Grade VII

Lesson : 2 FRACATIONS AND DECIMALS

Know the Terms

FRACTION :

The number of the form $\frac{a}{b}$, where a and b are natural numbers, is known as fraction.

e.g . $\frac{3}{5}$ = $\frac{3 \longrightarrow Numerator}{5 \longrightarrow Denominator}$

Various types of fraction :

- **Decimal fraction** : Whose denominator is any of the numbers 10,100,1000 etc,

  Eg: $\frac{2}{10}$, $\frac{4}{100}$, $\frac{13}{1000}$ etc.,

- **Vulgar fraction :** Whose denominator is a whole number other than etc.,

  Eg: $\frac{2}{9}$, $\frac{4}{13}$, $\frac{13}{20}$, $\frac{27}{109}$ etc.,

- **Proper fraction :** Whose numerator is less than its Denominator.

  Eg: $\frac{3}{7}$, $\frac{5}{11}$, $\frac{23}{40}$, $\frac{73}{100}$ etc.,

  Hint : $\frac{Rat}{Elephant}$

- **Improper Fraction :** Whose numerator is move than or equal to its denominator

  Eg: $\frac{11}{7}$, $\frac{25}{12}$, $\frac{41}{43}$, $\frac{53}{53}$ etc.,

  Hint : $\frac{Elephant}{Rat}$

- **Mixed Fraction :** A number which can be expressed as me sum of a natural number and proper fraction.

  Eg: $1\frac{3}{4}$, $4\frac{5}{9}$.....

  Hint :Quotient $\frac{Remainer}{Divisor}$

- **Equivalent Fraction :**

  A given fraction and the fraction obtained by multiplying or dividing its numerator and denominator by the same non zero number are called equivalent fraction.

- **Like Fraction :** Fraction have same denominator but different numerator

  Eq: $\frac{5}{13}$, $\frac{6}{13}$, $\frac{7}{13}$

- **Unlike Fraction :** Fraction having different denominators are called un like fraction.

  $\frac{3}{7}$, $\frac{5}{9}$, $\frac{11}{13}$

Objective Type Questions

I. Multiple choice questions

1. What is the $\frac{1}{2}$ of 12?

a) 5 b) 6 c) 3 d) 0

2. Which of the following is a proper fraction?

a) $\frac{4}{3}$ b) $\frac{1}{2}$ c) $\frac{19}{4}$ d) $\frac{11}{5}$

3. Which of the following is the equivalent fraction of $\frac{3}{4}$ with numerator 18?

a) $\frac{18}{12}$ b) $\frac{18}{20}$ c) $\frac{18}{4}$ d) $\frac{18}{24}$

4. Which of the following is the perimeter of the rectangle of length $\frac{3}{4}$ m and breadth $\frac{1}{4}$ m?

a) 2 m b) 1m c) $\frac{3}{8}$ m d) 4 m

5. In a class of 40 students, $\frac{3}{5}$ of the total number of students are girls. How many students of the class are boys?

a) 24 b) 20 c) 16 d) 15

6. A car runs 16 km using 1 litre of petrol. How much distance will it cover using 2.5 litres of petrol?

a) 16 km b) 40km c) 32 km d) 50 km

7. Which of the following is the value of 0.1 x 51.7 ?

a) 517 b)51.7 c) 0.517 d) 5.17

8. A vehicle covers a distance of 89.1 km in 2.2 hours. What is the average distance covered by it in 1 hour.?

a) 40.5 m b) 40.5 km c) 4.05 km d) 405 km

9. The decimal expression for 8 rupees 8 paise (in Rupees) is.

a) 8.8 b) 8.08 c) 8.008 d) 88.0

10. Each side of a regular hexagon is 3.5 cm long. The perimeter of the given polygon is

a) 17.5 cm B) 21 cm C)18.3 cm D) 20 cm

11. 2.5 ÷ 1000 is equal to :

a) 0.025 b) 0.0025 c) 0.2500 d) 25000

12. Which of the following has the smallest value?

a) 0.0002 b) $\frac{2}{1000}$ c) $\frac{(0.2)^2}{2}$ d) $\frac{2}{100} \div 0.01$

13. Which of the following has the largest value?

a) $\frac{32}{0.05}$ b) $\frac{0.320}{50}$ c) $\frac{3.2}{0.05}$ d) $\frac{3.2}{50}$

14. The largest of the following is :

a) 0.0001 b) $\frac{1}{1000}$ c) $(0.100)^2$ d) $\frac{1}{10} \div 0.1$

15. $\frac{2}{5}$ x $5\frac{1}{5}$ is equal to :

a) $\frac{26}{25}$ b) $\frac{52}{25}$ c) $\frac{2}{5}$ d) 6

16. $3\frac{3}{4} \div \frac{3}{4}$ is equal to :

a) 3 b) 4 c) 5 d) $\frac{45}{16}$

17. A ribbon of length $5\frac{1}{4}$ m is cut into small pieces each of length $\frac{3}{4}$ m. Number of pieces will be:

a) 5 b) 6 c) 7 d) 8

18. The ascending of arrangement of $\frac{2}{3}$, $\frac{6}{7}$, $\frac{13}{21}$ is :

a) $\frac{1}{5}$, $\frac{3}{7}$, $\frac{7}{10}$ b) $\frac{13}{21}$, $\frac{2}{3}$, $\frac{6}{7}$ c) $\frac{6}{7}$, $\frac{13}{21}$, $\frac{2}{3}$ d) $\frac{2}{3}$, $\frac{6}{7}$, $\frac{13}{21}$

19. Reciprocal of the fraction $\frac{2}{3}$ is :

a) 2 b) 3 c) $\frac{2}{3}$ d) $\frac{3}{2}$

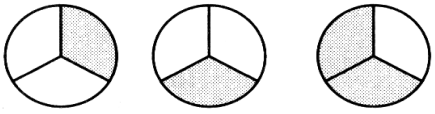
20. The product of $\frac{11}{13}$ and 4 is :

a) $3\frac{5}{13}$ b) $5\frac{3}{15}$ c) $13\frac{3}{5}$ d) $13\frac{5}{3}$

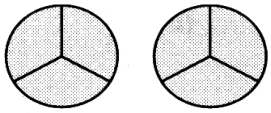
21. The product of 3 and $4\frac{2}{5}$ is :

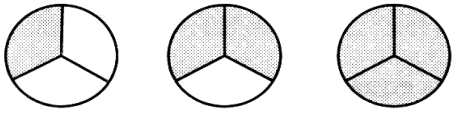
a) $17\frac{2}{5}$ b) $\frac{24}{5}$ c) $13\frac{1}{5}$ d) $5\frac{1}{13}$

22. Pictorial representation of 3 x $\frac{2}{3}$:

a. 

b. 

c. 

d. 

23. $\frac{1}{5} \div \frac{4}{5}$ equal to :

a) $\frac{4}{5}$ b) $\frac{1}{5}$ c) $\frac{5}{4}$ d) $\frac{1}{4}$

24. The product of 0.03 x 0.9 is :

a) 2.7 b) 0.27 c) 0.027 d) 0.0027

25. $\frac{5}{7} \div 6$ is equal to :

a) $\frac{30}{7}$ b) $\frac{5}{42}$ c) $\frac{30}{42}$ d) $\frac{6}{7}$

26. $5\frac{1}{6} \div \frac{9}{2}$ is equal to :

a) $\frac{31}{6}$ b) $\frac{1}{27}$ c) $5\frac{1}{27}$ d) $\frac{31}{27}$

27. Which of the following represents $\frac{1}{3}$ of $\frac{1}{6}$?

a) $\frac{1}{3} + \frac{1}{6}$ b) $\frac{1}{3} - \frac{1}{6}$ c) $\frac{1}{3} \times \frac{1}{6}$ d) $\frac{1}{3} \div \frac{1}{6}$

28. $\frac{3}{7}$ of $\frac{2}{5}$ is equal to :

a). $\frac{5}{12}$ b) $\frac{5}{35}$ c) $\frac{1}{35}$ d) $\frac{6}{35}$

29. One packet of biscuits requires $2\frac{1}{12}$ cups of flour and $1\frac{2}{3}$ cups of sugar. Estimated total quantity of both ingredients used in 10 such packets of biscuits will be :

a) Less than 30 cups b) Between 30cups and 40 cups

c) Between 40cups and 50 cups d) Above 50 cups

30. The product of 7 and $6\frac{3}{4}$ is :

a) $42\frac{1}{4}$ b) $47\frac{1}{4}$ c) $42\frac{3}{4}$ d) $47\frac{3}{4}$

31. On dividing 7 by $\frac{2}{5}$, the result is :

a) $\frac{14}{2}$ b) $\frac{35}{4}$ c) $\frac{14}{5}$ d) $\frac{35}{2}$

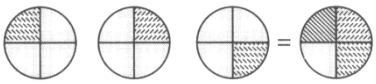
32. $2\frac{2}{3} \div 5$ is equal to :

a) $\frac{8}{15}$ b) $\frac{40}{3}$ c) $\frac{40}{5}$ d) $\frac{8}{3}$

33. $\frac{4}{5}$ of 5 kg apples were used on Monday. The next day $\frac{1}{3}$ of what was left was used. Weight (in kg) of apples left now is :

a) $\frac{2}{7}$ b) $\frac{1}{14}$ c) $\frac{2}{3}$ d) $\frac{4}{21}$.

34. The Picture



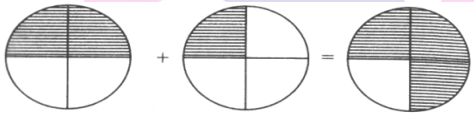
Interprets :

a) $\frac{1}{4} \div 3$ b) $3 \times \frac{1}{4}$ c) $\frac{3}{4} \times 3$ d) $3 \div \frac{1}{4}$

1. b	2. b	3. d	4. a	5. c	6. b	7. d	8. b	9. b	10.b
11. b	12. a	13. a	14. d	15. b	16. c	17. c	18. b	19. d	20. a
21. c	22. b	23. d	24. c	25. b	26. d	27. c	28. d	29. c	30. b
31. d	32. a	33. c	34. b						

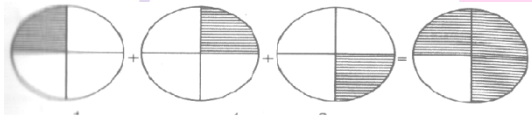
II. Multiple choice questions

1. The picture interprets.



1. $\frac{1}{3} \div 4$ 2. $3 \times \frac{1}{4}$ 3. $\frac{3}{4} \times 4$ 4. $3 \div \frac{1}{4}$

2

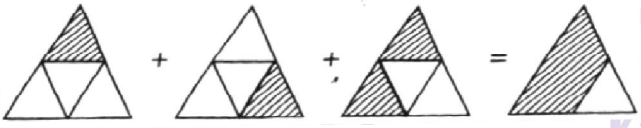


a) $\frac{1}{4} \div 3$ b) $3 \times \frac{1}{4}$ c) $\frac{3}{4} \times 3$ d) 2

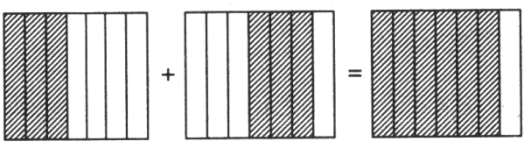
3. Pictorial representation of $6 \times \frac{1}{7}$ is

a)

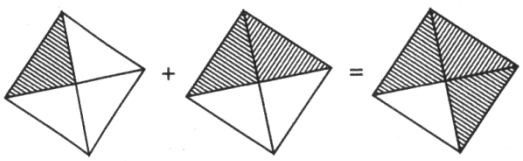
b)



c)



d)



4. In the year 2014, Shanthanu gets Rs.3832.5 as his pocket allowance. Find his pocket allowance per day.

a) Rs.9.5 b) Rs.10.5 c) Rs.12.5 d) Rs.11.5

5. How many pieces of 13.2 m can be cut from a 330 cm long rod?

a) 25 b) 28 c) 21 d) 35

6. $\frac{5}{12}$ part of what amount will be equal to $3\frac{3}{4}$ part of Rs.100?

a) Rs.900 b) Rs.940 c) Rs.875 d) Rs.925

1) b	2) b	3) c	4) b	5) a	6) a

III. Multiple choice questions

1. The place value of 7 in 631. 73 is.

a) Seven b) 7- tenths c) 7-hundredths d) 7- hundred

2. The number that should be added to 48.73 to obtain 61.5 is.

a) 12.77 b) 110.23 c) 12.32 d) 109.78

3. If we add 13.7 to 31.9 and then divide the result by 0.32, we obtain.

a) 56.875 b) 568.75 c) 14.25 d) 142.5

1. b	2. b	3. a

IV. Multiple choice questions

1. Which of the following is a proper fraction?

a) $\frac{7}{4}$ b) $\frac{19}{4}$ c) $\frac{14}{5}$ d) $\frac{4}{11}$

2. Which of the following is a proper fraction?

a) $\frac{17}{3}$ b) $\frac{43}{12}$ c) $\frac{15}{11}$ d) $\frac{4}{5}$

3. Which of the following is an improper fraction?

a) $\frac{2}{7}$ b) $\frac{1}{2}$ c) $\frac{2}{3}$ d) $\frac{73}{10}$

4. Which of the following is an improper fraction?

a) $\frac{1}{12}$ b) $\frac{5}{9}$ c) $\frac{4}{13}$ d) $\frac{7}{2}$

5. Which of the following is an mixed fraction?

a) $\frac{2}{17}$ b) $\frac{3}{14}$ c) $\frac{5}{27}$ d) $2\frac{13}{15}$

6. The improper fraction $\frac{33}{4}$ in the form of a mixed fraction is

a) $8\frac{1}{4}$ b) $4\frac{1}{8}$ c) $3\frac{8}{4}$ d) $4\frac{7}{8}$

7. Which of the following is not an equivalent fraction of $\frac{3}{5}$?

a) $\frac{6}{10}$ b) $\frac{9}{15}$ c) $\frac{12}{20}$ d) $\frac{15}{24}$

8. Which of the following is an equivalent fraction of $\frac{2}{3}$?

a) $\frac{4}{9}$ b) $\frac{6}{13}$ c) $\frac{8}{11}$ d) $\frac{10}{15}$

9. $1 - \frac{1}{5}$ is equal to

a) $\frac{2}{5}$ b) $\frac{3}{5}$ c) $\frac{4}{5}$ d) $\frac{1}{5}$

10. $2 + \frac{1}{4}$ is equal to

a) $\frac{7}{4}$ b) $\frac{9}{4}$ c) $\frac{5}{4}$ d) $\frac{11}{4}$

11. $\frac{1}{2} + \frac{1}{3}$ is equal to

a) $\frac{1}{6}$ b) $\frac{5}{6}$ c) $\frac{7}{6}$ d) $\frac{11}{6}$

12. $\frac{1}{2} - \frac{1}{4}$ is equal to

a) $\frac{1}{2}$ b) $\frac{1}{8}$ c) $\frac{1}{3}$ d) $\frac{1}{4}$

13. Apala ate $\frac{3}{5}$ of an orange. The remaining orange was eaten by Meenu. Qhat part of the orange was eaten by Meenu?

a) $\frac{1}{5}$ b) $\frac{2}{5}$ c) $\frac{3}{5}$ d) None of these.

14. The side of an equilateral triangle is $\frac{1}{2}$ cm. The perimeter of the triangle is.

a) 1 cm b) 2 Cm c) $\frac{3}{2}$ cm d) None of these.

15. The side of a square is $\frac{1}{2}$ cm. The perimeter of the square is.

a) 1 cm b) 2 cm c) $1\frac{1}{2}$ cm d) $2\frac{1}{2}$ cm.

16. Manish worked for $\frac{1}{2}$ an hour. Yash worked for $\frac{1}{4}$ of an hour. For how much time did both work together?

a) 1 hour b) $\frac{3}{4}$ hour c) $\frac{5}{4}$ hours d) $\frac{3}{2}$ hours.

17. The length of a rectangular sheet of paper is $\frac{3}{5}$ cm and the breadth is $\frac{2}{5}$ cm.

What is the perimeter of the paper?

a) 1cm b) 2 cm c) 3 cm d) 4 cm

18. Lipika reads $1\frac{1}{2}$ hours daily. Preeti reads $\frac{1}{2}$ hour daily. How much hours they read for in one day?

a) 1 hour b) 2 hours c)$1\frac{1}{2}$ hours d) $2\frac{1}{2}$ hours.

19. 2 x $\frac{5}{3}$ is equal to.

a) $\frac{7}{3}$ b) $\frac{11}{3}$ c) $\frac{13}{3}$ d) $\frac{10}{3}$

20. $\frac{7}{5}$ x 4 is equal to.

a) $\frac{21}{5}$ b) $\frac{22}{5}$ c) $\frac{28}{5}$ d) $\frac{23}{5}$

21. What is $\frac{1}{2}$ of 8?

a) 1 b) 2 c) 3 d) 4.

22. What is $\frac{1}{3}$ of 9 ?

a) 1 b) 2 c) 3 d) 9

23. What is $\frac{3}{5}$ of 25 ?

a) 5 b) 10 c)15 d) 20

24. What is $\frac{3}{4}$ of 24 ?

a) 12 b) 18 c) 16 d) 20

25. What is $\frac{1}{2}$ of $\frac{10}{7}$?

a) $\frac{5}{7}$ b) $\frac{3}{7}$ c) $\frac{6}{7}$ d) $\frac{4}{7}$

26. What is $\frac{1}{4}$ of $5\frac{1}{3}$?

a) $\frac{1}{3}$ b) $\frac{2}{3}$ c) $\frac{4}{3}$ d) None of these

27. There are 40 students in a class. $\frac{1}{2}$ of the total number of students are Hindus. The number of Hindus is.

a) 10 b) 20 c) 30 d) 40

28. A water bottle contains 2 litres of water. Meenu drank $\frac{1}{8}$ of water. How much water did Meenu drink?

a) $\frac{1}{2}$ litre b) $\frac{1}{8}$ litre c) $\frac{1}{4}$ litre d) None of these

29. A car runs 20 km using 1 litre of petrol. How much distance will it cover in $1\frac{1}{4}$. litre or petrol.

a) 25 km b) 30 km c) 36 km d) 40km

30. By what fraction should be multiply $\frac{4}{5}$ to get $\frac{16}{35}$?

a) $\frac{4}{7}$ b) $\frac{7}{4}$ c) $\frac{4}{5}$ d) $\frac{16}{35}$

31. $5 \div \frac{5}{2}$ is equal to

a) 1 b) 2 c) 5 d) 3

32. $14 \div \frac{7}{2}$ is equal to

a) 1 b) 2 c) 3 d) 4

33. $\frac{1}{3} \div \frac{5}{3}$ is equal to.

a) $\frac{1}{3}$ b) $\frac{5}{3}$ c) $\frac{1}{4}$ d) None of these

34. $\frac{1}{2} \div 4$ is equal to

a) $\frac{1}{8}$ b) $\frac{1}{4}$ c) $\frac{1}{2}$ d) $\frac{1}{6}$

35. $3\frac{1}{3} \div$ 10is equal to

a) $\frac{1}{2}$ b) $\frac{1}{3}$ c) $\frac{1}{4}$ d) $\frac{1}{5}$

36. 5 paise is equal to

a) Rs.0.5 b) Rs.0.05 c) Rs 0.005 d) Rs.0.0005

37. 5 cm is equal to

a) 0.005 km b) 0.00005 km c)0.000005 km d) None of these.

38. 150 g is equal to

a) 0.15 kg b) 0.015kg c) 0.0015 kg d)0.00015 kg.

39. The place value of 2 in 2.38 is

a) 1 b) 2 c) 20 d) 0.2

40. The place value of 2 in 5.32is

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

41. How much less is 10 km than 30.6 km?

a) 10.6 km b) 20.6 km c) 30.6 km d) 10km

42. Find : 2.5 x 4

a) 10 b) 5 c) 8 d) 12.

43. Find : 1.2 x 1.2

a) 144 b) 14.4 c) 1.44 d) None of these

44. 1.2 x 10 is equal to

a) 12 b) 120 c) 0.12 d) None of these

45. 0.6 x 100 is equal to

a) 6 b) 60 c) 600 d) 0.06

46. 1.25 x 5 is equal to

a) 62.5 b) 6.25 c) 31.25 d) 0.625

47. 0.01 x 1000 is equal to

a) 1 b) 0.1 c) 0.01 d) 10

48. 0.6 ÷ 3 is equal to

a) 1 b)2 c) 3 d) 0.2

49. 2.5 ÷ 100 is equal to

a) 0.025 b) 0.25 c) 25 d) 250

50. 1.44 ÷ 1.2 is equal to

a) 1.2 b) 12 c) 0.12 d) 120

1. d	2. d	3. d	4. d	5. d	6. a	7. d	8. d	9. c	10.b
11. b	12. d	13. b	14. c	15. b	16. b	17. b	18. b	19. d	20. c
21. d	22. c	23. c	24. b	25. a	26. c	27.b	28. c	29. a	30. a
31.b	32.d	33.c	34.a	35. b	36. b	37. b	38.a	39. b	40.c
41. b	42. a	43. c	44. a	45.b	46.b	47. d	48. d	49. a	50.a

Hints / Solutions

I. Fill in the Blanks

1. A fraction acts as an _____

2. Fraction which is reciprocal of $\frac{2}{3}$ is _____

3. Product of a proper and improper fraction is_____ the improper fraction.

4. The two non-zero fractions whose product is 1, are called the _____ Of each other.

5. 5 rupee 5 paise =_____

6. 45 mm = _____ m

7. 2.4 x 1000 = _____

8. To divide a decimal number by 100, we shift the decimal point in the number to the _____ by _____ places.

9. Rani are $\frac{2}{7}$ part of a cake while her brother Ravi ate $\frac{4}{5}$ of the remaining. Part of the cake left is _____

10. The reciprocal of $\frac{3}{7}$ is _____

11. $\frac{2}{3}$ of 27 is _____

12. The lowest from of the product $2\frac{3}{7}$ x $\frac{7}{9}$ is _____

13. $\frac{4}{5}$ ÷4 is equal to _____

14. $\frac{2}{5}$ of 25 is _____

15. $\frac{1}{5} \div \frac{5}{6} = \frac{1}{5}$ _____ $\frac{6}{5}$

16. 3.2 x 10 = _____

17. 25.4 x 1000 = _____

18. 93.5 x 100 = _____

19. 4.7 ÷ 10 = _____

20. 4.7 ÷ 100 = _____

21. 4.7 ÷ 1000 = _____

22. The product of two proper fractions is _____ than each of the fractions that are multiplied.

23. While dividing a fraction by another fraction, we _____ the first fraction by the _____ of the other fraction.

24. 8.4 ÷ _____ = 2.1.

25. $\frac{4}{5}$ of 45 is = _____ .

26. 4 x $6\frac{1}{3}$ is equal to _____ .

27. $\frac{1}{2}$ of $4\frac{2}{7}$ is _____.

28. $\frac{1}{9}$ of $\frac{6}{5}$ is _____ .

29. 52.7 ÷ _____ = 0.527 .

30. 0.5 _____0.7 = 0.35

31. 2 _____ $\frac{5}{3} = \frac{10}{3}$.

32. 2.001 ÷ 0.003 =_____.

1. Rational Number	2. $\frac{3}{3}$	3. Less than	4. Reciprocal	5. 5.05	6. 0.045
7. 2400	8. Left, Two	9. $\frac{1}{7}$	10. $\frac{7}{3}$	11. 18	12. $1\frac{8}{9}$
13. $\frac{1}{5}$	14. 10	15. X	16. 32	17. 25400	18. 9350
19. 0.47	20. 0.047	21. 0.0047	22. Less	23. Multiply, Reciprocal	24. 4
25. 36	26. $25\frac{1}{3}$	27. $2\frac{1}{7}$	28. $\frac{2}{15}$	29. 100	30. X
31. X	32. 667				

II. Fill in the Blanks

1. The reciprocal of $\frac{2}{7}$ is _____ .

   $\frac{7}{2}$ [∴ reciprocal of $\frac{2}{7} = \frac{1}{\frac{2}{7}} = \frac{7}{2}$]

2. $\frac{3}{4}$ of 27 is _____ .

   Given, $\frac{3}{4}$ of $27 = \frac{3}{4} \times 27 = \frac{3 X 27}{4} = \frac{81}{4}$ or $20\frac{1}{4}$

3. 4 x $6\frac{1}{3}$ is equal to _____ .

   Given $4 \times 6\frac{1}{3} = 4 \times \frac{(6 X 3)+1}{3} = 4 \times \frac{19}{3} = \frac{76}{3} = 25\frac{1}{3}$

4. $\frac{1}{2}$ of $4\frac{2}{7}$ is _____.

   Given, $\frac{1}{2}$ of $4\frac{2}{7} = \frac{1}{2} \times \frac{(4 X 7)+2}{7} = \frac{1}{2} \times \frac{30}{7} = \frac{15}{7} = 2\frac{1}{7}$

5. The lowest form of the product $2\frac{3}{7} \times \frac{7}{9}$ is _____ .

   Given, $2\frac{3}{7} \times \frac{7}{9} = \frac{(2 x 7)+3}{7} \times \frac{7}{9}$

   $\frac{17}{7} \times \frac{7}{9} = \frac{17}{9} = 1\frac{8}{9}$

6. $\frac{4}{5} \div 4$ is equal to _____ .

   Given, $\frac{4}{5} \div 4 = \frac{4}{1} \div \frac{4}{1} = \frac{4}{5} \times \frac{1}{4} = \frac{1}{5}$

7. $\frac{1}{5} \div \frac{5}{6} = \frac{1}{5}$ _____ $\frac{6}{5}$.

   Given. $\frac{1}{5} \div \frac{5}{6} = \frac{1}{5} \times \frac{6}{5}$

8. 25.4 x 1000 = _____ .

   . Given, $25.4 \times 1000 = \frac{254}{10} \times 1000$

=254 x 100 = 25400.

9. 8.4 ÷ _____ = 2.1

$\frac{8.4}{2.1} = \frac{\frac{84}{10}}{\frac{21}{10}} = \frac{84}{10} \times \frac{10}{21} = 4$

10. 42.47 ÷ _____ = 0.4247

Given 42.47 + _____= 0.4247,

$\frac{42.47}{0.4247} = \frac{\frac{4247}{100}}{\frac{4247}{100}} = \frac{4247}{100} \times \frac{1000}{4247} = \frac{4247 \times 100}{1 \times 4247} = 100$

∴ 42.47 ÷ 100 = 0.4247

11. $1\frac{1}{4} + \frac{3}{5} \times \frac{2}{7}$ = _____ .

Given, $1\frac{1}{4} \div \frac{3}{5} \times \frac{2}{7} = \frac{(1 \times 4)}{4} \div \frac{3}{5} \times \frac{2}{7}$

$= \frac{5}{4} \times \frac{5}{3} \times \frac{2}{7} = \frac{25 \times 2}{12 \times 7} = \frac{25}{42}$.

I. True Or False

1. The reciprocal of a proper fraction is a proper fraction.
2. The reciprocal of an improper fraction is an improper fraction.
3. Product of two fractions = $\frac{\text{Product of their denominators}}{\text{Product of their numerators}}$
4. The product of two improper fractions is less than both the fractions.
5. A reciprocal of a fraction is obtained by inverting it upside down.
6. To multiply a decimal number by 1000, we move the decimal point in the number to the right by three places.
7. To divide a decimal number by 100, we move the decimal point in the number to the left by two places.
8. 1 is the only number which is its own reciprocal.
9. $\frac{2}{3}$ of 8 is same as $\frac{2}{3} \div 8$.
10. The reciprocal of $\frac{4}{7}$ is $\frac{4}{7}$

1. False	2. False	3. False	4. False	5. True	6. True	7. True	8. False	9. False	10. False

II. True Or False

1. $\frac{1}{3}$ of 6 is same as $\frac{1}{3} \div 6$.

   False, $\frac{1}{3}$ of $6 = \frac{1}{3} \times 6 = \frac{6}{3} = \frac{2}{1}$

   But $\frac{1}{3} \div 6 = \frac{1}{3} \times \frac{1}{6} = \frac{1}{18}$

2. The reciprocal of $\frac{4}{7}$ is $\frac{4}{7}$

   False, reciprocal of $\frac{4}{7} = \frac{1}{4/7} = \frac{7}{4}$

3. 1 is the only number which has its own reciprocal.

   True, Reciprocal of $1 = \frac{1}{1} = 1$

4. To divide a decimal number by 1000, we have the decimal point in the number to the left by three places.

   True, e.g. $2.64 \div 1000$

   $\frac{264}{100} \div \frac{1000}{1} = \frac{264}{100} x \frac{1}{1000}$

   $\frac{264}{100000} = 0.00264$.

5. The reciprocal of a proper fraction is a proper fraction.

   False, e.g. $\frac{1}{3}$ is proper fraction.

   Reciprocal of $\frac{1}{3}$ is $\frac{3}{1}$ which is improper fraction.

6. Product of two fractions = $\frac{Product\ of\ numerators}{Product\ of\ denominators}$

   False e.g. $\frac{2}{7} \times \frac{3}{7} = \frac{2\ x\ 3}{7\ x\ 7} = \frac{6}{49}$.

   So, product of two fractions

   = $\frac{Product\ of\ numerators}{Product\ of\ denominators}$.

7. False, $1\frac{1}{7} \times 1\frac{6}{1} \times 64$ is equal to.

   False, $1\frac{1}{7} \times 1\frac{6}{1} \times 64 = \frac{(1 \times 7) + 1}{7} \times \frac{(1 \times 1) + 6}{1} \times 64$

   $= \frac{8}{7} \times \frac{1}{7} \times 64 = 8 \times 64 = 512 \neq 64$.

8. $\frac{1}{4}$ of $\frac{1}{7}$ is equal to 28.

   False $\frac{1}{4} \times \frac{1}{7} = \frac{1 \times 1}{4 \times 7} = \frac{1}{28} = \frac{1}{28} \neq 28$

9. The value of $\left(4\frac{4}{6} \div \frac{2}{12}\right) \times 2\frac{1}{18}$

   False, $\left(4\frac{4}{6} + \frac{2}{12}\right) \times 1\frac{4}{9} \times 2\frac{1}{18}$

$= \left(\frac{(4 \times 6)+4}{6} \div \frac{2}{12}\right) X \frac{(1 \times 9)+4}{9} X \frac{(2 \times 18)+1}{18}$

$= \left(\frac{28}{6} \div \frac{2}{12}\right) X \frac{13}{9} X \frac{37}{18}$

$= \frac{28}{6} X \frac{12}{2} X \frac{13}{9} X \frac{37}{18}$

$= \frac{14 \times 2 \times 13 \times 37}{9 X 18}$

$= \frac{14 \times 13 \times 37}{81}$

$= \frac{6734}{81} = 83.135$

So, $83.135 \neq 216$

10. To multiply a decimal number by 1000, we have the decimal point in the number to the right by three places.

e.g. $1.24 \times 1000 = \frac{124}{100} \times 1000 = 1240$.

I Match the following

1. Match the column A to Column B

Column A	Column B
i) $4\frac{6}{6} \div \frac{1}{81}$	a) 378
ii) $7\frac{5}{6} \times \frac{3}{47} \times 46$	b) 6.554
iii) 9.42 x 5.45	c) 23
iv) 14.42 ÷ 2.2	d) 51.339

2. Match the column A to Column B

Column A	Column B
i) $2\frac{6}{13} + 4\frac{6}{39} + \frac{1}{3}$	a) $\frac{5}{43}$
ii) $3\frac{1}{3} \div 14\frac{1}{3} \times \frac{1}{2}$	b) $6\frac{27}{39}$
iii) 2.69 x 12.64	c) 8.263
iv) 81.81 ÷ 9.9	d) 34.0016

i) a	ii) c	iii) d	iv) b

i) b	ii) a	iii) d	iv) c

Very Short Answer Type Questions I

1. **The product of two numbers is 2.0016. If one of them is 0.72, Find the other.**

Product of two numbers = 2.0016

One of the decimal numbers = 0.72

Other decimal number = 2.0016 ÷0.72 = 2.78

$= \frac{2.0016}{0.72} = \frac{20016}{7200}$

Thus the other number is 2.78.

2. **Find the value of x :**

$\frac{6}{11} \times x = \frac{6}{11} = x = 1$

3. **What is the reciprocal of $\frac{5}{17}$?**

$\frac{17}{5}$

4. **What is the value of $\frac{3}{4}$ of $\frac{4}{5}$?**

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

5. **Write the value of 2.331 x 100 = _____.**

233.1

Very Short Answer Type Questions II

1. **Define vulgar fraction**

A fraction whose denominator is any of number 10, 100, 1000 etc, is called vulgar fraction.

2. **Write one equivalent fraction of $\frac{4}{7}$.**

$\frac{8}{14}$

3. **What happens to the value of a fraction if the denominator of the fraction is decreased while numerator is kept unchanged?**

The value of fraction would increase.

4. **If 5 is added to both the numerator and the denominator of the fraction $\frac{5}{9}$, will the value of the fraction be changed? If so, will the value increase or decrease?**

Yes increase.

5. **What is the reciprocal of $\frac{5}{9}$?**

Reciprocal of $\frac{5}{9} = \frac{9}{5}$.

6. How much is $\frac{2}{5}$ of 27?

$\frac{2}{3}$ x 27 = 2 x 9 = 18

7. What is the place value of 5 in 243.54?

Place value of 5 is 5 – tenths

8. Express 4.75 as fraction in lowest form.

4.75 = $\frac{475}{100}$ = $\frac{19}{4}$

9. To multiply a decimal number by 1000, we move the decimal point to the right by how many places?

Three

10. Express 6 cm in meter.

6 cm = $\frac{6}{100}$ m = 0.06 m.

Very Short Answer Type Questions III

1. Solve the following fractions:

a) $3 + \frac{4}{5}$ b) $\frac{2}{7} + \frac{9}{11} + \frac{1}{7}$

a) $\frac{3}{1} + \frac{4}{5} = \frac{(3\ X\ 5)+(4\ X\ 1)}{5} = \frac{15+4}{5} = \frac{19}{5} = 3\frac{4}{5}$

b) $\frac{2}{7} + \frac{9}{11} + \frac{1}{7} = \frac{(2\ X\ 11)+(9\ X\ 7)+(1\ X\ 11)}{77} = \frac{22+63+11}{77} = \frac{96}{77} = 1\frac{19}{77}$ [∵ LCM of 7, 11 and 7 is 77]

2. Solve the following fractions:

a) $\frac{6}{8} - \frac{3}{5}$ b) $4\frac{1}{12} - 1\frac{3}{8}$

a) $\frac{6}{8} - \frac{3}{5} = \frac{(6\ X\ 5)-(3\ X\ 8)}{40} = \frac{30-24}{40} = \frac{6}{40} = \frac{3}{20}$ [∵ LCM of 8 and 5 is 40]

b) $4\frac{1}{12} - 1\frac{3}{8} = \frac{4\ X\ 12+1}{12} - \frac{1\ X\ 8+3}{77} = \frac{49}{12} - \frac{11}{8}$ [∵ LCM of 12 and 8 is 24]

$= \frac{(49\ X\ 2)-(3X\ 11)}{24} = \frac{98-33}{24} = \frac{65}{24} = 2\frac{17}{24}$

3. Which of the following is greater ?

a) $\frac{2}{3}$ and $\frac{1}{4}$ b) $\frac{3}{4}$ and $\frac{18}{12}$

a) $\frac{2}{3}$ and $\frac{1}{4}$ [∵ LCM of 3 and 4 is 12]

$= \frac{2\ X\ 4}{3\ X\ 4} = \frac{8}{12}$ and $\frac{1\ X\ 3}{4\ X\ 3} = \frac{3}{12}$

Here, denominator is same and 8 > 3.

Hence, $\frac{8}{12} > \frac{3}{12}$ i.e. $\frac{2}{3} > \frac{1}{4}$

d. Given, $\frac{3}{4}$ and $\frac{18}{12}$ [∵ LCM of 4 and 12 is 12]

$= \frac{3\ X\ 3}{4\ X\ 3} = \frac{9}{12}$ and $\frac{18\ X\ 1}{12\ X\ 1} = \frac{18}{12}$

Here is denominator is same and 18 > 9

Hence, , $\frac{18}{12} > \frac{9}{12}$ i.e. $\frac{18}{12} > \frac{3}{4}$.

4. Find the following products.

a) $\frac{3}{7}$ x 4 b) $\frac{1}{9}$ x $2\frac{3}{7}$

a) $\frac{3}{7}$ x 4 $= \frac{3}{7}$ x $\frac{4}{1}$ $= \frac{3\ X\ 4}{7\ X\ 1} = \frac{12}{7}$

b) $\frac{1}{9}$ x $2\frac{3}{7}$ $= \frac{1}{9}$ x $\frac{(2\ X\ 7)+3}{7}$ $= \frac{1}{9}$ x $\frac{(14+3)}{7}$

$= \frac{1}{9}$ x $\frac{17}{7}$ $= \frac{1\ X\ 17}{9\ X\ 7} = \frac{17}{63}$

5. Find the value of the following fractions of numbers,

a) $\frac{1}{3}$ of 15 b) $\frac{1}{4}$ of 20

a) Given $\frac{1}{3}$ of 15

i.e. $\frac{1}{3}$ x $\frac{15}{1}$ $= \frac{1\ X\ 15}{3\ X\ 1} = \frac{15}{3} = 5$

b) Given $\frac{1}{4}$ of 20

i.e. $\frac{1}{4}$ x $\frac{20}{1}$ $= \frac{1\ X\ 20}{4\ X\ 1} = \frac{20}{4} = 5$

6. Multiply and reduce to lowest form and convert into a mixed fraction.

a) 6 x $\frac{11}{8}$ b) 9 x $\frac{13}{21}$

a) Given, 6 x $\frac{11}{8}$

$= \frac{6}{1}$ x $\frac{11}{8} = \frac{6\ X\ 11}{1\ X\ 18} = \frac{66}{18} = \frac{33}{9} = \frac{11}{3} = 3\frac{2}{3}$

b) Given, 9 x $\frac{13}{21}$

$= \frac{9}{1}$ x $\frac{13}{21} = \frac{9\ X\ 13}{1\ X\ 21} = \frac{117}{21} = \frac{39}{7} = 5\frac{4}{7}$

7. Multiply and express as a mixed fraction.

a) 2 x $4\frac{1}{5}$ b) 2 x $2\frac{2}{3}$

a) Given, 2 x $4\frac{1}{5}$

$= \frac{2}{1} = \frac{(4\ X\ 5)+1}{5} = \frac{2}{1}$ x $\frac{21}{5} = \frac{2\ x\ 21}{1x\ 5} = \frac{42}{5} = 8\frac{2}{5}$

b) Given, 2 x $2\frac{2}{3}$

$= \frac{2}{1} = \frac{(2\ X\ 3)+2}{3} = \frac{2}{1}$ x $\frac{(6+2)}{3} = \frac{2}{1}$ x $\frac{8}{3} = \frac{16}{3} = 5\ \frac{1}{3}$.

8. Find the value of the following division of fractions.

a) $2 \div \frac{8}{9}$ b) $1\frac{3}{5} \div \frac{1}{2}$ c) $2\frac{1}{2} \div 2\frac{3}{5}$

a) Given $2 \div \frac{8}{9} = \frac{2}{1} \div \frac{8}{9} = \frac{2}{1}$ x Reciprocal of $\frac{8}{9}$

$= \frac{2}{1}$ x $\frac{9}{8} = \frac{2\ X\ 9}{1\ X\ 8} = \frac{18}{8} = \frac{9}{4} = 2\ \frac{1}{4}$.

b) Given $1\frac{3}{5} \div \frac{1}{2} = \frac{(1X\ 5)+3}{5} \div \frac{1}{2} = \frac{8}{5} \div \frac{1}{2}$

$\frac{8}{5}$ x Reciprocal of $\frac{1}{2}$

$= \frac{8}{5}$ x $\frac{2}{1} = \frac{8\ X\ 2}{5\ X\ 1} = \frac{16}{5} = 3\ \frac{1}{5}$.

c) Given $2\frac{1}{2} \div 2\frac{3}{5} = \frac{(2X\ 2)+1}{2} \div \frac{(2\ X\ 5)+3}{5}$

$= \frac{5}{2} \div \frac{13}{5} = \frac{5}{2}$ x Reciprocal of $\frac{13}{5}$

$= \frac{5}{2}$ x $\frac{5}{13} = \frac{5\ X\ 5}{2\ X\ 13} = \frac{25}{26}$.

9. Which of the following decimal numbers is greater?

a) 0.2 or 0.02 b) 0.9 or 0.11 c) 0.11 or 11 d) 6.03 or 6.30

a) Given 0.2 or 0.02

For greater decimal number, compare the digits at tenth place.

2 > 0

So, 0.2 > 0.02

b) Given 0.9 or 0.11

For greater decimal number, compare the digits at unit place.

9 > 1

So, 0.9 > 0.11

c) Given 0.11 or 11

For greater decimal number, compare the digits at unit place.

[∵ tenth place is same]

0 < 1

And again, 0.11 < 11.

d) Given 6.03 or 6.30

If unit digits are same in both numbers then we compare tenth place digit.

O < 3 So, 6. 03 < 6.30.

10. Find the value of the following products of decimal numbers.

a) 1.3 x 4 b) 2.3 x 4.35 c) 56.3 x 1000

a) Given 1.3 x 4 = 13 x 4 = 52

∵ There is only 1digit to the right of the decimal point in 1.3

∴ 1.3 x 4 = 5.2

b) Given 2.3 x 4.35

23 x 435 =10005

∵ sum of the decimal places to the right of the decimal point in 2.3 and 4.35 is 3.

c) Given 56.3 x 1000

563 x 1000 = 563000

∵ There is only 1 digit to the right of the decimal point in 56.3 and 1000.

So, 56.3 x 1000 = 56000.00

11. Find the value of the following division of decimal numbers.

a) 0.6÷ 0.2 b) 15.5 ÷ 5

a) Given 0.6÷ 0.2 = $\frac{0.6}{0.2} = \frac{0.6\ X\ 10}{0.2\ X\ 10} = \frac{6}{2} = 3$

b) Given 15.5 ÷ 5

= 15.5 ÷ 5= 15.5 ÷ $\frac{5}{1}$

= 15.5 Reciprocal of $\frac{5}{1}$ = 15.5 x $\frac{1}{5}$

There is only 1 digit to the right of decimal point in 15.5

So, 15.5 ÷ 5 = 31.

Short Answer Type Questions I

1. Arrange the following in descending order :

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

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

LCM of 9 , 3 and 21 is 63

$\therefore \frac{2}{9}$ x 63, $\frac{2}{3}$ x 63, $\frac{8}{21}$ x 63

Or 14, 42, 24

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

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

LCM of 5 , 7 and 10 is 70

Or 14, 30, 49

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

2. If the length and breadth of the rectangular sheet of paper is 49 $\frac{1}{2}$ cm and 23 $\frac{1}{2}$ cm respectively. Find its perimeter.

Length = $49\frac{1}{2} = \frac{99}{2}$

Breadth = $23\frac{1}{2} = \frac{47}{2}$ cm

Perimeter = 2 (l + b)

$=2\left[\frac{99}{2} + \frac{47}{2}\right]$

$=2\left[\frac{99+47}{2}\right]$ = 146.

3.Evaluate the following :

a) 2 x 5x 1.2

b) 2 - $\frac{1}{2}$ of 4.

Solution : a) = 2 x 5x 1.2 = 10 x 1.2

= 12.

b) 2 - $\frac{1}{2}$ of 4. = 2 - $\frac{1}{2}$ x 4

= 2 – 2 = 0.

4. Find $\frac{3}{4}$ of : a) 16 b) 36

a) $\frac{3}{4}$ of 16 = $\frac{3}{4}$ x 16 = 3 x 9 = 27

5. Multiply the following : a) $\frac{2}{5}$ **x 5** $\frac{1}{4}$ **b)** $2\frac{3}{5}$ **x 3**

Solution :

$= \frac{2}{5} \times 5\frac{1}{4} = \frac{2}{5} \times \left(\frac{21}{4}\right)$

$= \frac{21}{10} = 2\ \frac{1}{10}$.

b) $2\frac{3}{5} \times 3 = \frac{13}{5} \times 3$

$= \frac{39}{5} = 7\ \frac{4}{5}$.

6. Find :

a) $\frac{2}{5} \div \frac{1}{2}$ **b)** $\frac{4}{9} \div \frac{2}{3}$

$\frac{2}{5} \div \frac{1}{2} = \frac{2}{5} \times \frac{1}{2} = \frac{4}{5}$

b) $\frac{4}{9} \div \frac{2}{3} = \frac{4}{9} \times \frac{3}{2} = \frac{2}{3}$

7. Find :

a) 2.5 x 0.3 **b) 0.1 x 51.7**

Solution :

a) 2.5 x 0.3 = 0.75 b) 0.1 x 51.7 = 5.17

8**. Find the product of**

a) 1 and Reciprocal of 1

b) 2 and Reciprocal of 2

c) $\frac{1}{4}$ **and reciprocal of** $-\frac{1}{4}$

d) $\frac{2}{5}$ **and reciprocal of** $-2\frac{1}{2}$

Solution :

a) 1 x 1 =1

as reciprocal of 1 is 1

b) 2 x $\frac{1}{2}$ = 1

As reciprocal of 2 is $\frac{1}{2}$

c) $\frac{1}{4}$ x (-4) = -1

as reciprocal of $\frac{1}{4}$ is -4

d)Since $-2\ \frac{1}{2} = -\frac{5}{2}$

and its reciprocal $= -\frac{2}{5}$

So $\frac{2}{5} \times -\frac{2}{5} = \frac{-4}{25}$

9. Find the values of the following :

a) 135 ÷ 10

a) = $\frac{135}{10}$

= 13.5

b) 235.4 ÷ 100

b) = $\frac{235.4}{100}$

= 2.354

10. Find : $\frac{7.75}{0.25}$

Solution : $\frac{7.75}{0.25}$ = $\frac{775}{25}$ = 31

11. Simplify

$\frac{15}{16}$ - $\frac{11}{12}$

∴ LCM of 16 and 12 = 4 x 4 x 3 =48

4	16, 12
	4, 3

$\frac{15}{16}$ - $\frac{11}{12}$ = $\frac{15 x 3}{16 x 3}$ - $\frac{11 x 4}{12 x 4}$

= $\frac{45}{48}$ - $\frac{44}{48}$ = $\frac{45-44}{48}$

= $\frac{1}{48}$.

12. Simplify : $4\frac{5}{6}$ - $2\frac{5}{6}$ + $3\frac{7}{12}$

2	6, 8, 12
3	3, 4, 6
2	1, 4, 2
2	1, 2, 1
	1, 1, 1

= $\frac{6 X 4+5}{6}$ - $\frac{2 X 8+3}{8}$ + $\frac{3 X 12+7}{12}$

= $\frac{29}{6}$ - $\frac{19}{8}$ + $\frac{43}{12}$

= $\frac{29 X 4}{6 X 4}$ - $\frac{19 X 3}{8 X 3}$ + $\frac{43 X 2}{12 x 2}$

= $\frac{116}{24}$ - $\frac{57}{24}$ + $\frac{86}{24}$

= $\frac{116-57+86}{24}$ = $\frac{145}{24}$

= $6\frac{1}{24}$.

13. A Sugar is sold at Rs.$17\frac{3}{4}$ per kg. Find the cost of $8\frac{1}{2}$ kg of a sugar.

We have ,

Cost of 1 kg sugar = Rs.$17\frac{3}{4}$ = Rs $\frac{71}{4}$

∴ Cost of $8\frac{1}{2}$ kg of sugar = Rs. $\left(\frac{71}{4} X 8\frac{1}{2}\right)$

= Rs. $\left(\frac{71}{4} X \frac{17}{2}\right)$ = Rs. . $\left(\frac{71 X 17}{4 X 2}\right)$

= Rs.$\left(\frac{1207}{8}\right)$ = Rs. $150\frac{7}{8}$

Hence, the cost of $8\frac{1}{2}$ kg of sugar is Rs $150\frac{7}{8}$.

14. A car runs 16km using 1 litre of petrol. How much distance will it cover using $2\frac{3}{4}$ litres of petrol?

In 1 litre petrol, car runs 16 km

$\therefore$ In $2\frac{3}{4}$ litres of petrol, car will travel

$= \left(2\frac{3}{4} \; X \; 16\right)$ km $= \left(\frac{11}{4} \; X \; \frac{16}{1}\right) km$

= (11 x 4) km = 44 km Hence, car travels 44 km in $2\frac{3}{4}$ litres of petrol.

15. Shikha has read $\frac{3}{4}$ of a book consisting of 288 pages. How many pages are still left?

Sol, We have,

Total number of pages in the book = 288

Number of pages read by Shikha $= \frac{3}{8}$ of 288

$= \frac{3}{4}$ x 288

$= \frac{3}{4}$ x $\frac{288}{1}$

= 3 x 72 = 216

$\therefore$ Number of pages left = (288 – 216) = 72.

16. A rectangular park is 20 $\frac{3}{4}$m long and 15 $\frac{1}{2}$ wide. What is the area of the park?

Length of the park = $20\frac{3}{4}$ m = $\frac{83}{4}$ m,

Width of the park = $15\frac{1}{2}$ m = $\frac{31}{2}$ m

$\therefore$ Area of the park = Length x Width

$= \left(\frac{83}{4} \; X \; \frac{31}{2}\right) m^2 = \frac{83 \; X \; 31}{4 \; X \; 2} m^2$

$= \frac{2573}{8} m^2 = 321 \; \frac{5}{8} m^2$

17. A carton contains 40 boxes of nails and each box weights $3\frac{3}{4}$ kg. How much would a carton of nails weigh?

Weight of 1 box = $3\frac{3}{4}$ kg. = $\frac{15}{4}$ kg

Weight of 40 boxes

$= \left(\frac{15}{4} \times 40\right)$ kg = $= \left(\frac{15}{4} \times \frac{40}{1}\right)$ kg

$= \frac{15 \; X \; 40}{4 \; X \; 1}$ kg.

Hence, weight of the carton in 150 kg.

18. Find the value of :

$$\frac{1}{4\frac{2}{7}} + \frac{1}{3\frac{11}{13}} + \frac{1}{5\frac{5}{9}}$$

Given expression = $\frac{1}{\frac{30}{7}} + \frac{1}{\frac{50}{13}} + \frac{1}{\frac{5}{9}}$

$= \frac{7}{30} + \frac{13}{50} + \frac{9}{5}$

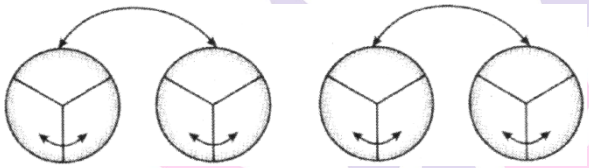
$= \frac{35}{150} + \frac{39}{150} + \frac{270}{150}$

$= \frac{35+39+270}{150} = \frac{344}{150}$

$= \frac{172}{75} = 2\frac{22}{75}$

19. How many $\frac{2}{3}$ kg pieces can be cut from a cake of weight 4 kg?

Observe the following figure representing 4 cakes each of 1 kg and try to give the answer.



In the above figure we look for 'how many $\frac{2}{3}$ are there in these 4 cakes.

i.e. $4 \div \frac{2}{3} = 4 \times \frac{3}{2} = 4 \times \frac{3}{2} = 6$

20. Harmeet purchased 3.5 kg of potatoes at the rate of 3.75 per kg. How much money should she pay in nearest rupees?

Cost of 1 kg of potatoes = Rs 3.75

Cost of 3.5 kg of potatoes = Rs.3.75 x 3.5

	1	3.	7	5
	X	3.	5	
	6	8	7	5
4	1	2	5	x
4	8.	1	2	5

So, cost of 3.5 kg of potatoes = 48, to the nearest rupees.

21. Kavita had a piece of rope of length 9.5 m. She needed some small pieces of rope of length 1.9 m each. How many pieces of the required length will she get out of this rope?

The length of the rope = 9.5 m

The length of a small piece of rope = 1.9 m

Number of small pieces = 9.5 m ÷ 1.9 m

$= \frac{9.5}{1.9} = \frac{9.5 \ X \ 10}{1.9 \ X \ 10} = \frac{95}{19} = 5$

So, she will get 5 small pieces of rope.

22. Three boys earned a total of Rs.235.50. What was the average amount earned per boy?

Three boys earned = Rs.235.50.

The average amount earned per boy = Rs. $\frac{235.50}{3}$

```
   78.50
  ------
3 ) 235.50 (
    21
    --
    25
    24
    --
     15
     15
     --
      0
```

The average amount earned per boy is Rs.78.50

23. Find the product of

a) $\frac{1}{2}$ **and** $\frac{5}{8}$

Solution

$= \frac{1}{2} \times \frac{5}{8}$

$\frac{1 \ x \ 5}{2 \ x \ 8}$

$= \frac{5}{16}$

b) $\frac{1}{3}$ **and** $\frac{7}{5}$

$= \frac{1}{3} \times \frac{7}{5}$

$= \frac{1}{3} \times \frac{7}{5}$

$= \frac{1x7}{3 \ x \ 5} = \frac{7}{15}.$

24. The weight of an object on Moon is $\frac{1}{6}$ its weight on Earth. If an object weighs 5 $\frac{3}{5}$ kg on Earth, how much would it weight on the Moon?

Weight of an object on Moon is $\frac{1}{6}$ its weight on Earth.

Object weights on Earth = $5\frac{3}{5}$ kg.

$$15\overline{)140}\,(93$$
$$-135$$
$$50$$
$$-45$$
$$50$$

$= \frac{5 \times 5 + 3}{5}$ kg$= \frac{28}{5}$

Weight an Moon $\frac{1}{6}$ of $\frac{28}{5}$ kg.

$= \frac{1}{6} \times \frac{28}{5} = \frac{28}{30}$ kg

$= \frac{14}{15}$ kg = 0.93 kg

[dividing numerator and denominator by 21]

Hence, the object will weigh 0.93 kg on Moon.

25. Raj travels 360 km on three fifth of his petrol tank. How far would he travel the same rate with a full tank of petrol?

Raj Travels 360 km on $\frac{3}{5}$ th of his petrol tank.

Let the distance travelled with full tank is x km

According to the question , $\frac{3}{5}$ of$x$ km = 360km

$\frac{3}{5} \times = 360$

On multiplying by $\frac{5}{3}$ both sides

$\frac{3}{5} X \frac{5}{3} X x = 360 \times \frac{5}{3}$

= 5 x 120 = 600 km

x = 600 km.

If tank is full, then Raj can travel = 600 km.

26. If 5 is added to both the numerator and the denominator of the fraction 5/9 will the value of the fraction be changed 7. If so, will the value increase of decrease.

Fraction = $\frac{5}{9}$

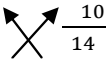
5 is added to both numerator and denominator,

New fraction = $\frac{5}{9}$

5 is added to both numerator and denominator.

New fraction = $\frac{5+5}{9+5}$ = $\frac{10}{14}$

By comparing fraction $\frac{5}{9}$, $\frac{10}{14}$

$\frac{5}{9}$  $\frac{10}{14}$

5 x 14 <9 x 10

70 < 90

So, new fraction is increased in value as compared to the given fraction.

Short Answer Type Questions II

1. Sameera purchased 3 $\frac{1}{2}$ kg apples and 4 $\frac{3}{4}$ kg oranges. What is the total weight of fruits purchased by her?

Weight of Apples = $3\frac{1}{2}$ kg = $\frac{7}{2}$ kg.

Weight of Oranges = $4\frac{3}{4}$ kg = $\frac{19}{4}$ kg.

Total weight of fruits = $\frac{7}{2} + \frac{19}{4}$

= $\frac{14+19}{4}$ = $\frac{33}{4}$ kg.

= 8 $\frac{1}{4}$ kg.

2. Evaluate the following :

a) 7 ÷ 3.5 **b) 3.25 ÷ 0.5** **c) 2.73 ÷ 1.3**

a) 7 ÷ 3.5 = $\frac{7}{3.5}$ = $\frac{7 \times 10}{35}$

= $\frac{70}{35}$ = 2

Or

7 ÷ 3.5 = 7 ÷ $\frac{35}{10}$

= 7 x $\frac{10}{35}$

= $\frac{70}{35}$

= 2.

b) 3.25 ÷ 0.5 = $\frac{3.25}{0.5}$ = $\frac{3.25}{0.5}$

= $\frac{325}{50}$ = 6.5

3.25 ÷ 0.5 = $\frac{325}{100}$ x $\frac{10}{5}$

$= \frac{65}{100} \times \frac{10}{1}$

$= \frac{65}{10}$

$= 6.5$

c) $2.73 \div 1.3 = \frac{2.73}{1.3} = \frac{2.73}{1.30}$

$= \frac{273}{130}$

$= \frac{21}{10}$

$= 2.1.$

3. Find the value of following :

a) $\frac{1}{2} \times \frac{1}{3} \times 2 \times 3$

b) $0.04 \times 100 \times \frac{1}{4}$

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

$= 1 \times 1 = 1.$

b. $0.01 \times 100 \times \frac{1}{4} = \frac{4}{100} \times 100 \times \frac{1}{4}$

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

$= 1 \times 1 = 1$

4. Find :

a) 0.3 x 10

b) 1.02 x 100

c) 56.3 x 1000

a) $0.3 \times 10 = \frac{3}{10} \times 10$

$= 3 \times 1 = 3.$

b) $1.02 \times 100 = \frac{102}{100} \times 100$

$= 102 \times 1$

$= 102.$

c) $56.3 \times 1000 = \frac{563}{10} \times 1000$

$= \frac{563}{10} \times 1000$

$= 563 \times 100$

$= 56300.$

5. If length or rectangle is 0.5 metre and its breadth is 1.5 metre, find its area.

For rectangle,

Area = Length x Breadth

Length = 0.5 m

Breadth = 1.5 m

Area = (1.5 x 0.5) m^2

= $\left(\frac{15}{10} X \frac{5}{10}\right) m^2$

= $\frac{75}{100} m^2$

= 0.75 m^2

6. Write the following numbers in the expanded form :

a) 234.345 b) 2.034 c) 115.567

a) 234.345

= 2 x 100 + 3 x 10 + 4 x 1 + $\frac{3}{10} + \frac{4}{100} + \frac{5}{1000}$

b) 2.034 = 2 x 1 + 0 $\frac{3}{100} + \frac{4}{1000}$

c) 115.567 = 1 x 100 + 1 x 10 + 5 x 1 + $\frac{5}{10} + \frac{6}{100} + \frac{7}{1000}$.

7. If train covers 300 kilometre in 3 $\frac{1}{2}$ hours, find its speed.

For any moving object,

Speed = $\frac{distance}{time}$

In this question, distance covered = 300 km

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

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

Speed = $\frac{300}{7}$ = $\frac{300\ x\ 2}{7}$

= $\frac{600}{7}$ 85.7 km/h.

8. Write the place value of 2 in the following decimal numbers :

a) 20.56 b) 10.25 c) 63.352

Place value of 2

a) In 20.56 be (10) or tens.

As 20.56 = 2 x 10 + 5 x $\frac{1}{10}$ + 6 x $\frac{1}{100}$

b) In 10.25 be $\left(\frac{1}{10}\right)$ or tenths as 2 x $\frac{1}{10}$

c) In 67.352 be $\left(\frac{1}{1000}\right)$ or thousand as $\left(\frac{2}{1000}\right)$.

9. Which is greater :

a) 0.5 or 0.05 b) 0.7 or 0.5 c) 1.37 or 1.49

a) In 0.5 and 0.05 On comparing tens,

5 > 0

So, 0.5 > 0.05

b) In 0.7 and 0.5

On comparing tens,

7 > 5

So, 0.7 > 0.5

c) 1.37 or 1.49

On comparing tens,

3 < 4

So, 1.37 < 1.49.

10. Mukul solved $\frac{2}{7}$ part of an exercise while Deeksha solved $\frac{4}{5}$ of it. Who solved less?

In order to know who solved less part of the exercise, we will compare $\frac{2}{7}$ and $\frac{4}{5}$.

We have,

LCM of denominators (i.e.) 7 and 5) , 7 x 5 = 35. Converting each fraction into an equivalent fraction having 35 as its denominator, we have

$\frac{2}{7} = \frac{2\ X\ 5}{7\ X\ 5} = \frac{10}{35}$ and $\frac{4}{7} = \frac{4\ X\ 7}{5\ X\ 7} = \frac{28}{35}$

$\therefore 10 < 28$

$\therefore \frac{10}{35} < \frac{28}{35} \Rightarrow \frac{2}{7} < \frac{4}{5}$

Hence Mukul solved lesser part than Deeksha.

11. Suval finished colouring a picture in $\frac{7}{12}$ hours. Pramod finished colouring the same picture in $\frac{3}{4}$ hours. Who worked longer? By what fraction was it longer?

In order to know who worked longer we will compare fractions $\frac{7}{12}$ and $\frac{3}{4}$

We have,

(LCM of 12 and 4) = 12

Converting each fraction into an equivalent fraction with 12 as denominator, we have

$\frac{7}{12} = \frac{7\ X\ 1}{12\ x\ 1} = \frac{7}{12}$ and $\frac{3}{4} = \frac{3\ X\ 3}{4\ X\ 3} = \frac{9}{12}$

7< 9

$\frac{7}{12} < \frac{9}{12}$ or $\frac{7}{12} < \frac{3}{4}$

Thus, Vaibhav finished colouring in longer time.

Now, $\frac{3}{4} - \frac{7}{12} = \frac{9}{12} - \frac{7}{12} = \frac{9-7}{12} = \frac{2}{12} = \frac{1}{6}$

Hence, Pramod finished colouring in $\frac{1}{6}$ hour more time than Suval.

12. Multiply :

a) $\frac{2}{9}$ by $\frac{4}{5}$ **b) $2\frac{1}{3}$ by $\frac{2}{5}$** **c) $5\frac{3}{4}$ by $2\frac{3}{7}$**

We have ,

a) $\frac{2}{9} \times \frac{4}{5} = \frac{2 X 4}{9 x 5} = \frac{8}{45}$

b) $2\frac{1}{3} \times \frac{2}{5} = \frac{7}{3} \times \frac{2}{5} = \frac{7 X 2}{3 x 5} \times \frac{14}{5}$

c) $5\frac{3}{4} \times 2\frac{3}{7} = \frac{23}{4} \times \frac{17}{7} = \frac{23 X 17}{4 X 7} = \frac{391}{28} = 13\frac{27}{28}$.

13. Multiply and reduce to lowest form (if possible) :

a) $\frac{2}{3} \times \frac{5}{4}$ b) $\frac{1}{3} \times \frac{15}{8}$ c) $\frac{4}{5} \times \frac{12}{7}$

a) $\frac{2}{3} \times \frac{5}{4} = \frac{2 X 5}{3 X 4} = \frac{1 X 5}{3 X 2} = \frac{5}{6}$

b) $\frac{1}{3} \times \frac{15}{8} = \frac{1 X 15}{3 X 8} = \frac{1 X 5}{1 X 8} = \frac{5}{8}$

c) $\frac{4}{5} \times \frac{12}{7} = \frac{4X12}{5 X 7} = \frac{48}{35} = 1\frac{13}{35}$

14. Simplify :

a) $5 \times \frac{3}{20} \times \frac{2}{15}$ **b) $\frac{14}{25} \times \frac{35}{51} \times \frac{34}{49}$**

a) $5 \times \frac{3}{20} \times \frac{2}{15} = \frac{5}{1} \times \frac{3}{20} \times \frac{2}{15} = \frac{5 X 3 X 2}{1 X 20 X 15} = \frac{1 X 1 X 2}{1 X 4 X 5} = = \frac{1}{2 X 5} = = \frac{1}{10}$

b) $\frac{14}{25} \times \frac{35}{51} \times \frac{34}{49} = \frac{14 X 35 X 34}{25 X 51 X 49} = \frac{2 X 1 X 2}{5 X 3 X 1} = \frac{4}{15}$.

15. Divide :

a) $\frac{5}{9}$ by $\frac{2}{3}$ **b) 28 by $\frac{7}{4}$** **c) 36 by $6\frac{2}{3}$**

We have

a) $\frac{5}{9} \div \frac{2}{3} = \frac{5}{9} \times \frac{3}{2} = \frac{5 \times 3}{9 \times 2} = \frac{5 \times 1}{3 \times 2} = \frac{5}{6}$

b) $28 \div \frac{7}{4} = \frac{28}{1} \div \frac{7}{4} = \frac{28}{1} \times \frac{4}{7} = \frac{28 \times 4}{1 \times 7} = \frac{4 \times 4}{1 \times 1} = \frac{16}{1} = 16$

c) $36 \div 6\frac{2}{3} = 36 \div \frac{20}{3} = \frac{36}{1} \div \frac{20}{3} = \frac{36}{1} \times \frac{3}{20} = \frac{27}{5} = 5\frac{2}{5}$.

16. Simplify :

a) $\frac{4}{9} \div \frac{2}{3}$ **b)** $3\frac{3}{7} \div \frac{8}{21}$ **c)** $15\frac{3}{7} \div 1\frac{23}{49}$

We have

a) $\frac{4}{9} \div \frac{2}{3} = \frac{4}{9} \times \frac{3}{2} = \frac{2 \times 1}{3 \times 1} = \frac{2}{3}$

b) $3\frac{3}{7} \div \frac{8}{21} = \frac{24}{7} \times \frac{21}{8} = \frac{24 \times 21}{7 \times 8} = \frac{3 \times 3}{1 \times 1} = 9$

c) $15\frac{3}{7} \div 1\frac{23}{49} = \frac{108}{7} \div \frac{72}{49} = \frac{108}{7} \times \frac{49}{72}$

$= \frac{108 \times 49}{7 \times 72} = \frac{3 \times 7}{1 \times 2} = \frac{21}{2} = 10\frac{1}{2}$

Short Answer Type Questions III

1. How much less is 28km than 42.6 km?

Converting the given number's into like decimals, we get 28.00 and 42.60.

Now, required difference = (42.60 – 28.00) = 14.60.

∴ It is 14.60 less than 42.60.

2. In a class of students $\frac{1}{5}$ of the total number of students like to eat rice only , $\frac{2}{5}$ of the total number of students like to eat chapatti only and the remaining students like to eat both. What fraction of the total number of students like to eat both?

Total number of students = 40

Number of students like to eat rice = $\frac{1}{5} \times 40 = 8$.

Number of students like to eat chapati = $\frac{2}{5} \times 40 = 16$.

Students like to eat both = 40 – 8 – 16

= 40 – 24 = 16

Fraction of total students like to eat both = $\frac{16}{40} = \frac{2}{5}$.

3. what should be added to $7\frac{4}{15}$ to get $8\frac{2}{5}$?

Required number to be added = $\left(8\frac{2}{5} - 7\frac{4}{15}\right) = \left(\frac{42}{5} - \frac{109}{15}\right)$

$= \frac{126-109}{15} = \frac{17}{15} = 1\frac{2}{15}$.

4. Shyama bought 5kg 300g apples and 3 kg 250g mangoes. Sarala bought 4 kg 800g oranges and 4 kg 150g bananas. Who bought more fruits?

Weight of apples bought by Shyama = 5kg 300 g = 5.300 g

Weight of mangoes bought by Shyama = 3kg 250 g = 3.250 g

Total Weight of fruits bought by Shyama = 5.300 + 3.250 kg = 8.550 kg

Weight of oranges bought by Sarala = 4kg 800 g = 4.800 kg.

Weight of bananas bought by Sarala = 4kg 150g = 4.150 kg.

Total Weight of fruits bought by Sarala = 4.800 + 4.150 = 8.950 kg

∴ Sarala bought more fruits.

5. A two-wheeler covers a distance of 55.3 km in one litre of petrol. How much distance will it cover in 10 litres of petrol?

Distance covered in 1 litre petrol = 55.3 km

So, distance covered in 10 litres of petrol = 55.3 x 10 = 553 km

So, it will cover 553 kms in 10 litre of petrol.

6. The product of two decimals is 42.987 . If one of them is 12.46, find the other.

Product of given decimals = 42.987

One decimal = 12.46

∴ The other decimal $\frac{42.987}{12.46} = \left(\frac{42.987\ X\ 100}{12.46\ X\ 100}\right)$

$= \frac{4298.7}{1246} = 3.45$

Hence, the other decimal = 3.45.

7. A bucket contains 20 $\frac{1}{4}$ litres of water. A small jug has a capacity of $\frac{3}{4}$ litre. How many times has the jug to be filled with water from the bucket to get it emptied?

Quantity of water in a bucket = $20\frac{1}{4}$ litres

Quantity of a small jug = $\frac{3}{4}$ litres

∴ Number of times jug to be filled to empty the bucket

$= \left(20\frac{1}{4} \div \frac{3}{4}\right)$

$= \left(\frac{81}{4} \div \frac{3}{4}\right) = \left(\frac{81}{4} X \frac{4}{3}\right) = \frac{81}{3} = 27.$

8. Cost of a burger is Rs.$20\frac{3}{4}$ and of macpuff is Rs15 $\frac{1}{2}$. Find the cost of 4 burgers and 14 macpuffs.

Cost of a burger Rs.$20\frac{3}{4}$ = Rs. $\frac{83}{4}$

Cost of a burger = Rs. $\frac{83}{4}$ x 4 = Rs.83.

Cost of macpuffs = Rs. $15\frac{1}{2}$ = Rs.$\frac{31}{2}$

Cost of 14 macpuffs = Rs. $\frac{31}{2}$ x 14 = Rs. 31 x 7 = Rs.217.

Total cost of a burgers and 14 macpuffs = Rs. 83 + 217 = Rs.300.

9. Simplify : $\frac{\frac{1}{4}+\frac{1}{5}}{1-\frac{3}{8}X\frac{3}{5}}$

$\frac{\frac{1}{4}+\frac{1}{5}}{1-\frac{3}{8}X\frac{3}{5}} = \frac{\frac{1}{4}+\frac{1}{5}}{1-\frac{9}{40}} = \frac{\frac{1}{4}+\frac{1}{5}}{\frac{40-9}{40}}$

$= \frac{\frac{5+4}{20}}{\frac{31}{40}} = \frac{\frac{9}{20}}{\frac{31}{40}} = \frac{9}{20} \times \frac{40}{31} = \frac{18}{31}$.

Short Answer Type Questions IV

1. Simplify the following sums

a) $1\frac{6}{7} + 11\frac{2}{5} + \frac{21}{5}$ **b)** $2\frac{2}{3} + 12\frac{2}{4} + 5\frac{1}{2}$

a) Given $1\frac{6}{7} + 11\frac{2}{5} + \frac{21}{5}$

$\therefore \frac{(1 X 7)+6}{7} + \frac{(11 X 5)+2}{5} + \frac{21}{5}$

$= \frac{7+6}{7} + \frac{55+2}{5} + \frac{21}{5} = \frac{13}{7} + \frac{57}{5} + \frac{21}{5}$

$= \frac{(13 X 5)+(57 X 7)+(21 X 7)}{35}$

[$\because$ *LCM of* 7,5 *and* 5 *is* 35]

$= \frac{65+399+147}{35} = \frac{611}{35}$ or $17\frac{16}{35}$

b) Given, $2\frac{2}{3} + 12\frac{2}{4} + 5\frac{1}{2}$

$\therefore \frac{(2 X 3)+2}{3} + \frac{(12 X 4)+2}{4} + \frac{(5 X 2)+1}{2}$

$= \frac{6+2}{3} + \frac{48+2}{4} + \frac{10+1}{2} = \frac{8}{3} + \frac{50}{4} + \frac{11}{2}$

$= \frac{(8 X 4)+(50 X 3)+(11 X 6)}{12}$

[$\because$ *LCM of* 3,4 *and* 2 *is* 12]

$= \frac{32+150+66}{12} = \frac{248}{12} = \frac{124}{6} = \frac{62}{3} = 20\frac{2}{3}$.

2. Find the value of $\frac{4}{7}$ of 21 of $\frac{2}{3}$ of 6.

Given $\frac{4}{7}$ of 21 $= \frac{4}{7} \times \frac{21}{1} = \frac{4 \times 21}{7 \times 1} = 12$

Then, 12 of $\frac{2}{3}$

$= \frac{12}{1} \times \frac{2}{3} = \frac{12 \times 2}{1 \times 3} = 8$

So, 8 of 6

$= \frac{8}{1} \times \frac{6}{1} = \frac{8 \times 6}{1 \times 1} = \frac{48}{1} = 48.$

Hence, $\frac{4}{7}$ of 21 of 6 $= \frac{4}{8}$.

3. Find the value: $2\frac{1}{3}$ of 4 $\frac{7}{9}$ of $\frac{1}{2}$

Given $2\frac{1}{3}$ of 4 $\frac{7}{9}$ of $\frac{1}{2}$

$\because 2\frac{1}{3} = \frac{(2 \times 3)+1}{3} = \frac{6+1}{3} = \frac{7}{3}$

$4\frac{7}{9} = \frac{(4 \times 9)+7}{9} = \frac{36+7}{9} = \frac{43}{9}$

$\therefore \frac{7}{3} = \frac{43}{9}$ of $\frac{1}{2}$

Now, $\frac{7}{3}$ of $\frac{43}{9} = \frac{7}{3} \times \frac{43}{9} \times \frac{7 \times 43}{3 \times 9} = \frac{301}{27}$

and again, $\frac{301}{27}$ of $\frac{1}{2} = \frac{301}{27} \times \frac{1}{2} \times \frac{301 \times 1}{27 \times 2} = \frac{301}{54} = 5\frac{31}{54}$

Hence, $\frac{7}{3}$ of $\frac{43}{9}$ of $\frac{1}{2} = 5\frac{31}{54}$.

4. Express as rupees using decimals.

a) 49 paise **b) Rs. 54 64 paise** **c) 249 paise**

a) Given, 49 paise

We know that, Rs.1 = 100 paise

$\therefore$ 1 paise = Rs. $\frac{1}{100}$

So, 49 paise = 49 x $\frac{1}{100} = \frac{49}{100}$ = Rs0.49

b) 54 Rs 64 paise

we know that Rs 1=100 paise

1 paise = Rs. $\frac{1}{100}$

$\therefore$ 64 paise = 64 x $\frac{1}{100} = Rs\ \frac{64}{100}$ = Rs0.64.

$\therefore$ Rs.54 + Rs0.64 = Rs54.64

c) Given, 249 paise

we know that Rs 1=100 paise

1 paise = Rs. $\frac{1}{100}$

$\therefore$ 249 paise = (200 + 49)paise = 200 paise + 49 paise

So,49 paise = = Rs49 x $\frac{1}{100} = \frac{49}{100}$ Rs0.49

200 paise = $\frac{200}{100}$ = Rs.2

$\therefore$ Rs.2 + Rs0.49 = Rs2.49.

5. Simplify and write the result in decimal form

$\left(1 \div \frac{2}{9}\right) + \left(1 \div 3\frac{1}{5}\right) + \left(1 \div 2\frac{2}{3}\right)$

Given $\left(1 \div \frac{2}{9}\right) + \left(1 \div 3\frac{1}{5}\right) + \left(1 \div 2\frac{2}{3}\right)$

Now, $3\frac{1}{5} = \frac{(3\ X\ 5)+1}{5} = \frac{15+1}{5} = \frac{16}{5}$

$2\frac{2}{3} = \frac{(2\ X\ 3)+2}{3} = \frac{6+2}{3} = \frac{8}{3}$

$\therefore \left(1 \div \frac{2}{9}\right) + \left(1 \div \frac{16}{5}\right) + \left(1 \div \frac{8}{3}\right)$

[∵ reciprocal of $\frac{2}{9}$ is $\frac{9}{2}$, reciprocal of $\frac{16}{5}$ is $\frac{5}{16}$,and reciprocal of $\frac{8}{3}$ is $\frac{3}{8}$]

$\left(1 \times \frac{9}{2}\right) + \left(1 \times \frac{5}{16}\right) + \left(1 \times \frac{3}{8}\right)$

$= \left(\frac{1 \times 9}{1 \times 2}\right) + \left(\frac{1 \times 5}{1 \times 16}\right) + \left(\frac{1 \times 3}{1 \times 8}\right)$

$= \left(\frac{9}{2}\right) + \left(\frac{5}{16}\right) + \left(\frac{3}{8}\right)$

[∵ LCM of2,16 and 8 is 16]

$= \frac{(9\ X\ 8) + (5X1) + (3\ X\ 2)}{16}$

$\frac{72+5+6}{16} = \frac{72+11}{16} = \frac{83}{16} = 5.1875.$

6. Evaluate (0.3) x (0.3) – (0.2) x (0.2).

Given (0.3) x (0.3) – (0.2) x (0.2).

$0.3 = \frac{3}{10}$, $0.2 = \frac{2}{10}$, $\left(\frac{3}{10} \text{ x} \frac{3}{10}\right) - \left(\frac{2}{10} \text{ x} \frac{2}{10}\right)$

$= \frac{9}{100} - \frac{4}{100} = \frac{9-4}{100}$

$= \frac{5}{100} = 0.05$

7. Evaluate $\frac{0.6}{0.3} + \frac{0.16}{0.4}$

$= \frac{0.6}{0.3} + \frac{0.16}{0.4}$

∵ $0.6 = \frac{6}{10}$, $0.3 = \frac{3}{10}$, $0.16 = \frac{16}{100}$ $0.4 = \frac{4}{10}$

$\frac{\frac{6}{10}}{\frac{3}{10}} + \frac{\frac{16}{100}}{\frac{4}{10}} = \left(\frac{6}{10} \text{ x} \frac{10}{3}\right) + \left(\frac{16}{100} \text{ x} \frac{10}{4}\right)$

[∵ division is reverse of multiplication]

$= \frac{60}{30} + \frac{160}{400} = \frac{6}{3} + \frac{16}{40} = \frac{2}{1} + \frac{4}{10} = \frac{20+4}{10}$

[∵ LCM of 1 and 10 is 10]

$\frac{24}{10} = \frac{12}{5} = 2.4$

8. Find the value of $\frac{(0.2 \text{ x } 0.14)+(0.5 \text{ x } 0.91)}{(0.1 \text{ x } 0.2)}$.

Given $\frac{(0.2 \text{ x } 0.14)+(0.5 \text{ x } 0.91)}{(0.1 \text{ x } 0.2)}$.

∵ $0.2 = \frac{2}{10}$, $0.14 = \frac{14}{100}$, $0.5 = \frac{5}{10}$

$0.91 = \frac{91}{100}$, $0.1 = \frac{1}{10}$, $0.2 = \frac{2}{10}$

$$\frac{\left(\frac{2}{10} X \frac{14}{100}\right)+\left(\frac{5}{10} X \frac{91}{100}\right)}{\left(\frac{1}{10} X \frac{2}{10}\right)} = \frac{\frac{2 X 14}{1000}+\frac{5 X 91}{1000}}{\frac{1 X 2}{1000}}$$

$$= \frac{\frac{28}{1000}+\frac{455}{1000}}{\frac{2}{1000}}$$

$$= \frac{\frac{28+455}{1000}}{\frac{2}{100}} = \frac{\frac{483}{1000}}{\frac{2}{100}} = \frac{483}{1000} X \frac{100}{2}$$

[∵ division is reverse of multiplication]

$$\frac{483}{10 x 2} = \frac{241}{10} = 24.15.$$

9. Rama has $6\frac{1}{4}$ kg of cotton wool for making pillows. If one pillow takes $1\frac{1}{4}$ kg, how many pillows can she make?

i.e. $6\frac{1}{4}$ kg $= \frac{(6 X 4)+1}{4} = \frac{24+1}{2} = \frac{25}{4}$

Where the one pillow can be made from $1\frac{1}{4}$

i.e. $1\frac{1}{4}$ kg $= \frac{(1 X 4)+1}{4} = \frac{4+1}{2} = \frac{5}{4}$

∴ Number of pillows $= \frac{Total\ quantity\ of\ cotton\ available}{cotton\ used\ in\ one\ pillow}$

$$\frac{\frac{25}{4}}{\frac{5}{4}} = \frac{25}{4} \times \frac{4}{5} = \frac{25}{5} = 5$$

[∵ division is reverse of multiplication].

10. If Radhika takes $2\frac{1}{3}$ m of cloth to make a shirt. How many shirts can Radhika make from a piece of cloth $9\frac{1}{3}$ m long?

Given Radhika takes $2\frac{1}{3}$ m of cloth to make a shirt

i.e. $2\frac{1}{3}$m $= \frac{(2 X 3)+1}{3} = \frac{6+1}{3} = \frac{7}{3}$

If Radhika has $9\frac{1}{3}$ m long cloth

i.e. $9\frac{1}{3}$m $= \frac{(9 X 3)+1}{3} = \frac{27+1}{3} = \frac{28}{3}$m

Then number of shirts that can be made $= \frac{available\ cloth}{Required\ cloth\ to\ make\ one\ shirt}$

$$\frac{28/3}{7/3} = \frac{28}{3} \times \frac{3}{7}$$

[∵ division is reverse of multiplication]

$$\frac{28}{7} = 4$$

Hence, Radhika make 4 shirts from available piece of cloth.

11. Ravi can walk $3\frac{1}{3}$ km in one hour. How long will it take him to walk to his office which is 10 km from him home.?

Ravi can walk $3\frac{1}{3}$ km in one hour

i.e. $3\frac{1}{3}$ km / hour = $\frac{(3\ X\ 3)+1}{3}$ = $\frac{9+1}{3}$ = $\frac{10}{3}$ km/h.

∵ Distance between Ravi's and his office = 10 km

∴ Time = $\frac{\text{Distance between Ravi's and his office}}{Ravi'sspeed\ in\ 1\ h}$

$\frac{10\ km}{\frac{10}{3}\ km/h}$ x $\frac{10}{1}$ x $\frac{3}{1}$

[∵ division is reverse of multiplication]

$\frac{30}{10}$ = 3h.

12. Rohan is dividing 1 $\frac{3}{4}$ kg of sweets equally among his seven friends. How much does each friend receive?

Total quantity of sweets = $1\frac{3}{4}$ kg

∵ $1\frac{3}{4}$ = = $\frac{(1\ X\ 4)+3}{3}$ = $\frac{4+3}{4}$ = $\frac{7}{4}$ kg

$\frac{7}{4}$ ÷ 7 = $\frac{7}{4}$ x $\frac{1}{7}$ = $\frac{1}{4}$ kg

Hence, each friend receive $\frac{1}{4}$ kg sweets.

13. Amit has one piece of chocolate cake. Sumit has one piece of strawberry cake. Amit slices his cake into 8 equal pieces. Sumit slices his cake into 16 equal pieces. Amit wants to exchange a portion of Sumit's cake. If he gives 4 pieces of his cake to Sumit, how many pieces of cake should Sumit give to Amit.

So, each piece = $\frac{1}{8}$ of chocolate cake

Sumit divide cake into 16 equal pieces

So each piece = $\frac{1}{16}$ of strawberry cake

= 8 x $\frac{1}{16}$ = 4 x $\frac{1}{8}$

Sumit should give 8 pieces of cake to Amit.

14. Mukesh cut a cake into 4 equal pieces. If he wanted to divide each of them into 3 equal pieces, what fraction of the whole cake would each small piece be?

Number of pieces =4

Mukesh wants to divide each piece of cake in 3 equal pieces.

So, $\frac{1}{3}$ of $\frac{1}{4}$ x $\frac{1}{3}$ x $\frac{1}{12}$.

15. Find the decimal expression for 6 rupees 8 pase (in rupees).

=Rs.6 ÷8x$\frac{1}{100}$rupees [∵ 1 rupees = 100 paise]

=Rs.6+Rs.0.08 = Rs.6.08.

16. Ramu finishes $\frac{1}{3}$ part of a work in 1 h. How much part of the work will be finished in $2\frac{1}{5}$ h?

The part of the work finished by Ramu in 1h= $\frac{1}{3}$

So,the part of the work finished by Ramu in = $2\frac{1}{5}$

= $2\frac{1}{5}$ x $\frac{1}{3}$ = $\frac{(2x5)+1}{5}$ x $\frac{1}{3}$

= $\frac{11}{5}$ x $\frac{1}{3}$ = $\frac{11}{35}$

Hene Ramu will finish $\frac{11}{5}$part of the work in $2\frac{1}{5}h$.

17. For the celebrating children's day, 4 students of class VII bought sweets for Rs.740.25 and cold drink for Rs.70 . If 35 students contributed equally, what value depicted here?

Paid money for sweets = Rs.740.25

Paid money for cold drink = Rs.70

Total money paid by 35 students = Rs.740.25 + Rs.70 = 810.25

∴ Contribution by each students = $\frac{Rs.810.251}{35}$ = $\frac{81025}{3500}$

So, each student contributed = Rs.23.15

The value depited here is unity of the students.

18. In her Science class , Jyoti learnt that the atomic weight of Helium is 4.0030, of Hydrogen is 1.0080 and of Oxygen is 16.0000. Find the difference between the atimic weights of.

i) Oxygen and Hydrogen

ii) Oxygen and Helium

iii) Helium and Hydrogen

Given Atomic weight of Helium = 4.0030

Hydrogen = 1.0080 and Oxygen = 16.0000

i) Difference between the atomic weights of Oxygen and hydrogen

$$\begin{array}{r} 16.0000 \\ -01.0080 \\ \hline 14.9920 \end{array}$$

ii) Difference between the atomic weights of Oxygen and Helium

$$\begin{array}{r} 16.0000 \\ -04.0030 \\ \hline 11.9970 \end{array}$$

iii) Difference between the atomic weights of Hydrogen and Helium

$\begin{array}{r} 4.0030 \\ -1.0080 \\ \hline 2.9950 \end{array}$.

19. If $\frac{2}{3}$ of a number is 10 , then what is 1.75 times of that number?

Let the number be x.

According to the question $\frac{2}{3}$ of x=10 = $\frac{2}{3}$ x x x = 10

On multiplying by $\frac{2}{3}$ bothsides,we get

= $\frac{2}{3}$ x x x $\frac{3}{2}$ = 10 x $\frac{3}{2}$ = x = 5 x 3= x = 15

1.75 times of 15 = 1.75 of 15= 1.75 x 15

= $\frac{175}{100}$ x 15 = $\frac{2625}{100}$ = 26.25.

20. $\frac{4}{5}$ of 5 kg apples were used on Monday. The next day, $\frac{1}{3}$ of what was left was used . Find the weight (in kg) of apples left now.

Apples used on Monday = $\frac{4}{5}$ of 5 kg

= $\frac{4}{5}$ of 5 = $\frac{4\,x\,5}{5}$ of 4 kg

Apples left = (5-4)kg = 1kg

Next day apples used = $\frac{1}{3}$ of 1 kg = $\frac{1}{3}$ kg

Left apples = $\left(1-\frac{1}{3}\right)$ kg = $\frac{3\,x\,1-1\,x\,1}{3}$ = $\frac{3-1}{3}$ = $\frac{2}{3}$ kg.

21. A picture hall has seats for 820 persons. At a recent film show, used Mr. X guessed it was $\frac{3}{4}$ full, another used Mr. Y guessed it was $\frac{2}{3}$ full. The ticket office reported 648 sales.

Which used (first or second) made the better guess? What value depict here?

Given picture hall seats = 820

One user guesses $\frac{3}{4}$ full

$\therefore$ $\frac{3}{4}$ of 820 = $\frac{3}{4}$ x 820 = $\frac{3x820}{4}$ = $\frac{246}{4}$ = 615

Another user guesses $\frac{2}{3}$full

$\therefore$ $\frac{2}{3}$ of 820 = $\frac{2}{3}$ x 820 = $\frac{2x820}{3}$ = $\frac{1640}{4}$ = 546.66

648 tickets are sold that is nearly to 615

So, Mr. X guess was better.

In many situations we solve our problems by approximation or guessing.

22. A flower garden is 22.50 m long. Sheela wants to make a border along one side using bricks that are 0.25 m long. How many bricks will be needed?

Length of the flower garden = 22.50m

Length of brick = 0.25m

Number of bricks used in one side = $\frac{Length\ of\ flower\ garden}{Length\ of\ a\ brick}$ = $\frac{22.50m}{0.25m}$= $\frac{2250}{25}$= 90

Hence 90 bricks will be needed.

23. The product of two decimal numbers is 2.2144. If one of them is 0.64 then find the other decimal number.

Given, the product of two decimal numbers is 2.2144

One of the decimal number =0.64

Let the other decimal number be x

So according to the question

0.64 x = 2.2144

$\frac{2.2144}{0.64}\ x = \frac{22144}{10000} = \frac{100}{64}$

$x = \frac{22144}{100} \times \frac{1}{64} = \frac{346}{100} = 3.46$

x = 3.46

Hence the other number is 3.46

Check = 3.46 x 0.64 = 346 x 64 = 22144

Place decimal point often 4 digits starting from the extreme right of 22144 and 64

so 3.46 x 0.64 = 2.2144

24. Measurement made in Science lab must be as accurate as possible. Ravi measured the length of an iron rod and said it was 19.34cm long. Kamal said 19.25 cm and Tabish said 19.27 cm. The correct length was 19.33 cm. How much of error was made by each of the boys?

The actual length of an iron rod = 19.33 cm

Measured length = 19.34 m

Error = measured value – Actual Value

=(19.34 – 19.33) cm + 01 cm

Kamal measured = 19.25 cm

Error = (19.25 – 19.33) cm – 0.08 cm

Tabish measured = 19.27 cm

Error = (19.27 – 19.33) cm – 0.06 cm

25. Family photograph has length $14\frac{2}{5}$ cm and breadth $10\frac{2}{5}$ cm. It has border of uniform width $2\frac{3}{5}$ cm. Find the area of framed photograph.

$= \frac{14x5+2}{5} = \frac{72}{5}$ cm

Breadth of family photograph = $10\frac{2}{5}$ cm

$= \frac{10x5+2}{5} = \frac{52}{5}$ cm

New length including border (from both sides)

$= \frac{72}{5} + \left(2\frac{3}{5}x2\right) = \frac{72}{5} + \left(\frac{13}{5}x2\right)$

$= \frac{72}{5} + \frac{26}{5} = \frac{72+26}{5} = \frac{98}{5}$ cm

New width including border (from both sides)

$= \frac{52}{5} + \left(2\frac{3}{5}x2\right)$

$= \frac{52}{5} + \frac{26}{5} = \frac{52+26}{5} = \frac{78}{5}$ cm

∴ Area of framed photograph

$= \frac{98}{5}$ x $= \frac{78}{5} = = \frac{7644}{25} = 305 = \frac{19}{25}$ cm^2

Hence area of formed photograph is $305\frac{19}{25}$ cm^2

Long Answer Type Questions

1. Ritika studies for $11\frac{1}{3}$ hours daily. She devotes $5\frac{3}{5}$ hours of her time for Hindi and Sanskrit. How much time does she devote for other subjects?

Total hours devoted by Ritika for other subjects

$= \frac{34}{3} - \frac{28}{5}$

$= \frac{170-84}{15} = \frac{86}{15} = 5\frac{11}{15}$ hours.

2.Evaluate the following

a. the place value of 5 in 103.2523 – place value of 2 in 115.552.

b. $\frac{1}{6}$ of $2\frac{2}{3} \div \frac{4}{3}$ x $1\frac{1}{2}$

a.. Place value of 5 in 103.2523 – Place value of 2 in 115.552.

= 0.0500 – 0.002

=0.050 – 0.002

$= \frac{50}{1000} - \frac{2}{1000}$

$= \frac{50-2}{1000} = = \frac{48}{1000}$

$= 0.048$

b.. $\frac{1}{6}$ of $2\frac{2}{3} \div \frac{4}{3} \times 1\frac{1}{2}$

$= \frac{1}{6}$ of $\frac{8}{3} \div \frac{4}{3} \times \frac{3}{2}$

$= \frac{1}{6} \times \frac{8}{3} \div \frac{4}{3} \times \frac{3}{2}$

$= \frac{8}{18} \times \frac{4}{3} \times \frac{3}{2}$

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

3. In a school $\frac{5}{6}$ of the students are boys. If there are 240 girls is school, The find the number of the boys in School.

Solution : Since the no. of boys $= \frac{5}{6}$

Or. Number of girls = 1- $\frac{5}{6}$

$= \frac{6-5}{6} = \frac{1}{6}$

Hence, the no of girls $= \frac{1}{6}^{th}$ of the total number of students

$= \frac{1}{6}^{th}$ of the total number of students = 240

Total number of students $\frac{240}{1/6}$

Total number of students = 1440

= ∴ No. Of boys = 1440 – 240

= 1200

4. In a class of 40 students, $\frac{1}{5}$ of the total number of students like to study English,, $\frac{2}{5}$ of the total number like to study maths and remaining students likes to study science.

a) How many students like to study English?

b) How many students like to study maths?

c) What fraction of the total number of students like to study science.

Solution :

a) No. Of students like to study English

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

= 1 x 8

=8

b) No. of students who like to study science

$= \frac{2}{5}$ x 40

= 2 x 8

=16

d) No. Of students who like to study science

=40 – (8 + 16)

=40 -24

= 16

In part (ii) we know

$\frac{2}{5}$ x 40 = 16

So $\frac{2}{5}$ of the total no. of students like to study science.

5. A car covers a distance of 8.6 km in 1 litre petrol. How far it will go in 36.5 litres of petrol ∴ car cover in 1 litre = 8.6 km

Car covers in 36.5 litres = 8.6 x 36.5

=313.90

=313.9 km

6. Simplify :

$4\frac{2}{3} - 3\frac{1}{4} + 2\frac{1}{6}$

Solution :

$4\frac{2}{3} - 3\frac{1}{4} + 2\frac{1}{6} = \frac{14}{3} - \frac{13}{4} + \frac{13}{63}$

$= \frac{14\,x\,4}{3\,x\,4} - \frac{13\,x\,3}{4\,x\,3} + \frac{13\,x\,2}{6\,x\,2}$

=∴ LCM of 3,4 and 6 is 12, so we convert each fraction into an equivalent fraction with denominator 12.

i.e. $\frac{56}{12} - \frac{39}{12} + \frac{26}{12} = \frac{56-39+26}{12}$

$= \frac{82-39}{12}$

$= \frac{43}{12} = 3\frac{7}{12}$.

7. The cost of $5\frac{2}{5}$ kg of sugar is Rs.$101\frac{1}{4}$, find its cost per kg.

We have

Cost of $5\frac{2}{5}$ kg of sugar is Rs.$101\frac{1}{4}$

Or, cost of $\frac{27}{5}$kg of sugar is Rs. $\frac{405}{4}$

Or, cost of 1 kg of sugar

= Rs. $\left(\frac{405}{4} \div \frac{27}{5}\right)$ = Rs. $\left(\frac{405}{4} x \frac{5}{27}\right)$

= Rs. $\left(\frac{405\ x\ 5}{4\ x\ 27}\right)$= Rs. $\frac{75}{4}$ = Rs.18 $\frac{3}{4}$

8. The product of two number is $20\frac{5}{7}$. If one of the numbers is 6 $\frac{2}{3}$ find the other.

We have

Product of two numbers = 20 $\frac{5}{7}$. If one of the numbers is 6 $\frac{2}{3}$ find the other.

Other

Product of two numbers = $20\frac{5}{7} = \frac{145}{7}$

One of the number = $6\frac{2}{3} = \frac{20}{3}$

The other number = (product of the numbers ÷ One of the numbers)

$= \frac{145}{7} \div \frac{20}{3}$

$= \frac{145}{7}\ x\ \frac{3}{20} = = \frac{145\ x\ 3}{7x20} = = \frac{29\ x\ 3}{7\ x\ 4} = \frac{87}{28} = 3\ \frac{3}{28}$

Hence the other number is $3\ \frac{3}{28}$

9. If the cost of a notebook is Rs.$8\frac{3}{4}$, how many notebooks can be purchased for Rs. $\frac{131}{4}$?

We have,

Cost of a notebook is Rs.$8\frac{3}{4} = Rs.\frac{35}{4}$

Total amount = Rs. $131\frac{1}{4}$= Rs. $\frac{35}{4}$

Number of Notebooks = $\frac{Total\ Amount}{Cost\ of\ one\ notebook}$

$=\frac{525}{4} \div \frac{35}{4} = \frac{525}{4}$ x $\frac{4}{435} = \frac{525\ x\ 4}{4\ x\ 35}$ = 15.

10. A bucket contains $24\frac{3}{4}$ litres of water. How many $\frac{3}{4}$ litres jugs can be filled from the bucker emptied ?

Volume of water in the bucket $24\frac{3}{4}$ *litres* = $\frac{99}{4}$ litres

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

∴ Number of jugs that can be filled to get the bucket emptied

= $\frac{99}{4} \div \frac{3}{4} = \frac{99}{4} \times \frac{4}{3} = \frac{99X\ 4}{4X\ 3}$ = 33

Hence, 33 jugs of $\frac{3}{4}$ litre can be filled to get the bucket emptied.