

St. Mary's Co-Ed School, Harda(M.P.)

Subject Maths Class 7 th

Chapter-(2): Chapter-Fractions

Exercise 2A

Question 1:

(i)

Solution: By cross multiplication, we have

$$5 \times 12 = 60 \text{ and } 7 \times 8 = 56$$

$$\text{But, } 60 > 56$$

$$\text{So, } \frac{5}{8} > \frac{7}{12}$$

(ii)

Solution: By cross multiplication, we have

$$5 \times 15 = 75 \text{ and } 11 \times 9 = 99$$

$$\text{But, } 75 < 99$$

$$\text{So, } \frac{5}{9} < \frac{11}{15}$$

(iii)

Solution: By cross multiplication, we have

$$11 \times 16 = 176 \text{ and } 15 \times 12 = 180$$

$$\text{But, } 176 < 180$$

$$\text{So, } \frac{11}{12} < \frac{15}{16}$$

Question 2:

(i)

Solution: LCM of 4, 6, 9 and 12 = $2 \times 2 \times 3 \times 3 = 36$

2	4	6	9	12
2	2	3	9	6
3	1	3	9	3
3	1	1	3	1
1	1	1	1	1

Now change each fraction in equivalent fraction having 36 as denominator

$$3 \times 9 = 27; 5 \times 6 = 30; 7 \times 4 = 28; 11 \times 3 = 33$$

$$\frac{4 \times 9}{36} = \frac{36}{36}; \frac{6 \times 6}{36} = \frac{36}{36}; \frac{9 \times 4}{36} = \frac{36}{36}; \frac{12 \times 3}{36} = \frac{36}{36}$$

$$27 < 28 < 30 < 33$$

$$\frac{27}{36} < \frac{28}{36} < \frac{30}{36} < \frac{33}{36}$$

(ii)

Solution: LCM of 5, 10, 15, 20 = $2 \times 2 \times 3 \times 5 = 60$

2	5	10	15	20
2	5	5	15	10
3	5	5	15	5
5	5	5	5	5
	1	1	1	1

Now change each fraction in equivalent fraction having 60 as denominator

$$4 \times 12 = 48; 7 \times 6 = 42; 11 \times 4 = 44; 17 \times 3 = 51$$

$$5 \times 12 = 60; 10 \times 6 = 60; 15 \times 4 = 60; 20 \times 3 = 60$$

$$\frac{42}{60} < \frac{44}{60} < \frac{48}{60} < \frac{51}{60}$$

Question 3:

(i)

Solution: LCM of 4, 8, 12, 24 = $2 \times 2 \times 2 \times 3 = 24$

2	4	8	12	24
2	2	4	6	12
2	1	2	3	6
3	1	1	3	3
	1	1	1	1

Now change each fraction in equivalent fraction having 24 as denominator

$$3 \times 6 = 18; 7 \times 3 = 21; 7 \times 2 = 14; 17 \times 1 = 17$$

$$4 \times 6 = 24; 8 \times 3 = 24; 12 \times 2 = 24; 24 \times 1 = 24$$

$$\frac{14}{24} < \frac{17}{24} < \frac{18}{24} < \frac{21}{24}$$

(ii)

Solution: LCM of 3, 5, 10, 15 = $2 \times 3 \times 5 = 30$

2	3	5	10	15
3	3	5	5	15
5	1	5	5	5
	1	1	1	1

Now change each fraction in equivalent fraction having 30 as denominator

$$2 \times 10 = 20; 3 \times 6 = 18; 7 \times 3 = 21; 8 \times 2 = 16$$

$$\begin{array}{ccccccccc} 3 \times 10 & 30 & 5 \times 6 & 30 & 10 \times 3 & 30 & 15 \times 2 & 30 & \\ 16 & < & 18 & < & 20 & < & 21 & & \\ 30 & & 30 & & 30 & & 30 & & 30 \end{array}$$

Question 4:

Solution: Part of an apple Renu got = $\frac{2}{4}$

Part of an apple Sonal got = $\frac{5}{7}$

By cross multiplication of $\frac{2}{4}$ and $\frac{5}{7}$, we have

$$2 \times 5 = 10 \text{ and } 4 \times 7 = 28$$

$$\text{But, } 10 < 28$$

$$\text{So, } \frac{2}{4} < \frac{5}{7}$$

Hence, Sonal got the larger part of an apple

$$\text{Now, } \frac{4}{5} - \frac{2}{7} = \frac{(4 \times 7) - (2 \times 5)}{35} = \frac{28 - 10}{35} = \frac{18}{35}$$

Therefore, Sonal got the larger part of an apple by $\frac{18}{35}$

Question 5:

(i)

$$\text{Solution: } 9^5 + 9^3 = 9^5 + 9^3 = 9^8$$

(ii)

$$\text{Solution: } \frac{8}{9} + \frac{7}{12} = \frac{(8 \times 4) + (7 \times 3)}{36} = \frac{32 + 21}{36} = \frac{53}{36} = 1 \frac{17}{36}$$

(iii)

$$\text{Solution: } \frac{5}{6} + \frac{7}{8} = \frac{(5 \times 4) + (7 \times 3)}{24} = \frac{20 + 21}{24} = \frac{41}{24} = 1 \frac{17}{24}$$

(iv)

$$\text{Solution: } \frac{7}{12} + \frac{11}{16} + \frac{9}{24} = \frac{(7 \times 4) + (11 \times 3) + (9 \times 2)}{48} = \frac{28 + 33 + 18}{48} = \frac{79}{48} = 1 \frac{31}{48}$$

(v)

$$\text{Solution: } 3 \frac{4}{5} + 2 \frac{3}{10} + 1 \frac{1}{15} = \frac{19}{5} + \frac{23}{10} + \frac{16}{15} = \frac{(19 \times 6) + (23 \times 3) + (16 \times 2)}{30} = \frac{114 + 69 + 32}{30} = \frac{215}{30}$$

$$\frac{215 \div 5}{30 \div 5} = \frac{43}{6} = 7 \frac{1}{6}$$

(vi)

$$\text{Solution: } 8 \frac{3}{4} + 10 \frac{2}{5} = \frac{35}{4} + \frac{52}{5} = \frac{(35 \times 5) + (52 \times 4)}{20} = \frac{175 + 208}{20} = \frac{383}{20} = 19 \frac{3}{20}$$

Question 6:

(i)

$$\text{Solution: } 7^5 - 7^2 = 7^{5-2} = 7^3$$

(ii)

$$\text{Solution: } 5 \frac{5}{6} - 3 \frac{3}{4} = \frac{(5 \times 2) - (3 \times 3)}{12} = \frac{10 - 9}{12} = \frac{1}{12}$$

(iii)

$$\text{Solution: } 3 \frac{1}{5} - \frac{7}{105} = \frac{16}{10} - \frac{7}{105} = \frac{(16 \times 2) - 7}{10} = \frac{32 - 7}{10} = \frac{25}{10} = \frac{25 \div 5}{10 \div 5} = \frac{5}{2} = 2 \frac{1}{2}$$

(iv)

$$\text{Solution: } 7 - 4 \frac{2}{3} = 7 - \frac{14}{3} = \frac{(7 \times 3) - 14}{3} = \frac{21 - 14}{3} = \frac{7}{3} = 2 \frac{1}{3}$$

(v)

$$\text{Solution: } 3 \frac{3}{10} - 1 \frac{7}{15} = \frac{33}{10} - \frac{22}{15} = \frac{(33 \times 3) - (22 \times 2)}{30} = \frac{99 - 44}{30} = \frac{55}{30} = \frac{55 \div 5}{30 \div 5} = \frac{11}{6} = 1 \frac{5}{6}$$

(vi)

$$\text{Solution: } 2 \frac{5}{9} - 1 \frac{7}{15} = \frac{23}{9} - \frac{22}{15} = \frac{(23 \times 5) - (22 \times 3)}{45} = \frac{115 - 66}{45} = \frac{49}{45} = 1 \frac{4}{45}$$

Question 7:

(i)

$$\text{Solution: } \frac{2}{3} + \frac{5}{69} - \frac{1}{18} = \frac{(2 \times 6) + (5 \times 3) - (1 \times 2)}{18} = \frac{12 + 15 - 2}{18} = \frac{25}{18} = 1 \frac{7}{18}$$

(ii)

$$\text{Solution: } 8 - 4 \frac{1}{2} - 2 \frac{1}{4} = 8 - \frac{9}{2} - \frac{9}{4} = \frac{(8 \times 4) - (9 \times 2) - 9}{4} = \frac{32 - 18 - 9}{4} = \frac{32 - 27}{4} = \frac{5}{4} = 1 \frac{1}{4}$$

(iii)

$$\text{Solution: } 8 \frac{5}{6} - 3 \frac{3}{8} + 1 \frac{7}{12} = \frac{53}{6} - \frac{27}{8} + \frac{19}{12} = \frac{(53 \times 4) - (27 \times 3) + (19 \times 2)}{24} = \frac{212 - 81 + 38}{24}$$

$$= \frac{250 - 38}{24} = \frac{169}{24} = 7 \frac{1}{24}$$

Question 8:

Solution: Aneeta bought an apple = $3\frac{3}{4}$ kg

Aneeta bought guava = $4\frac{1}{2}$ kg

$$\text{Total weight of fruits purchased} = 3\frac{3}{4} + 4\frac{1}{2} = \frac{15}{4} + \frac{9}{2} = \frac{15+18}{4} = \frac{33}{4} = 8\frac{1}{4} \text{ kg}$$

Question 9:

Solution: Length of rectangular sheet = $15\frac{3}{4}$ cm

Width of rectangular sheet = $12\frac{1}{2}$ cm

$$\begin{aligned} \text{Perimeter of rectangular sheet} &= 2(L+B) = 2\left(15\frac{3}{4} + 12\frac{1}{2}\right) = 2\left(\frac{63}{4} + \frac{25}{2}\right) = 2\left(\frac{63+50}{4}\right) \\ &= 2 \times \frac{113}{4} = \frac{113}{2} = 56\frac{1}{2} \text{ cm} \end{aligned}$$

Question 10:

Solution: Width of picture = $7\frac{3}{5}$ cm

Width of frame = $7\frac{10}{10}$ cm

$$\text{Picture to be trimmed to fit in a frame} = 7\frac{3}{5} - 7\frac{3}{10} = \frac{38}{5} - \frac{73}{10} = \frac{76-73}{10} = \frac{3}{10} \text{ cm}$$

Question 11:

$$\text{Solution: } 18 - 7\frac{3}{5} = 18 - \frac{38}{5} = \frac{90-38}{5} = \frac{52}{5} = 10\frac{2}{5}$$

Question 12:

$$\text{Solution: } 8\frac{2}{5} - 7\frac{4}{15} = \frac{42}{5} - \frac{109}{15} = \frac{126-109}{15} = \frac{17}{15} = 1\frac{2}{15}$$

Question 13:

Solution: Length of wire = $3\frac{3}{4}$ m = $\frac{15}{4}$

Length of one piece of wire = $1\frac{1}{2}$ m = $\frac{3}{2}$

$$\text{Length of other piece of wire} = 15\frac{3}{4} - 3\frac{1}{2} = 15\frac{3}{4} - 6\frac{2}{4} = 9\frac{1}{4} = 2\frac{1}{4} m$$

Question 14:

Solution: Timing of film show = $3\frac{2}{3} hr = 11\frac{1}{3}$

Time spent on advertisements = $1\frac{1}{2} hr = 2\frac{3}{6}$

Actual duration of the film = $11\frac{1}{3} - 2\frac{3}{6} = \frac{22}{6} - \frac{9}{6} = \frac{13}{6} = 2\frac{1}{6} hr$

Question 15:

Solution: By cross multiplication, we have

$$2 \times 9 = 18 \text{ and } 5 \times 3 = 15$$

$$18 > 15$$

$$\text{So, } 2\frac{2}{3} > 9\frac{5}{9}$$

$$\text{Now, } 2\frac{2}{3} - 9\frac{5}{9} = 6\frac{6}{9} - 9\frac{5}{9} = 9\frac{1}{9}$$

$$\text{So, } 2\frac{2}{3} \text{ is greater than } 9\frac{5}{9} \text{ by } 9\frac{1}{9}.$$

Question 16:

Solution: The cost of pen = Rs. $16\frac{3}{5} = 83\frac{3}{5}$

By cross multiplication of $83\frac{3}{5}$ and $19\frac{4}{4}$, we have

$$83 \times 4 = 332 \text{ and } 19 \times 5 = 95$$

$$\text{But, } 332 > 95$$

$$\text{So, } 83\frac{3}{5} > 19\frac{4}{4}$$

$$\text{Now, } 83\frac{3}{5} - 19\frac{4}{4} = \frac{332}{20} - \frac{95}{20} = \frac{237}{20} = 11\frac{17}{20}$$

$$\text{So, the cost of pen is Rs. } 11\frac{17}{20} \text{ more than the pencil.}$$

Exercise 2B

Question 1:

(i)

Solution: $5^3 \times 11^7 = 5^3 \times 11^7 = 55^{21}$

(ii)

Solution: $8^5 \times 7^4 = 2^5 \times 7^4 = 2^5 \times 7^4 = 14^5$

(iii)

Solution: $9^4 \times 16^{15} = 3^4 \times 4^{15} = 3^4 \times 4^{15} = 12^5$

(iv)

Solution: $5^2 \times 15 = 5^2 \times 15 = 1^2 \times 1^3 = 1 \times 1^3 = 6$

(v)

Solution: $15^8 \times 20 = 15^8 \times 20 = 3^8 \times 1^4 = 3^8 \times 1^4 = 32^3 = 10^2_3$

(vi)

Solution: $\frac{5}{8} \times 1000 = \frac{5}{8} \times 1000 = \frac{5}{8} \times 125 = \frac{5 \times 125}{1 \times 1} = 625$

(vii)

Solution: $3^1 \times 16 = 25 \times 16 = 25 \times 16 = 1 \times 1^2 = 1 \times 1^2 = 50$

(viii)

Solution: $2^4 \times 12 = \frac{34}{15} \times 12 = \frac{34}{5} \times 4 = \frac{34 \times 4}{5} = \frac{136}{5} = 27 \frac{1}{5}$

(ix)

Solution: $3^6 \times 4^2 = 27 \times 14 = 9 \times 1^2 = 9 \times 1^2 = 18$

(x)

Solution: $19^2 \times 19^{28} = 1^1 \times 14 = 1 \times 14 = 14$

(xi)

Solution: $4^1 \times 2^{10} = 33 \times 11^{32} = 3 \times 1^4 = 12$

(xii)

Solution: $35^6 \times 12^7 = 1^5 \times 1^2 = 10$

Question 2:**(i)**

$$\text{Solution: } \frac{2 \times 5 \times 33}{3 \times 44 \times 35} = \frac{1 \times 1 \times 11}{1 \times 22 \times 7} = \frac{1 \times 1 \times 1}{1 \times 2 \times 7} = \frac{1}{14}$$

(ii)

$$\text{Solution: } \frac{12 \times 15 \times 35}{25 \times 28 \times 36} = \frac{1 \times 3 \times 5}{5 \times 4 \times 3} = \frac{1 \times 1 \times 1}{1 \times 4 \times 1} = \frac{1}{4}$$

(iii)

$$\text{Solution: } \frac{10 \times 28 \times 39}{27 \times 65 \times 56} = \frac{10 \times 1 \times 3}{27 \times 5 \times 2} = \frac{1 \times 1 \times 1}{9 \times 1 \times 1} = \frac{1}{9}$$

(iv)

$$\text{Solution: } \frac{11}{7} \times \frac{35}{22} \times \frac{16}{15} = \frac{11 \times 35 \times 16}{7 \times 22 \times 15} = \frac{1 \times 1 \times 8}{1 \times 1 \times 3} = \frac{8}{3} = 2 \frac{2}{3}$$

(v)

$$\text{Solution: } \frac{36}{17} \times \frac{65}{9} \times \frac{85}{52} = \frac{36 \times 65 \times 85}{17 \times 9 \times 52} = \frac{1 \times 5 \times 5}{17 \times 9 \times 521 \times 1} = 25$$

(vi)

$$\text{Solution: } \frac{49}{16} \times \frac{52}{7} \times \frac{64}{39} = \frac{49 \times 52 \times 64}{16 \times 7 \times 39} = \frac{7 \times 4 \times 4}{1 \times 1 \times 3} = \frac{112}{3} = 37 \frac{1}{3}$$

Question 3:**(i)**

$$\text{Solution: } 24 \times \frac{1}{3} = 8$$

(ii)

$$\text{Solution: } 32 \times \frac{3}{4} = 8 \times 3 = 24$$

(iii)

$$\text{Solution: } 45 \times \frac{5}{9} = 5 \times 5 = 25$$

(iv)

$$\text{Solution: } 1000 \times \frac{7}{50} = 20 \times 7 = 140$$

(v)

$$\text{Solution: } 1020 \times \frac{3}{20} = 51 \times 3 = 153$$

(vi)

$$\text{Solution: } \text{Rs.}(220 \times \frac{5}{11}) = \text{Rs.}(20 \times 5) = \text{Rs.}100$$

1

1

(vii)

Solution: $54 \times 9^4 = 4 \times 6 = 24m$

(viii)

Solution: $35 \times 7^6 = 6 \times 5 = 30l$

(ix)

Solution: $60 \text{ min} \times \frac{1}{6} = 10 \text{ min}$

(x)

Solution: $12 \text{ months} \times \frac{5}{6} = 2 \times 5 = 10 \text{ months}$

(xi)

Solution: $1000 \text{ g} \times 20^7 = 50 \times 7 = 350g$

(xii)

Solution: $100 \text{ cm} \times 20^9 = 5 \times 9 = 45 \text{ cm}$

(xiii)

Solution: $24 \text{ hr} \times \frac{7}{8} = 3 \times 7 = 21 \text{ hr}$

(xiv)

Solution: $7 \text{ days} \times 7^3 = 3 \text{ days}$

(xv)

Solution: $1000 \text{ ml} \times 50^7 = 20 \times 7 = 140 \text{ ml}$

Question 4:

Solution: Cost of 1 kg of apple = Rs. $48 \frac{4}{5}$

Cost of $3 \frac{3}{4}$ kg of apples = $48 \frac{4}{5} \times 3 \frac{3}{4} = \frac{92}{5} \times \frac{15}{4} = 23 \times 3 = \text{Rs. } 69$

Question 5:

Solution: Cost of 1 m of cloth = Rs. $42 \frac{1}{2}$

Cost of $5 \frac{3}{5}$ m of cloth = $42 \frac{1}{2} \times 5 \frac{3}{5} = \frac{85}{2} \times \frac{28}{5} = 17 \times 14 = \text{Rs. } 238$

Question 6:

Solution: Distance covered by car in 1 hour = $66\frac{2}{3}$ km

Distance covered by car in 9 hours = $66\frac{2}{3} \times 9 = 200\frac{2}{3} \times 9 = 200 \times 3 = 600$ km

Question 7:

Solution: Capacity of 1 tin = $12\frac{3}{4}$ litres

Capacity of 26 tins = $12\frac{3}{4} \times 26 = \frac{51}{4} \times 26 = \frac{13 \times 51}{2} = \frac{663}{2} = 331\frac{1}{2}$ l

Question 8:

Solution: Cost of 1 ticket = Rs. $35\frac{1}{2}$

Cost of 308 tickets = $35\frac{1}{2} \times 308 = 71\frac{1}{2} \times 308 = 71 \times 154 = \text{Rs. } 10,934$

Question 9:

Solution: Thickness of 1 board = $3\frac{2}{3}$ cm

Thickness of 9 boards = $3\frac{2}{3} \times 9 = 11\frac{1}{3} \times 9 = 11 \times 3 = 33$ cm

Therefore, height of stack is 33 cm.

Question 10:

Solution: Time taken by Rohit to complete 1 round of the circular park = $4\frac{4}{5}$ min

Time taken to complete 15 rounds = $4\frac{4}{5} \times 15 = 24\frac{4}{5} \times 15 = 24 \times 3 = 72$ min = 1 hr 12 min

Question 11:

Solution: Weight of Amit = 35 kg

Weight of Kavita = $\frac{3}{5}$ of Weight of Amit = $\frac{3}{5} \times 35 = 3 \times 7 = 21$ kg

Question 12:

Solution: Total students in class = 42

No. of boys = $\frac{5}{7}$ of total students = $\frac{5}{7} \times 42 = 5 \times 6 = 30$

No. of girls in the class = $42 - 30 = 12$

Question 13:

Solution: Total earning of Sapna = Rs.24000

Monthly expenditure = $\frac{7}{8}$ of total income = $\frac{7}{8} \times 24000 = 7 \times 3000 = \text{Rs.}21000$

Sapna deposits in bank = Total income – monthly expenditure = $24000 - 21000 = \text{Rs.}3000$

Question 14:

Solution: Side of square field = $4\frac{2}{3} \text{ m}$

Area of square = $(\text{side})^2 = (4\frac{2}{3})^2 = (\frac{14}{3})^2 = \frac{14}{3} \times \frac{14}{3} = \frac{196}{9} = 21\frac{7}{9} \text{ m}^2$

Question 15:

Solution: Length of rectangular park = $41\frac{2}{3} \text{ m} = 125\frac{2}{3}$

Breadth of rectangular park = $18\frac{3}{5} \text{ m} = 93\frac{3}{5}$

Area of rectangular park = length x breadth = $125\frac{2}{3} \times 93\frac{3}{5} = 25 \times 31 = 775 \text{ m}^2$

Exercise 2C

Question 1:

(i)

Solution: $8\frac{5}{5}$, because $8\frac{5}{5} \times 8\frac{5}{5} = 1$

(ii)

Solution: $1\frac{1}{7}$, because $7 \times 1\frac{1}{7} = 1$

(iii)

Solution: $12\frac{1}{12}$, because $12 \times 12\frac{1}{12} = 1$

(iv)

Solution: $63\frac{5}{5}$, because $12\frac{3}{5} = \frac{63}{5} \rightarrow \frac{63}{5} \times 63\frac{5}{5} = 1$

Question 2:

(i)

Solution: $7^4 \times 14_9 = 8_9$

(ii)

Solution: $10^7 \times 5_3 = 7_6 = 1_6$

(iii)

Solution: $8_9 \times 16^1 = 18^1$

(iv)

Solution: $9 \times 3 = 27$

(v)

Solution: $24 \times 7_6 = 28$

(vi)

Solution: $18_5 \div 5^4 = 18_5 \times 5_4 = 9_2 = 4_2^1$

(vii)

Solution: $24_7 \div 21^8 = 24_7 \times 21_8 = 9$

(viii)

Solution: $39_7 \div 10^{13} = 39_7 \times 10_{13} = 30_7 = 4_7^2$

(ix)

Solution: $108_7 \div 72_{49} = 108_7 \times 72_{49} = 21_2 = 10_2^1$

Question 3:

(i)

Solution: $11_{24} \div 7_8 = 11_{24} \times 8_7 = 11_{21}$

(ii)

Solution: $55_8 \div 16^{11} = 55_8 \times 16_{11} = 10$

(iii)

Solution: $50_9 \div 10_3 = 50_9 \times 10^3 = 20$

(iv)

Solution: $32 \div 8\frac{5}{5} = 32 \times 8\frac{5}{5} = 20$

(v)

Solution: $45 \div 9\frac{5}{5} = 45 \times 9\frac{5}{5} = 25$

(vi)

Solution: $63 \div 9\frac{4}{4} = 63 \times 9\frac{4}{4} = 28$

Question 4:

Solution: Length of rope = $13\frac{1}{2} m = 27\frac{2}{2}$

No. of equal pieces = 9

Length of each piece = $27\frac{2}{2} \div 9 = 27\frac{2}{2} \times \frac{1}{9} = 3\frac{2}{2} = 1\frac{1}{2} m$

Question 5:

Solution: Total weight of 18 boxes = $49\frac{1}{2} kg = 99\frac{2}{2}$

Weight of 1 box = $99\frac{2}{2} \div 18 = 99\frac{2}{2} \times \frac{1}{18} = 11\frac{4}{4} = 2\frac{3}{4} kg$

Question 6:

Solution: Cost of 1 orange = Rs. $6\frac{3}{4} = 27\frac{4}{4}$

By selling all oranges, he get = Rs. 378

No. of oranges sell by him = $378 \div 27\frac{4}{4} = 378 \times \frac{4}{27} = 112$

Question 7:

Solution: Cost of 1 kg mangoes = Rs. $43\frac{1}{2} = 87\frac{2}{2}$

Cost of all mangoes = Rs. $326\frac{1}{4} = 1305\frac{4}{4}$

Weight of mangoes = $1305\frac{4}{4} \div 87\frac{2}{2} = 1305\frac{4}{4} \times \frac{2}{87} = 15\frac{2}{2} = 7\frac{1}{2} kg$

Question 8:

Solution: Distance cover by Vikas in $7\frac{3}{4}$ hours = $20\frac{2}{3} km = 62\frac{3}{3}$

Distance cover by Vikas in 1 hour = $62\frac{2}{3} \div 7\frac{3}{4} = 62\frac{2}{3} \div \frac{31}{4} = 62\frac{2}{3} \times \frac{4}{31} = 8\frac{2}{3} = 2\frac{2}{3} \text{ km}$

Question 9:

Solution: Cost of $8\frac{1}{2} \text{ kg}$ of sugar = Rs. $242\frac{1}{4} = 969\frac{1}{4}$

Cost of 1 kg sugar = $969\frac{1}{4} \div 8\frac{1}{2} = 969\frac{1}{4} \div 17\frac{2}{2} = 969\frac{1}{4} \times \frac{2}{17} = 57\frac{1}{2} = \text{Rs. } 29\frac{1}{2}$

Question 10:

Solution: Cost of 1 notebook = Rs. $27\frac{3}{4} = 111\frac{3}{4}$

Total money spent on notebook = Rs. $249\frac{3}{4} = 999\frac{3}{4}$

No. of notebooks purchased = $999\frac{3}{4} \div 111\frac{3}{4} = 999\frac{3}{4} \times \frac{4}{111} = 9$

Question 11:

Solution: Price of 1 ticket = Rs. $32\frac{1}{2} = 65\frac{1}{2}$

Price of all tickets = Rs. $877\frac{1}{2} = 1755\frac{1}{2}$

No. of tickets sold = $1755\frac{1}{2} \div 65\frac{1}{2} = 1755\frac{1}{2} \times \frac{2}{65} = 27$

Question 12:

Solution: Contribution of 1 student = Rs. $261\frac{1}{2} =$

$523\frac{1}{2}$ Total contribution = Rs. $2876\frac{1}{2} = 5753\frac{1}{2}$

No. of students = $5753\frac{1}{2} \div 523\frac{1}{2} = 5753\frac{1}{2} \times \frac{2}{523} = 11$

Question 13:

Solution: Total milk = 24 litres

Milk for 1 student = $5\frac{2}{3}$ litre

$$\text{No. of student} = 24 \div 5^2 = 24 \times \frac{5}{2} = 60$$

Question 14:

Solution: Capacity of 1 bucket = $20\frac{1}{4}$ litres =

$$81\frac{1}{4} \text{ Capacity of 1 jug} = 3\frac{3}{4} \text{ litre}$$

$$\begin{aligned} \text{No. of times, the jug has to be filled with water from bucket to get it emptied} &= 81\frac{1}{4} \div 3\frac{3}{4} \\ &= 81\frac{1}{4} \times \frac{4}{3} = 27 \end{aligned}$$

Question 15:

Solution: Let the other number be X

$$X \times 6\frac{1}{3} = 15\frac{5}{6}$$

$$X \times \frac{19}{3} = \frac{95}{6}$$

$$X = \frac{95}{6} \div \frac{19}{3} = \frac{95}{6} \times \frac{3}{19} = \frac{5}{2} = 2\frac{1}{2}$$

So, the other number is $2\frac{1}{2}$

Question 16:

Solution: Let the number be X

$$X \times 95\frac{4}{5} = 42$$

$$X \times \frac{49}{5} = 42$$

$$X = 42 \div \frac{49}{5} = 42 \times \frac{5}{49} = \frac{30}{7} = 4\frac{2}{7}$$

So, the other number is $4\frac{2}{7}$

Question 17:

Solution: Let the number be X

$$69\frac{2}{3} \div X = 4\frac{2}{3}$$

$$56_{9 \div X} = 14_3$$

$$X = 56_{9 \div 14_3} = 56_{9 \times 14^3} = 4_3 = 1_3$$

So, the number is 1_3

Exercise 2D

OBJECTIVE QUESTIONS

Mark (✓) against the correct answer in each of the following:

Question 1:

Solution: (c) 10_3 , because its denominator is a whole number other than 10, 100, 1000, etc.

Question 2:

Solution: (c) 9_7 , because its denominator is less than numerator.

Question 3:

Solution: (a) 112^{105} , because $112^{105 \div 7} = 16^{15}$

Question 4:

Solution: (c) equivalent fractions, because $\frac{2}{3}; \frac{4}{6} = \frac{2}{3}, \frac{6}{9} = \frac{2}{3}, \frac{8}{12} = \frac{2}{3}$

Question 5:

Solution: (c) $16^9 > 13_{24}$, because by cross multiplication, we have

$$9 \times 24 = 216 \text{ and } 13 \times 16 = 208$$

However, $216 > 208$

Therefore, $16^9 > 13_{24}$

Question 6:

Solution: (d) none of these, because reciprocal of $1\frac{3}{4} = \text{reciprocal of } \frac{7}{4} = \frac{4}{7}$

Question 7:

Solution: (c) $\frac{5}{6}$, because $\left(\frac{3}{10} + \frac{8}{15}\right) = \frac{9+16}{30} = \frac{25}{30} = \frac{25 \div 5}{30 \div 5} = \frac{5}{6}$

Question 8:

Solution: (d) $\frac{11}{12}$, because $\left(3\frac{1}{4} - 2\frac{1}{3}\right) = \frac{13}{4} - \frac{7}{3} = \frac{39-28}{12} = \frac{11}{12}$

Question 9:

Solution: (d) 144, because $36 \div \frac{1}{4} = 36 \times 4 = 144$

Question 10:

Solution: (b) 7^5 , because $17^6 \div 25^3 = \frac{13}{7} \div \frac{13}{5} = \frac{13}{7} \times \frac{5}{13} = 7^5$

Question 11:

Solution: (d) $2\frac{1}{4}$, because $1\frac{1}{2} \div \frac{2}{3} = \frac{3}{2} \div \frac{2}{3} = \frac{3}{2} \times \frac{3}{2} = \frac{9}{4} = 2\frac{1}{4}$

Question 12:

Solution: (c) $2\frac{2}{5}$, because $1\frac{3}{5} \div \frac{2}{3} = \frac{8}{5} \div \frac{2}{3} = \frac{8}{5} \times \frac{3}{2} = \frac{12}{5} = 2\frac{2}{5}$

Question 13:

Solution: (d) $1\frac{5}{6}$, because $2\frac{1}{5} \div 1\frac{1}{5} = \frac{11}{5} \div \frac{6}{5} = \frac{11}{5} \times \frac{5}{6} = \frac{11}{6} = 1\frac{5}{6}$

Question 14:

Solution: (d) 5^3 , because reciprocal of $1\frac{2}{3} = \text{reciprocal of } \frac{5}{3} = 5^3$

Question 15:

Solution: (b) $5^3 < 3^2 < 14^{15}$, because LCM of 5, 3,

15 = 15 Now, we have

$$2 \times 5 = 10 ; 3 \times 3 = 9 ; 14 \times 1 = 14$$

$$3 \times 5 = 15 \quad 5 \times 3 = 15 \quad 15 \times 1 = 15$$

$$\text{Clearly, } \frac{9}{15} < \frac{10}{15} < \frac{14}{15}$$

Therefore, $5^3 < 3^2 < 14^{15}$

Question 16:

Solution: (c) 44 km, because Distance covered by car on $2\frac{3}{4}$ litres of petrol =

$$16 \times 2\frac{3}{4} = 16 \times \frac{11}{4} = 4 \times 11 = 44 \text{ km}$$

Question 17:

Solution: (a) $10\frac{1}{2}$ hours, because Time taken by lalit to read the whole book

$$= 6 \times 1\frac{3}{4} = 6 \times \frac{7}{4} = \frac{3 \times 7}{2} = \frac{21}{2} = 10\frac{1}{2} \text{ hours}$$

