

MATHEMATICS

Chapter 2: Fractions and Decimals



Important Questions

Multiple Choice Questions :

Question 1. What is $\frac{1}{7}$ of 49 litres?

- (a) 11
- (b) 51
- (c) 71
- (d) 61

Question 2. Find $\frac{2}{7} \times 3$.

- (a) $\frac{5}{7}$
- (b) $\frac{6}{7}$
- (c) $\frac{1}{7}$
- (d) none of these

Question 3. If $43m = 0.086$ then m has the value

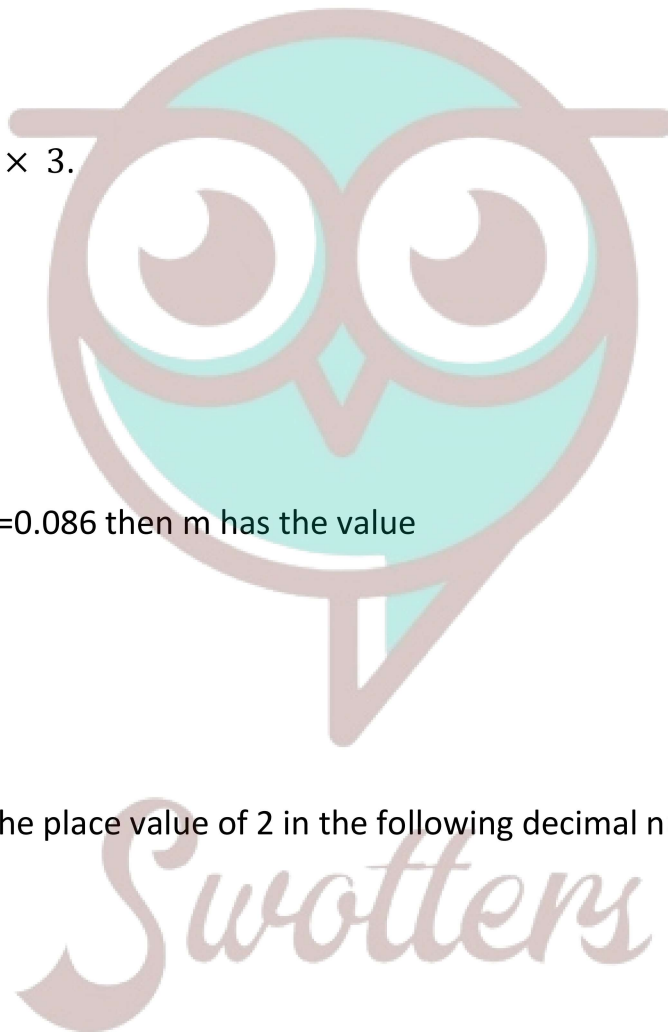
- (a) 0.002
- (b) 0.02
- (c) 2
- (d) 0.2

Question 4. Write the place value of 2 in the following decimal numbers : 2.56

- (a) 5
- (b) .06
- (c) 2
- (d) None of these

Question 5. $0.01 \times 0.01 =$ _____

- (a) 0.0001
- (b) 0.001
- (c) 1
- (d) 0.1



Question 6. Find 0.2×0.3

- (a) 0.6
- (b) 0.06
- (c) 6
- (d) None of these

Question 7. Which of the following is an improper fraction?

- (a) $\frac{20}{70}$
- (b) $\frac{30}{40}$
- (c) $\frac{50}{20}$
- (d) $\frac{70}{80}$

Question 8. What is $\frac{1}{2}$ of 10.

- (a) 6
- (b) 4
- (c) 3
- (d) 5

Question 9. Find the area of rectangle whose length is 6.7 cm and breadth is 2 cm.

- (a) 13 cm^2
- (b) 13.4 cm^2
- (c) 13.8 cm^2
- (d) 14 cm^2

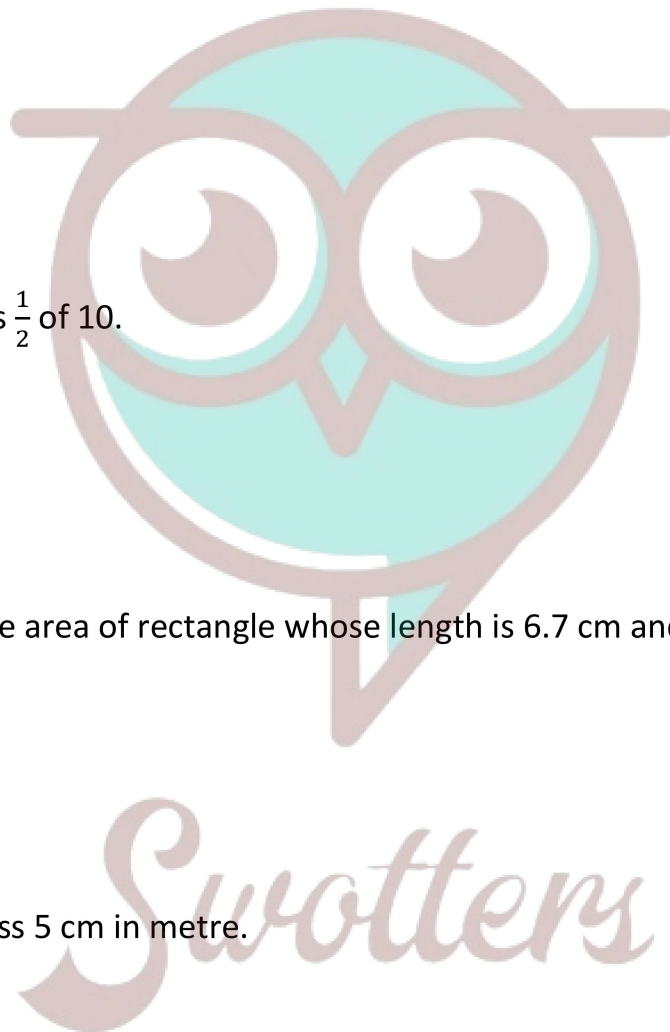
Question 10. Express 5 cm in metre.

- (a) .05
- (b) .5
- (c) .005
- (d) None of these

Question 11. Which amongst the following is the largest?

$|-89|$, -89 , -21 , $|-21|$

- (a) -89
- (b) -21



(c) $|-89|$

(d) $|-21|$

Question 12. The side of an equilateral triangle is 3.5 cm. Find its perimeter.

(a) 10.5 cm

(b) 1.05 cm

(c) 105 cm

(d) None of these

Question 13. Provide the number in the box \cong such that $\frac{3}{5} \times \cong = \frac{24}{75}$.

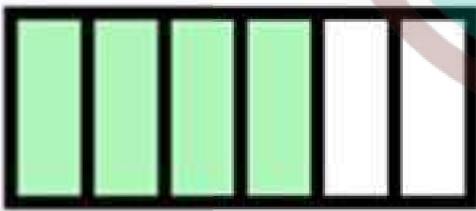
(a) $\frac{7}{15}$

(b) $\frac{8}{15}$

(c) $\frac{5}{3}$

(d) none of these

Question 14. What is the fraction of the shaded area?



(a) $\frac{2}{3}$

(b) $\frac{1}{3}$

(c) $\frac{1}{4}$

(d) None of these

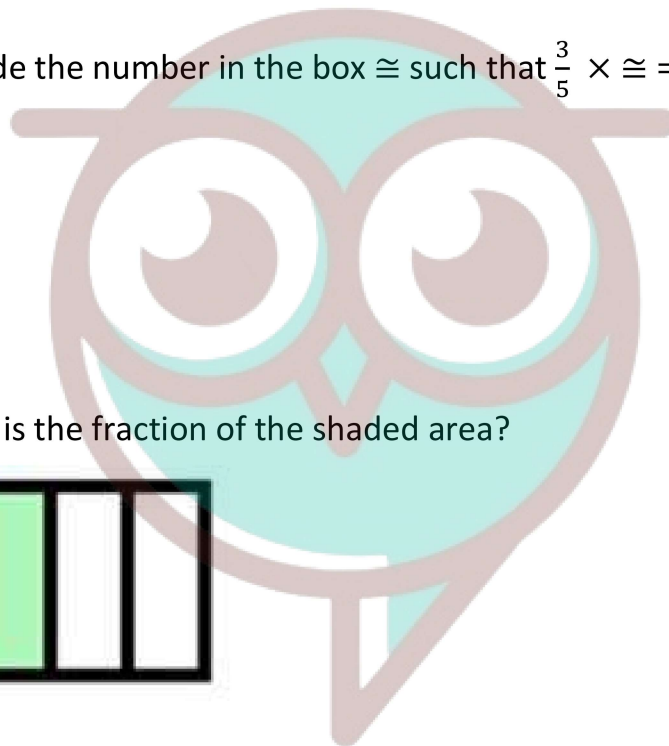
Question 15. Which of the following is a proper fraction?

(a) $\frac{28}{15}$

(b) $\frac{21}{23}$

(c) $\frac{16}{7}$

(d) $\frac{34}{3}$



Swotters

Very Short Questions :

1. If $\frac{2}{3}$ of a number is 6, find the number.

2. Find the product of $\frac{6}{7}$ and $2\frac{2}{3}$.

3. Solve the following:

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

4. Multiply 2.05 and 1.3.

5. Solve:

(i) $2 - \frac{3}{5}$ (ii) $4 + \frac{7}{8}$ (iii) $\frac{3}{5} + \frac{2}{7}$

6. Solve the following:

(a) $3 - \frac{2}{3}$

(b) $4 + \frac{2}{5}$

7. Arrange the following in descending order:

(i) $\frac{2}{9}, \frac{2}{3}, \frac{8}{21}$ (ii) $\frac{1}{5}, \frac{3}{7}, \frac{7}{10}$

Short Questions :

1. Arrange the following in ascending order:

(i) $\frac{2}{7}, \frac{3}{5}, \frac{5}{6}$ (ii) $\frac{1}{5}, \frac{3}{7}, \frac{7}{10}, \frac{1}{6}$

2. Find the products:

(i) 2.4×100

(ii) 0.24×1000

(iii) 0.024×10000

3. Arnav spends $1\frac{3}{4}$ hours in studies, $2\frac{1}{2}$ hours in playing cricket. How much time did he spend in all?

4. A square paper sheet has $10\frac{2}{5}$ cm long side. Find its perimeter and area.

- Find the value of $\frac{1}{3\frac{3}{5}} + \frac{1}{4\frac{4}{9}} + \frac{1}{\frac{1}{3}}$
- The product of two numbers is 2.0016. If one of them is 0.72, find the other number.
- Reemu reads 15th pages of a book. If she reads further 40 pages, she would have read $\frac{7}{10}$ th page of the book. How many pages are left to be read?
- $\frac{1}{8}$ of a number equals $\frac{2}{5} \div \frac{1}{20}$. What is the number?

Long Questions :

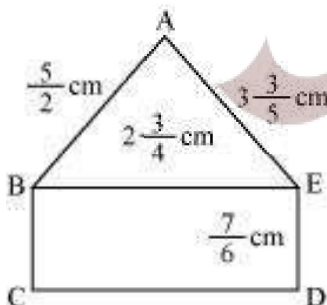
- Simplify the following:

(i) $\frac{2\frac{1}{2} + \frac{1}{5}}{2\frac{1}{2} + \frac{1}{5}}$

(ii) $\frac{\frac{1}{4} + \frac{1}{5}}{1 - \frac{3}{8} \times \frac{3}{5}}$

- The weight of an object on the Moon is $\frac{1}{6}$ its weight on the Earth. If an object weight $5\frac{3}{5}$ kg on the Earth. How much would it weight on the Moon?
- A picture hall has seats for 820 persons. At a recent film show, one usher guessed it was $\frac{3}{4}$ full, another that it was $\frac{2}{3}$ full. The ticket office reported 648 sales. Which usher (first or second) made the better guess?
- A rectangular sheet of paper is $12\frac{1}{2}$ cm long and $10\frac{2}{3}$ cm wide.
Find its perimeter.

- Find the perimeters of (i) ΔABE (ii) the rectangle BCDE in this figure. Whose perimeter is greater?



Assertion and Reason Questions:

- Assertion:** fraction is a number expressed as a quotient, in which a numerator is divided by a denominator.

Reason: $4/11$ is a fraction.

- a.) Both Assertion and Reason are correct and Reason is the correct explanation for Assertion
- b.) Both Assertion and Reason are correct and Reason is not the correct explanation for Assertion.
- c.) assertion is true but the reason is false.
- d.) both assertion and reason are false.

2) Assertion: $2/7$ is an improper fraction.

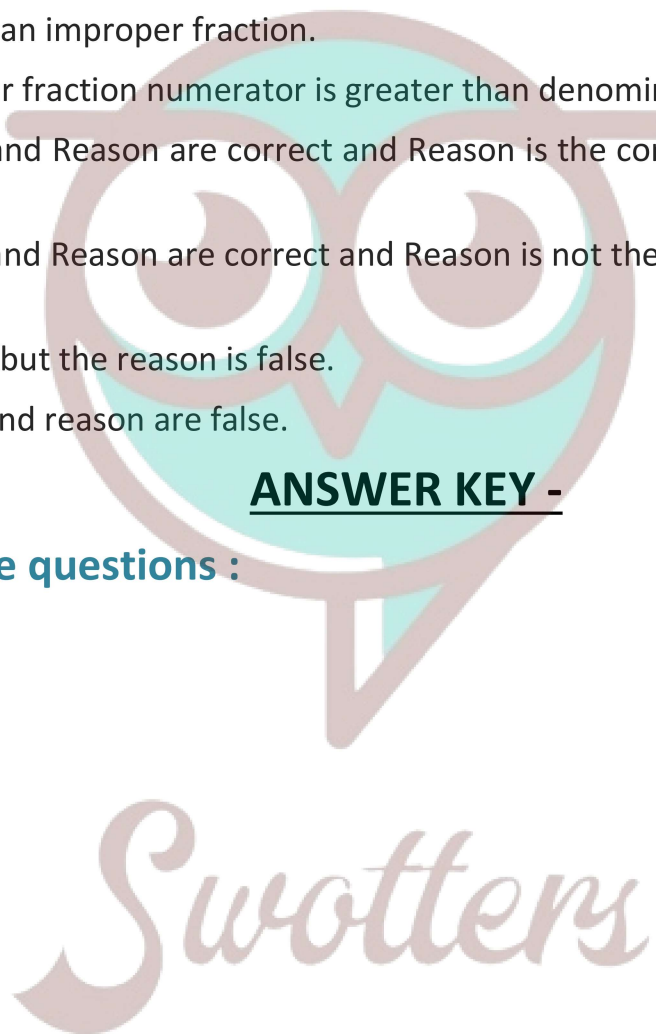
Reason: in improper fraction numerator is greater than denominator.

- a.) Both Assertion and Reason are correct and Reason is the correct explanation for Assertion
- b.) Both Assertion and Reason are correct and Reason is not the correct explanation for Assertion.
- c.) assertion is true but the reason is false.
- d.) both assertion and reason are false.

ANSWER KEY -

Multiple Choice questions :

1. (c) 71
2. (b) $\frac{6}{7}$
3. (a) 0.002
4. (c) 2
5. (a) 0.0001
6. (b) 0.06
7. (c) $\frac{50}{20}$
8. (d) 5
9. (b) 13.4 cm^2
10. (a) .05
11. (c) $|-89|$
12. (a) 10.5 cm
13. (b) $\frac{8}{15}$



14. (a) $\frac{2}{3}$

15. (b) $\frac{21}{23}$

Very Short Answer :

1. Let x be the required number.

$$\begin{aligned} \therefore \frac{2}{3} \text{ of } x = 6 &\Rightarrow \frac{2}{3} \times x = 6 \\ \Rightarrow x = 6 \div \frac{2}{3} &= 6 \times \frac{3}{2} = 3 \times 3 = 9 \end{aligned}$$

Hence, the required number is 9.

2.

$$\begin{aligned} \frac{6}{7} \times 2\frac{2}{3} &= \frac{6^2}{7} \times \frac{8}{3} = \frac{2 \times 8}{7 \times 1} \\ &= \frac{16}{7} = 2\frac{2}{7} \end{aligned}$$

3.

$$\begin{aligned} \frac{2}{3} + \frac{4}{5} + \frac{2}{5} - 3 &= \frac{2}{3} + \frac{4^2}{5} \times \frac{5}{2} - 3 \\ &= \frac{2}{3} + 2 - 3 = \frac{2}{3} - 1 = \frac{2-3}{3} = -\frac{1}{3} \end{aligned}$$

4.

$$2.05 \times 1.3 = \frac{205}{100} \times \frac{13}{10} = \frac{2665}{1000} = 2.665$$

5.

(i) $2 - \frac{3}{5} = \frac{2 \times 5}{5} - \frac{3}{5} = \frac{10-3}{5} = \frac{7}{5}$

(ii) $4 + \frac{7}{8} = \frac{4 \times 8}{8} + \frac{7}{8} = \frac{(4 \times 8) + 7}{8} = \frac{39}{8} = 4\frac{7}{8}$

(iii) $\frac{3}{5} + \frac{2}{7} = \frac{3 \times 7}{5 \times 7} + \frac{2 \times 5}{7 \times 5} = \frac{21+10}{35} = \frac{31}{35}$

6.

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

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

$$(b) 4 + \frac{2}{5} = \frac{4}{1} + \frac{2}{5} = \frac{4 \times 5 + 2 \times 1}{5}$$

$$= \frac{20 + 2}{5} = \frac{22}{5} = 4\frac{2}{5}$$

7.

$$(i) \frac{2}{9}, \frac{2}{3}, \frac{8}{21}$$

Changing them to like fractions, we obtain

$$\frac{2}{9} = \frac{2 \times 7}{9 \times 7} = \frac{14}{63}$$

$$\frac{2}{3} = \frac{2 \times 21}{3 \times 21} = \frac{42}{63}$$

$$\frac{8}{21} = \frac{8 \times 3}{21 \times 3} = \frac{24}{63}$$

Since $42 > 24 > 14$,

$$\therefore \frac{2}{3} > \frac{8}{21} > \frac{2}{9}$$

$$(ii) \frac{1}{5}, \frac{3}{7}, \frac{7}{10}$$

Changing them to like fractions, we obtain

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

$$\frac{3}{7} = \frac{3 \times 10}{7 \times 10} = \frac{30}{70}$$

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

As $49 > 30 > 14$,

$$\therefore \frac{7}{10} > \frac{3}{7} > \frac{1}{5}$$

Short Answer :

1.

(i) We have $\frac{2}{7}$, $\frac{3}{5}$ and $\frac{5}{6}$

LCM of 7, 5 and 6 = 210

$$\therefore \frac{2}{7} \times \frac{30}{30} = \frac{60}{210}$$

$$\frac{3}{5} \times \frac{42}{42} = \frac{126}{210}$$

$$\frac{5}{6} \times \frac{35}{35} = \frac{175}{210}$$

$$\begin{array}{r|l} 2 & 7, 5, 6 \\ \hline 3 & 7, 5, 3 \\ \hline 5 & 7, 5, 1 \\ \hline 7 & 7, 1, 1 \\ \hline & 1, 1, 1 \end{array}$$

$$\text{LCM} = 2 \times 3 \times 5 \times 7 = 210$$

Since, the denominators are same.

$$\therefore 175 > 126 > 60$$

Hence, the required order is

$$\frac{5}{6} > \frac{3}{5} > \frac{2}{7}$$

(ii) We have $\frac{1}{5}$, $\frac{3}{7}$, $\frac{7}{10}$ and $\frac{1}{6}$

LCM of 5, 7, 10 and 6 = 210

$$\frac{1}{5} \times \frac{42}{42} = \frac{42}{210}$$

$$\frac{3}{7} \times \frac{30}{30} = \frac{90}{210}$$

$$\frac{7}{10} \times \frac{21}{21} = \frac{147}{210}$$

$$\begin{array}{r|l} 2 & 5, 7, 10, 6 \\ \hline 3 & 5, 7, 5, 3 \\ \hline 5 & 5, 7, 5, 1 \\ \hline 7 & 1, 7, 1, 1 \\ \hline & 1, 1, 1, 1 \end{array}$$

$$\text{LCM} = 2 \times 3 \times 5 \times 7 = 210$$

$$\frac{1}{6} \times \frac{35}{35} = \frac{35}{210}$$

Since, the denominator are same.

$$\therefore 147 > 90 > 42 > 35$$

Hence, the required order is $\frac{7}{10} > \frac{3}{7} > \frac{1}{5} >$

$$\frac{1}{6}$$

2.

$$(i) 2.4 \times 100 = \frac{24}{10} \times 100 = 24 \times 10 = 240$$

$$(ii) 0.24 \times 1000 = \frac{24}{100} \times 1000 = 24 \times 10 = 240$$

$$(iii) 0.024 \times 10000 = \frac{24}{1000} \times 10000 = 24 \times 10 = 240$$

3. Time spent by Arnav in studies = $1\frac{3}{4}$ hours

Time spent by Arnav in playing cricket = $2\frac{1}{2}$ hours

Total time spent by Arnav = $1\frac{3}{4}$ hours + $2\frac{1}{2}$ hours

$$= \left(\frac{7}{4} + \frac{5}{2}\right) \text{ hours} = \left(\frac{7 \times 1 + 5 \times 2}{4}\right) \text{ hours}$$

$$= \left(\frac{7 + 10}{4}\right) \text{ hours} = \frac{17}{4} \text{ hours or } 4\frac{1}{4} \text{ hours}$$

4.

Length of the side of the square sheet

$$= 10\frac{2}{5} \text{ cm} = \frac{52}{5} \text{ cm}$$

$$\begin{aligned} \text{Perimeter} &= 4 \times \text{side} = 4 \times \frac{52}{5} \\ &= \frac{208}{5} \text{ cm} = 41\frac{3}{5} \text{ cm} \end{aligned}$$

$$\begin{array}{r} 5 \overline{) 208} \quad (41 \\ \underline{-20} \\ 8 \\ \underline{-5} \\ 3 \end{array}$$

$$\text{Area} = \text{Side} \times \text{Side} = 10\frac{2}{5} \times 10\frac{2}{5}$$

$$= \frac{52}{5} \times \frac{52}{5} = \frac{2704}{25}$$

$$= 108\frac{4}{25} \text{ cm}^2$$

$$\begin{array}{r} 25 \overline{) 2704} \quad (108 \\ \underline{-25} \\ 204 \\ \underline{-204} \\ 4 \end{array}$$

5.

$$\frac{1}{3\frac{3}{5}} + \frac{1}{4\frac{8}{9}} + \frac{1}{\frac{3}{5}} = \frac{1}{\left(\frac{18}{5}\right)} + \frac{1}{\left(\frac{44}{9}\right)} + \frac{1}{\left(\frac{3}{5}\right)}$$

$$= \frac{5}{18} + \frac{9}{44} + \frac{5}{3}$$

2	18, 44, 3
2	9, 22, 3
3	9, 11, 3
3	3, 11, 1
11	1, 11, 1
1	1, 1, 1

$$\therefore \text{LCM} = 2 \times 2 \times 3 \times 3 \times 11 = 396$$

$$= \frac{5 \times 22 + 9 \times 9 + 5 \times 132}{396}$$

$$= \frac{110 + 81 + 660}{396}$$

$$= \frac{851}{396} = 2\frac{59}{396}$$

396) 851	(2
	- 792	
	59	

Hence, the required value is $2\frac{59}{396}$.

6. Product of two numbers = 2.0016

One number = 0.72

Other number = $2.0016 \div 0.72$

$$= \frac{2.0016}{0.72} = \frac{20016}{10000} \times \frac{100}{72}$$

$$= \frac{139}{50} = \frac{139 \times 2}{50 \times 2} = \frac{278}{100} = 2.78$$

Hence, the required number = 2.78.

7. Let the total number of pages be x.

Number of pages read by Reemu = $\frac{1}{5x}$

If she reads 40 more pages,

Total number of pages read by her = $\frac{1}{5}x + 40$

$$\frac{7}{10}x = \frac{1}{5}x + 40 \Rightarrow \frac{7}{10}x - \frac{1}{5}x = 40$$

$$\Rightarrow \frac{7x - 2x}{10} = 40 \Rightarrow \frac{5x}{10} = 40$$

$$\Rightarrow x = 40 \div \frac{5}{10} = 40 \times \frac{10^2}{5} = 80$$

Hence, the required number of pages = 80.

8. Let the number be x.

$$\therefore \frac{1}{8} \text{ of } x = \frac{2}{5} + \frac{1}{20}$$

$$\Rightarrow \frac{1}{8} \times x = \frac{2}{5} \times \frac{20^4}{1}$$

$$\Rightarrow \frac{1}{8}x = 2 \times 4 \Rightarrow \frac{1}{8}x = 8$$

$$\Rightarrow x = 8 \times 8 = 64$$

Hence, the required number = 64.

Long Answer :

1.

$$(i) \frac{2\frac{1}{2} + \frac{1}{5}}{2\frac{1}{2} + \frac{1}{5}} = \frac{\frac{5}{2} + \frac{1}{5}}{\frac{5}{2} + \frac{1}{5}} = \frac{5 \times 5 + 1 \times 2}{\frac{5}{2} \times \frac{5}{1}}$$

$$= \frac{25 + 2}{\frac{25}{2}} = \frac{27}{10_5} \times \frac{2}{25} = \frac{27}{125}$$

$$(ii) \frac{\frac{1}{4} + \frac{1}{5}}{1 - \frac{3}{8} \times \frac{3}{5}} = \frac{\frac{5+4}{20}}{1 - \frac{9}{40}} = \frac{9}{40-9} = \frac{9}{31}$$

$$= \frac{9}{20} \times \frac{40^2}{31} = \frac{9 \times 2}{31} = \frac{18}{31}$$

2. Weight of the object on the Earth

$$= 5\frac{3}{5} \text{ kg} = \frac{28}{5} \text{ kg}$$

\therefore Weight of the object on the Earth

$$= \frac{1}{6} \times \frac{28^{14}}{5} \text{ kg} = \frac{14}{15} \text{ kg}$$

Hence, the required weight = $\frac{14}{15}$ kg.

3. Total number of seats = 820

Number of ticket sold = 648

For first usher = $\frac{3}{4} \times 648 = 3 \times 162 = 486$

For second usher = $\frac{2}{3} \times 648 = 2 \times 216 = 432$

Since $432 < 486$

Hence, the first usher guessed better.

4. Length = $12\frac{1}{2}$ cm = $\frac{25}{2}$ cm

Breadth = $10\frac{2}{3}$ cm = $\frac{32}{3}$ cm

Perimeter = $2 \times (\text{Length} + \text{Breadth})$

$$= 2 \times \left[\frac{25}{2} + \frac{32}{3} \right] = 2 \times \left[\frac{(25 \times 3) + (32 \times 2)}{6} \right] = 2 \times \left[\frac{75 + 64}{6} \right]$$

$$= 2 \times \frac{139}{6} = \frac{139}{3} = 46\frac{1}{3} \text{ cm}$$

5. (i) Perimeter of $\Delta ABE = AB + BE + EA$

$$= \left(\frac{5}{2} + 2\frac{3}{4} + 3\frac{3}{5} \right) = \left(\frac{5}{2} + \frac{11}{4} + \frac{18}{5} \right)$$

$$= \left(\frac{5 \times 10}{2 \times 10} + \frac{11 \times 5}{4 \times 5} + \frac{18 \times 4}{5 \times 4} \right)$$

$$= \frac{50 + 55 + 72}{20} = \frac{177}{20} = 8\frac{17}{20} \text{ cm}$$

(ii) Perimeter of rectangle = $2 (\text{Length} + \text{Breadth})$

$$\text{Perimeter of rectangle} = 2 \left[\frac{11}{4} + \frac{7}{6} \right]$$

$$= 2 \left[\frac{11 \times 3}{4 \times 3} + \frac{7 \times 2}{6 \times 2} \right] = 2 \left[\frac{33 + 14}{12} \right]$$

$$= 2 \times \frac{47}{12} = \frac{47}{6} = 7\frac{5}{6} \text{ cm}$$

Perimeter of $\Delta ABE = \frac{177}{20}$ cm

Changing them to like fractions, we obtain

$$\frac{177}{20} = \frac{177 \times 3}{20 \times 3} = \frac{531}{60}$$
$$\frac{47}{6} = \frac{47 \times 10}{6 \times 10} = \frac{470}{60}$$

As $531 > 470$,

$$\Rightarrow \frac{177}{20} > \frac{47}{6}$$

Perimeter ($\triangle ABE$) > Perimeter (BCDE)

Assertion and Reason Questions:

- 1) a) Both Assertion and Reason are correct and Reason is the correct explanation for Assertion.
- 2) d.) both assertion and reason are false.

