1}{2}$ hours.

a) How - - - - - $6\frac{1}{5}$ km?

Speed of Burman = $\frac{2\frac{1}{2}}{1\frac{1}{2}} = \frac{5}{3}$ km/hr

$$= \frac{5}{3} \times \frac{12}{1} = 20 \text{ km/hr}$$

Time required to cover 1 km = $\frac{1}{\frac{5}{3}} = \frac{3}{5}$

$$= \frac{3}{5} \times \frac{5}{1} = 3 \text{ hours}$$

$$= \frac{3}{5} \times \frac{10}{1} = 6 \text{ hours}$$

Time required to cover 6 km = $\frac{6}{\frac{5}{3}} = \frac{18}{5}$

$$= \frac{18}{5} \times \frac{5}{1} = 18 \text{ hours}$$

$$= 1\frac{3}{4} \text{ hrs}$$

8) Two - - - - - $1\frac{1}{5}$ hours

Distance she will cover in an hour = $\frac{14}{5} \div \frac{1}{5}$

$$= \frac{14}{5} \times \frac{5}{1} = 14$$

$$= 14 \text{ km}$$

Distance she will cover in $\frac{6}{5}$ hrs. = $\frac{14}{5} \times \frac{6}{5}$

$$= \frac{14 \times 6}{5} = \frac{84}{5}$$

$$= 16.8 \text{ km}$$

8- ~~Exercise~~ Time - - - - - other.

Product of two numbers = $3\frac{1}{2} = \frac{7}{2}$

One of them = $2\frac{2}{5} = \frac{12}{5}$

Other number = $\frac{7}{2} \div \frac{12}{5}$

$$= \frac{7}{2} \times \frac{5}{12} = \frac{35}{24} \text{ Ans.}$$

~~Exercise~~

9- Angeli - - - - - how much?

Distance covered by Angeli = 8.1 km

Time taken by Angeli = $2\frac{2}{3}$ hr

Her speed = $8.1 \div 2\frac{2}{3}$

$$= \frac{8.1}{2\frac{2}{3}} = 6 \text{ km/h}$$

Distance covered by Nisha = 22 km
Time taken by Nisha = $1\frac{1}{2}$ hr

$$\text{Her speed} = 22 \div 1\frac{1}{2} = \frac{22}{1\frac{1}{2}} \text{ (km/hr)}$$

$$= \frac{22 \times 2}{3} = \frac{44}{3}$$

$$= 14.66 \text{ km/h or } 14\frac{2}{3} \text{ km/h}$$

Speed of Nisha is ~~greater~~ but = $13 - 6$

$$= 7$$

$$\text{Ans.} = 1\frac{1}{2} \text{ km/h}$$

10- Reason - - - - - puller

Distance completed by Reason = $\frac{11}{4}$

Time taken = $4\frac{1}{3}$ hrs

Her speed = $\frac{11}{4} \div 4\frac{1}{3}$

$$= \frac{11}{4} \times \frac{3}{14} = \frac{33}{56} \text{ (puller)}$$

$$= 0.589 \text{ puller}$$

Distance completed by Ann = $\frac{9}{2}$

Time taken = $3\frac{1}{2}$ hrs



$$\text{New speed} = \frac{9}{2} \div \frac{39}{2}$$

$$\begin{array}{r} 11 \\ 2 \overline{) 22} \\ \underline{22} \\ 0 \end{array}$$

11

greater fractions = $\frac{3}{16} \times \frac{9}{29}$

$3 \times 39, 16 \times 9$
 $117, 144$

11	60
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$$\frac{39}{72}$$

So, ann is ~~posterior~~ ~~7/13~~ ~~3/13~~ ~~7/13~~ ~~3/13~~

22/2/22