BANK EXAMS

QUANTITATIVE APTITUDE

FRACTIONS

Fraction questions can look difficult at first, but they become easier when understand and practice them. Once you understand the fundamentals of what fractions are, they are very simple to solve.

★ If a cake is cut into five pieces and three pieces are taken out of five pieces, then these three pieces are known as $\frac{3}{5}$.

★ Thus the relation to represent some part to the whole part is known as fraction.

★ The upper part of the fraction is called Numerator and the lower part is called Denominator.

✪ For example in the fraction $\frac{4}{7}$, 4 is the numerator and 7 is the denominator.

★ Fraction is always represented in its lowest terms.

★ To reduce a fraction to its lowest term, both numerator and denominator are to be divided by the highest common factor.

✪ For example 3 is the highest common factor of the numerator and denominator of $\frac{6}{9}$. When both 6 and 9 are divided by 3, the fraction becomes $\frac{2}{3}$.

Comparison of Fractions:

When comparing two or more fractions, the following points are to be remembered.

★ When the denominators of the fractions are same, the fraction having largest numerator is the largest of all the fractions.

★ When the numerators of the fractions are same, the fraction having smallest denominator is the largest of all the fractions.

★ When neither numerators nor denominators of the fractions are same then they are converted into equivalent fractions of the same denominator by taking the LCM of the denominators of the given fractions and then compared.

★ If the difference of the numerators and denominators of each of the given fractions be same then the fraction of the greatest numerator is the greatest and the fraction of the least numerators is the smallest.

For example

In the fractions $\frac{7}{10}, \frac{5}{8}, \frac{11}{14}$ and $\frac{4}{7}$

the difference between the numerator and the denominator of all the fractions is same which is 3 in numerator, 11 is the biggest and 4 is the smallest.

Therefore, $\frac{11}{14}$ is the biggest and $\frac{4}{7}$ is the smallest fraction.

Cross multiplication Method:

★ Two fractions can be compared with this method.

★ The numerator of the first fraction is multiplied by the denominator of the second fraction and the numerator of the second fraction is multiplied by the denominator of the first fraction.

For example

$\frac{5}{9}$ and $\frac{4}{7}$ are to be compared then

$5 \times 7 = 35$ and $4 \times 9 = 36$

since 36 is greater than 35 and in 36 the numerator of $\frac{4}{7}$ is included,

$\therefore \frac{4}{7}$ is greater than $\frac{5}{9}$

$5 \times 7 \qquad 4 \times 9$

$35 \qquad 36$

Directions (Q.No.1 – 8): What should come in place of question mark (?) in the following questions?

1. $\frac{3}{5} \times \frac{4}{9} \div \frac{4}{15} = ?$

1) $\frac{3}{5}$ 2) $\frac{5}{6}$ 3) $\frac{1}{2}$ 4) $\frac{1}{3}$

5) None

2. $\frac{5}{9} \div \frac{5}{12} \times ? = \frac{2}{3}$

1) $\frac{3}{4}$ 2) $\frac{5}{4}$ 3) $\frac{1}{3}$ 4) $\frac{1}{2}$

5) None

3. $2\frac{1}{6} + ? + 4\frac{2}{3} = 8\frac{1}{6}$

1) $1\frac{1}{3}$ 2) $2\frac{2}{3}$ 3) $1\frac{1}{6}$ 4) $\frac{1}{3}$

5) None of these

4. $3\frac{1}{3} - 4\frac{1}{6} + 5\frac{1}{2} = ?$

1) $4\frac{1}{3}$ 2) $4\frac{2}{3}$ 3) $4\frac{5}{6}$ 4) $4\frac{3}{4}$

5) None of these

5. $4\frac{2}{5} \div 3\frac{3}{4} \times ? = 5\frac{3}{5}$

1) $4\frac{11}{23}$ 2) $3\frac{17}{22}$ 3) $6\frac{13}{22}$ 4) $4\frac{13}{21}$

5) None of these

6. $11\frac{2}{5} + 11\frac{2}{5} \div 11\frac{2}{5} - 11\frac{2}{5} = ?$

1) $22\frac{2}{5}$ 2) $11\frac{4}{3}$ 3) 1 4) $22\frac{1}{5}$

5) None of these

7. $12\frac{1}{2} - \left[4\frac{1}{2} - \left\{3 - \left(2 - \frac{1}{2}\right)\right\}\right] = ?$

1) $3\frac{1}{2}$ 2) $10\frac{1}{2}$ 3) $9\frac{1}{2}$ 4) $9\frac{1}{4}$

5) None of these

8. $3 + \cfrac{1}{2 - \cfrac{3}{5 + \cfrac{1}{4 - \frac{1}{4}}}} = ?$

1) $3\frac{29}{48}$ 2) $6\frac{13}{21}$ 3) $5\frac{19}{48}$ 4) $8\frac{29}{48}$

5) None of these

9. Find the biggest of the fractions $\frac{4}{7}, \frac{9}{13}, \frac{3}{5}$ and $\frac{5}{8}$

1) $\frac{3}{5}$ 2) $\frac{5}{8}$ 3) $\frac{4}{7}$ 4) $\frac{9}{13}$

5) None

10. A man completes $\frac{2}{15}$ th of his journey by bus, $\frac{2}{5}$ th by train and the remaining 91 km by taxi. What is the total journey?

1) 136.5 km 2) 182 km 3) 175 km 4) 195 km

5) None of these

11. What is the reciprocal of the sum of the reciprocals of $\frac{3}{5}$ and $\frac{2}{3}$?

1) $\frac{19}{9}$ 2) $\frac{15}{19}$ 3) $\frac{6}{19}$ 4) $\frac{9}{16}$

5) None

12. The difference between $\frac{5}{6}$ part and $\frac{3}{4}$ part of a number is 18. What is that number?

1) 124 2) 216 3) 256 4) 424

5) None of these

13. One fifth of a number exceeds one twelve of the same number by 35. What is that number?

1) 300 2) 60 3) 350 4) 175

5) 150

14. Bhargav spends $\frac{1}{8}$ th part of his monthly salary on rent, $\frac{1}{4}$ th part of the remainder on household expenses and spends $\frac{1}{7}$ th part of the remaining on buying cloths. If he was left with Rs.2160, find his monthly salary.

1) Rs.4320 2) Rs.3140 3) Rs.6400 4) Rs.3240

5) None

ANSWERS

1-5; 2-4; 3-1; 4-2; 5-5; 6-3; 7-3; 8-1; 9-4; 10-4; 11-3; 12-2; 13-1; 14-5.

EXPLANATIONS

1) $\frac{3}{5} \times \frac{4}{9} \div \frac{4}{15}$

$\Rightarrow \frac{3}{5} \times \frac{4}{9} \times \frac{15}{4} = 1$

2) $\frac{5}{9} \div \frac{5}{12} \times ? = \frac{2}{3}$

$\Rightarrow \frac{5}{9} \times \frac{12}{5} \times ? = \frac{2}{3}$

$\Rightarrow ? = \frac{2}{3} \times \frac{9}{5} \times \frac{5}{12} = \frac{1}{2}$

3) $2\frac{1}{6} + ? + 4\frac{2}{3} = 8\frac{1}{6}$

$\Rightarrow ? + 2\frac{1}{6} + 4\frac{2}{3} = 8\frac{1}{6}$

$\Rightarrow ? + 6\frac{5}{6} = 8\frac{1}{6}$

$\Rightarrow ? = 8\frac{1}{6} - 6\frac{5}{6} = \frac{49}{6} - \frac{41}{6} = \frac{8}{6} = 1\frac{1}{3}$

Shortcut:

$? + 2\frac{1}{6} + 4\frac{2}{3} = 8\frac{1}{6}$

$\Rightarrow ? + 2 + 4 + \frac{1}{6} + \frac{2}{3} = 8\frac{1}{6}$

$\Rightarrow ? + 6 + \frac{(1 \times 3) + (2 \times 6)}{6 \times 3} = 8\frac{1}{6}$

$\Rightarrow ? + 6 + \frac{15}{6 \times 3} = 8\frac{1}{6}$

$\Rightarrow ? = 8\frac{1}{6} - 6\frac{5}{6} \Rightarrow ? = 8 - 6 + \left(\frac{1}{6} - \frac{5}{6}\right)$

$\Rightarrow ? = 2 + \left(-\frac{2}{3}\right) = 2 - \frac{2}{3} = \frac{4}{3} = 1\frac{1}{3}$

4) $3\frac{1}{3} - 4\frac{1}{6} + 5\frac{1}{2}$

$\Rightarrow 3 - 4 + 5\left(\frac{1}{3} - \frac{1}{6} + \frac{1}{2}\right)$

$\Rightarrow 4\left(\frac{2 - 1 + 3}{6}\right) = 4\frac{2}{3}$

5) $4\frac{2}{5} \div 3\frac{3}{4} \times ? = 5\frac{3}{5}$

$\Rightarrow \frac{22}{5} \times \frac{4}{15} \times ? = \frac{28}{5}$

$\Rightarrow ? = \frac{28}{5} \times \frac{5}{22} \times \frac{15}{4} = \frac{105}{22} = 4\frac{17}{22}$

6) $11\frac{2}{5} + 11\frac{2}{5} \div 11\frac{2}{5} - 11\frac{2}{5}$

$\Rightarrow 11\frac{2}{5} + 1 - 11\frac{2}{5} = 1$

7) $12\frac{1}{2} - \left[4\frac{1}{2} - \left\{3 - \left(2 - \frac{1}{2}\right)\right\}\right] = ?$

$\Rightarrow 12\frac{1}{2} - \left[4\frac{1}{2} - \left\{3 - 1\frac{1}{2}\right\}\right]$

$\Rightarrow 12\frac{1}{2} - \left[4\frac{1}{2} - 1\frac{1}{2}\right]$

$\Rightarrow 12\frac{1}{2} - 3 = 9\frac{1}{2}$

8) $3 + \cfrac{1}{2 - \cfrac{2}{5 + \cfrac{3}{4 - \frac{1}{4}}}} = ?$

$\Rightarrow 3 + \cfrac{1}{2 - \cfrac{2}{5 + \cfrac{3}{\frac{15}{4}}}} = 3 + \cfrac{1}{2 - \cfrac{2}{5 + \frac{4}{5}}}$

$= 3 + \cfrac{1}{2 - 2 \times \frac{5}{29}} = 3 + \cfrac{1}{\frac{48}{29}} = 3\frac{29}{48}$

9) $\frac{4}{7}, \frac{9}{13}, \frac{3}{5}$ and $\frac{5}{8}$

Comparing $\frac{4}{7}$ and $\frac{9}{13}$

$4 \times 13 = 52$ and $9 \times 7 = 63$.

$\therefore \frac{9}{13}$ is bigger

And Comparing $\frac{9}{13}$ and $\frac{3}{5}$

$9 \times 5 = 45$ and $3 \times 13 = 39$.

$\therefore \frac{9}{13}$ is bigger

Comparing $\frac{9}{13}$ and $\frac{5}{8}$

$9 \times 8 = 72$ and $5 \times 13 = 65$

$\therefore \frac{9}{13}$ is the biggest of all the fractions

10) Journey completed by bus and train = $\frac{2}{15} + \frac{2}{5} = \frac{8}{15}$

Remaining part of journey is $1 - \frac{8}{15} = \frac{7}{15}$

which is equivelant to 91 km.

$\therefore$ Total Journey is $\frac{15}{7} \times 91 = 195$ km

11) Sum of reciprocals of $\frac{3}{5}$ and $\frac{2}{3}$ is $\frac{5}{3} + \frac{3}{2} = \frac{19}{6}$

$\therefore$ Reciprocal of $\frac{19}{6}$ is $\frac{6}{19}$

12) Let the number be 'x'

$\therefore \frac{5x}{6} - \frac{3x}{4} = 18 \Rightarrow x = 216.$

13) Let the number be 'x'

$\therefore \frac{x}{5} - \frac{x}{12} = 35 \Rightarrow x = 35 \times \frac{60}{7} = 300$

14) Let his monthly salary be Rs. x

$\therefore \left(1 - \frac{1}{8}\right)\left(1 - \frac{1}{4}\right)\left(1 - \frac{1}{7}\right) \times x = 2160$

$\Rightarrow \frac{7}{8} \times \frac{3}{4} \times \frac{6}{7} \times x = 2160 \Rightarrow x =$ Rs. 3840.

Writer: Dr. G.S. Giridhar