Section A

Objective Questions:

Q1. Which of the following fractions is the greatest:

(a) $\frac{5}{6}$ (b) $\frac{5}{7}$ (c) $\frac{5}{8}$ (d) $\frac{5}{9}$

Answer: (b) $\frac{5}{6}$

When comparing fractions with the same numerator, the fraction with the smallest denominator is the greatest.

Alternate solution:

In order to find the greatest fraction among the above given fractions we will convert all the fractions to an equivalent fraction with a denominator equal to the LCM of their denominators.

2	6,7,8,9
2	3,7,4,9
2	3,7,2,9
3	3,7,1,9
3	1,7,1,3
7	1,7,1,1
	1,1,1,1

LCM = 2 x 2 x 2 x 3 x 3 x 7 = 504

The equivalent fractions are:

(a) $\frac{5\ x\ 84}{6\ x\ 84} = \frac{420}{504}$

(b) $\frac{5\ x\ 72}{7\ x\ 72} = \frac{360}{504}$

(c) $\frac{5\ x\ 63}{8\ x\ 63} = \frac{315}{504}$

(d) $\frac{5\ x\ 56}{9\ x\ 56} = \frac{280}{504}$

(e) Clearly, $\frac{5\ x\ 84}{6\ x\ 84} = \frac{420}{504}$

Q2. Which of the following is a false statement?

(a) $\frac{1}{7} < \frac{3}{14}$ (b) $\frac{5}{8} = \frac{15}{24}$ (c) $\frac{3}{4} = \frac{6}{16}$ (d) $\frac{5}{12} > \frac{2}{6}$

Answer: (c) $\frac{3}{4} = \frac{6}{16}$

(a) $\frac{1}{7} < \frac{3}{14}$ = True ; $\frac{2}{14} = \frac{1}{7}$; $\frac{2}{14} < \frac{3}{14}$

(b) $\frac{5}{8} = \frac{15}{24}$ = True ; $\frac{15 \div 3}{24 \div 3} = \frac{5}{8}$

(c) $\frac{3}{4} = \frac{6}{16}$ = False ; $\frac{12 \div 4}{16 \div 4} = \frac{3}{4}$

(d) $\frac{5}{12} > \frac{2}{6}$ = True ; $\frac{5}{12} > \frac{4}{12}$

Q3. Anshul eats $\frac{4}{7}$ of a pizza. The fraction of the left is

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

Answer:

Step 1: Represent the whole pizza as a fraction = $\frac{7}{7}$ = 1

Step 2: Subtract the fraction eaten = $\frac{7}{7} - \frac{4}{7} = \frac{3}{7}$

Q4. The fraction which is not equal to $\frac{4}{5}$ is

(a) $\frac{40}{50}$ (b) $\frac{12}{15}$ (c) $\frac{16}{20}$ (d) $\frac{9}{15}$

Answer: (d) $\frac{9}{15}$

(a) $\frac{40}{50} = \frac{40 \div 10}{50 \div 10} = \frac{4}{5}$

(b) $\frac{12}{15} = \frac{12 \div 3}{15 \div 3} = \frac{4}{5}$

(c) $\frac{16}{20} = \frac{16 \div 4}{20 \div 4} = \frac{4}{5}$

(d) $\frac{9}{15} = \frac{9 \div 3}{15 \div 3} = \frac{3}{5}$

Q5. When $\frac{1}{4}$ is written with a denominator of 12, and its numerator is

(a) 3 (b) 8 (c) 24 (d) 12

Answer: (a) 3

$\frac{1}{4} = \frac{1\ x\ 3}{4\ x\ 3} = \frac{1}{12}$

Q6. Which of the following is not in the lowest form?

(a) $\frac{7}{5}$ (b) $\frac{15}{20}$ (c) $\frac{13}{33}$ (d) $\frac{27}{28}$

Answer: (b) $\frac{15}{20}$

(a) The common factor 7 and 5 = 1

(b) The common factor 15 and 20 = 4

(c) The common factor 13 and 33 = 1

(d) The common factor 27 and 28 = 1

Q7. If $\frac{5}{8} = \frac{20}{p}$, then the value of p is

(a) 23 (b) 8 (c) 32 (d) 16

Answer: (c) 32

$\frac{5}{8} = \frac{20}{p}$

⇨ 5 x p = 20 x 8

⇨ p = $\frac{20\ x\ 8}{5}$ = 4 x 8 = 32

Q8. $\frac{11}{7}$ can be expressed in the form

(a) $7\frac{1}{4}$ (b) $4\frac{1}{7}$ (c) $1\frac{4}{7}$ (d) $11\frac{1}{7}$

Answer: (c) $1\frac{4}{7}$

The mixed fraction of $\frac{11}{7}$ = $1\frac{4}{7}$

Q9. What is the value of a+b/ a−b, If a/b=4?

(a) 3/5 (b) 5/3 (c) 4/5 (d) 5/4

Answer: (b) 5/3

It is given that $\frac{a}{b}$ = 4

We can write a = 4b

By substituting the value of a in $\frac{a+b}{a-b}$

$\frac{a+b}{a-b} = \frac{4b+b}{4b-b} = \frac{5b}{3b}$

Dividing the numerator and denominator by b, the value is $\frac{5}{3}$

Q10. The fraction to be added to $6\frac{7}{15}$ to get $8\frac{1}{5}$ is equal to

(a) 11/15

(b) $1\frac{11}{15}$

(c) 44/3

(d) 3/44

Answer:

Consider x is the fraction to be added

$6\frac{7}{15} + x = 8\frac{1}{5}$

On further calculation

$\Rightarrow \frac{97}{15} + x = \frac{41}{5}$

$\Rightarrow x = \frac{41}{5} - \frac{97}{15}$

LCM of 5 and 15 is 15

$x = \frac{123}{15} - \frac{97}{15} = \frac{26}{15} = 1\frac{11}{15}$

Q11. $\frac{3}{5}$ of 4 m 20 cm of a rope is equal to _____ cm.

a) 452 **b) 352**

c) 420 **d) 252**

Answer: d) 252

Hint 1 meter = 100 cm

Section B

Q9. What is wrong with the following?

➔ $\frac{7}{4} + \frac{5}{2} = \frac{7+5}{4+2} = \frac{12}{6} = 2$

Answer: Writing $\frac{7}{4} + \frac{5}{2} = \frac{7+5}{4+2}$ is wrong. It should be as follows.

Converting into like fractions

⇨ $\frac{7}{4} + \frac{5}{2} = \frac{7}{4} + \frac{10}{4}$

Only numerators are added

⇨ $\frac{7+10}{4} = \frac{17}{4}$

Q10. Mark $\frac{2}{6}$, $\frac{4}{6}$, $\frac{8}{6}$ and $\frac{6}{6}$ on the number line and put appropriate signs between fractions given below:

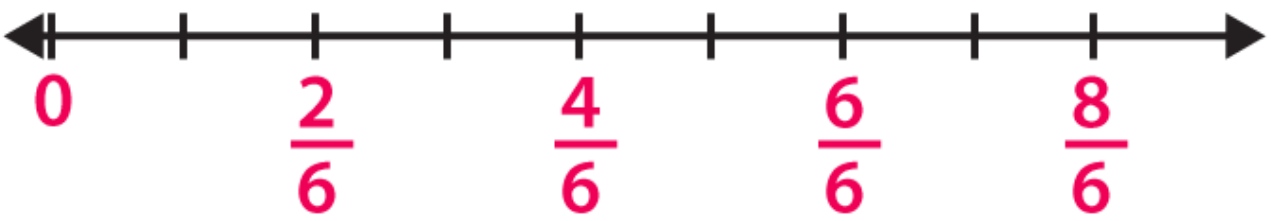
(i) $\frac{5}{6}$ ..... $\frac{2}{6}$

(ii) $\frac{3}{6}$ ..... $\frac{0}{6}$

(iii) $\frac{1}{6}$ ..... $\frac{6}{6}$

(iv) $\frac{8}{6}$ ..... $\frac{5}{6}$

Answer:



(i) $\frac{5}{6}$ ..... $\frac{2}{6}$

We know that

$\frac{5}{6} > \frac{2}{6}$ as 5 > 2 and the denominator is the same.

(ii) $\frac{3}{6}$ ..... $\frac{0}{6}$

We know that

$\frac{3}{6} > \frac{0}{6}$ as 3 > 0 and the denominator is the same.

(iii) $\frac{1}{6}$ ..... $\frac{6}{6}$

⇨ $\frac{1}{6} < \frac{6}{6}$ as 6 > 0 and the denominator is the same.

(iv) $\frac{8}{6}$ ..... $\frac{5}{6}$

⇨ $\frac{8}{6} > \frac{5}{6}$ as 8 > 5 and the denominator is the same

Q11. Fill in the blanks using '>', '<', '=' :

(a) $\frac{11}{16}$ ☐ $\frac{14}{15}$

(b) $\frac{8}{15}$ ☐ $\frac{95}{14}$

(c) $\frac{12}{75}$ ☐ $\frac{32}{200}$

(d) $\frac{18}{15}$ ☐ 1.3

Answer:

(e) $\frac{11}{16} < \frac{14}{15}$

The L.C.M. of 16 and 15 is 2 × 2 × 2 × 2 × 3 × 5 = 240

Make it as like a fraction, multiply in numerator and denominator with the same digit

$\frac{11}{16} \times \frac{15}{15} = \frac{165}{240}$

$\frac{14}{15} \times \frac{15}{15} = \frac{224}{240}$

$\Rightarrow \frac{224}{240} > \frac{165}{240}$ so, $\frac{11}{16} < \frac{14}{15}$

(b) $\frac{8}{15} < \frac{95}{14}$

The L.C.M of 15 and 14 is 2 × 3 × 5 × 7 = 210

Make it as like a fraction, multiply in numerator and denominator with the same digit

$\frac{8}{15} \times \frac{14}{14} = \frac{112}{210}$

$\frac{95}{14} \times \frac{15}{15} = \frac{1425}{210}$

(f) $\frac{12}{75} = \frac{32}{200}$

The L.C.M of 75 and 200 is 2 × 2 × 2 × 3 × 5 × 5 = 600

Make it as like a fraction, multiply in numerator and denominator with the same digit

$\Rightarrow \frac{12}{75} \times \frac{8}{8} = \frac{96}{600}$

$\Rightarrow \frac{32}{200} \times \frac{3}{3} = \frac{96}{600}$

$\Rightarrow \frac{96}{600} = \frac{96}{600}$

Q12. Arrange the fractions $\frac{2}{3}, \frac{3}{4}, \frac{1}{2}$, and $\frac{5}{6}$, in ascending order.

Answer: Take the LCM of 3,4,2 and 6

LCM = 2 x 2 x 3 = 12

⇨ $\frac{2\ x\ 4}{3\ x\ 4} = \frac{8}{12}$

⇨ $\frac{3\ x\ 3}{4\ x\ 3} = \frac{9}{12}$

⇨ $\frac{1\ x\ 6}{2\ x\ 6} = \frac{6}{12}$

⇨ $\frac{5\ x\ 2}{6\ x\ 2} = \frac{10}{12}$

Now, arrange the following the ascending order

⇨ $\frac{6}{12} < \frac{8}{12} < \frac{9}{12} < \frac{10}{12}$

The ascending order of the function is $\frac{1}{2} < \frac{2}{3} < \frac{3}{4} < \frac{5}{6}$

Q13. Write $\frac{5}{6}$ as a fraction with the numerator 60.

Answer: The given fraction is $\frac{5}{6}$

If multiply 5 by 12 it becomes 60

⇨ $\frac{5}{6} = \frac{5\ x\ 12}{6\ x\ 12} = \frac{60}{72}$

⇨ $\frac{5}{6}$ is equivalent to $\frac{60}{72}$

Q14. Find answers to the following. Write and indicate how you solved them.

(i) Is 5/9 equal to 4/5?

(ii) Is 9/16 equal to 5/9?

(iii) Is 4/5 equal to 16/20?

(iv) Is 1/15 equal to 4/30?

Answer:

(i) No. We know that 5 × 5 ≠ 9 × 4

(ii) No. We know that 9 × 9 ≠ 16 × 5

(iii) Yes. We know that 4 × 20 = 16 × 5

(iv) No. We know that 1 × 30 ≠ 15 × 4

Section C

Q14. Subtract $8\frac{1}{3}$ from $\frac{100}{9}$

Answer: Given fractions are $8\frac{1}{3}$ and $\frac{100}{9}$

Now, rewrite the mixed fraction

$8\frac{1}{3} = \frac{3\ x\ 8+1}{3} = \frac{24+1}{3} = \frac{25}{3}$

Subtract the following fraction, $\frac{25}{3}$ from $\frac{100}{9}$

Cross-multiply both fractions with each other.

⇨ $\frac{100}{9} - \frac{25}{3}$

⇨ $\frac{100}{9} - \frac{25\ x\ 3}{3\ x\ 3}$

⇨ $\frac{100}{9} - \frac{75}{9}$

⇨ $\frac{100-75}{9} = \frac{25}{9} = 2\frac{7}{9}$

Q15. Katrina rode her bicycle $6\frac{1}{2}$ km in the morning and $8\frac{3}{4}$ km in the evening. Find the distance travelled by her altogether on that day.

Answer: The distance covered by Katrina in the morning

⇨ $6\frac{1}{2} = \frac{2\ x\ 6+1}{2} = \frac{13}{2}$

⇨ $8\frac{3}{4} = \frac{4\ x\ 8+3}{4} = \frac{35}{4}$

Total distance travelled by her

⇨ $\frac{13}{2}\ km + \frac{35}{4}\ km = \frac{13\ x\ 2}{2\ x\ 2} + \frac{35}{4}$

LCM of 2 and 4 = 4

⇨ $\frac{26}{4} + \frac{35}{4} = \frac{(26+35)}{4}\ km = \frac{61}{4}$ km = $15\frac{1}{4}$ km

Distance travelled altogether by Katrina in a day is $15\frac{1}{4}$ km.

Q16. On an average $\frac{1}{10}$ of the food eaten is turned into the organism's own body and is available for the next level of the consumer in a food chain. What fraction of the food eaten is not available for the next level?

Answer: Let that total food for eaten is 1 and out of these, $\frac{1}{10}$ of the food eaten is turned into the organism's own body.

Now, available for the next level of the consumer in a food chain is

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

⇨ The fraction of food eaten that is not available for the next level is $\frac{9}{10}$.

Q17. Mr. Rajan got a job at the age of 24 years and he got retired from the job at the age of 60 **years. What fraction of his age till retirement was he in the job?**

Answer:

Mr. Rajan got a job at the age of 24 years

He retired from the job at the age of 60 years

Total working year = (60 − 24) = 36 year

The required fraction $\frac{36}{60} = \frac{36 \div 12}{60 \div 12} = \frac{3}{5}$

The fraction of his age till retirement was he in the job is $\frac{3}{5}$

Section D

Q18. $8 - \left\{5\frac{1}{3} - \left(3 - 2\frac{1}{2}\right)\right\}$

Answer:

➔ $8 - \left\{\frac{16}{3} - \left(3 - \frac{5}{2}\right)\right\}$

⇨ $8 - \left\{\frac{16}{3} - 3 + \frac{5}{2}\right\}$

⇨ $\frac{8}{1} - \frac{16}{3} + \frac{3}{1} - \frac{5}{2}$

⇨ $\frac{48-32+18-5}{6} = \frac{66-47}{6} = \frac{19}{6} = 3\frac{1}{6}$

Q19. Find the fraction equivalent to 45/60, having:

(i) numerator 15

(ii) denominator 4

(iii) denominator 240

(iv) numerator 135

Answer:

(i) numerator 15

Given fraction = $\frac{45}{60}$

By considering numerator = 15

We know that 45 ÷ 3 = 15

Dividing the numerator and denominator of the fraction by 3

⇨ $\frac{45 \div 3}{60 \div 3} = \frac{15}{20}$

(ii) denominator 4

Given fraction = $\frac{45}{60}$

By considering denominator = 4

We know that 60 ÷ 15 = 4

Dividing the numerator and denominator of the fraction by 15

⇨ $\frac{45 \div 15}{60 \div 15} = \frac{3}{4}$

(iii) denominator 240

Given fraction = $\frac{45}{60}$

By considering denominator = 240

We know that 60 × 4 = 240

Multiply the numerator and denominator of the fraction by 4

⇨ $\frac{45\ x\ 4}{60\ x\ 4} = \frac{180}{240}$

(iv) numerator 135

By considering numerator = 135

We know that 45 × 3 = 135

Multiply the numerator and denominator of the fraction by 3

⇨ $\frac{45\ x\ 3}{60\ x\ 3} = \frac{135}{180}$

Q20. Check whether the given fractions are equivalent:

(i) $\frac{5}{9}, \frac{30}{54}$

(ii) $\frac{2}{7}, \frac{16}{42}$

(iii) $\frac{4}{11}, \frac{32}{88}$

(iv) $\frac{3}{10}, \frac{12}{50}$

(v) $\frac{9}{27}, \frac{25}{75}$

Answer:

(i) $\frac{5}{9}, \frac{30}{54}$

➔ $\frac{5}{9} \times \frac{6}{6} = \frac{30}{54}$ [Equivalent]

(ii) $\frac{2}{7}, \frac{16}{42}$

⇨ $\frac{2}{7} \times \frac{8}{8} = \frac{16}{56}$ [Not Equivalent]

(iii) $\frac{4}{11}, \frac{32}{88}$

⇨ $\frac{4}{11}$ x $\frac{8}{8}$ = $\frac{32}{88}$ [Equivalent]

(iv) $\frac{3}{10}$, $\frac{12}{50}$

⇨ $\frac{3}{10}$ x $\frac{4}{4}$ = $\frac{12}{40}$ [Not Equivalent]

(v) $\frac{9}{27}$, $\frac{25}{75}$

➔ $\frac{9}{27}$ = $\frac{1}{3}$

⇨ $\frac{25}{75}$ = $\frac{1}{3}$ [Equivalent]

Q21. A girl did half of some work on Monday and one-third of it on Tuesday. How much will she have to do on Wednesday in order to complete the work?

Answer:

Let the total work done = 1

Work done on Monday = $\frac{1}{2}$

Work done on Tuesday = $\frac{1}{3}$

Work done on Wednesday = remaining work

⇨ $1 - \left(\frac{1}{2} + \frac{1}{3}\right)$

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

⇨ $\frac{6-5}{6} = \frac{1}{6}$

Work done on Wednesday = $\frac{1}{6}$ of work.

Q22. Ravish takes 2 $\frac{1}{5}$ minutes to walk across the school ground. Rahul takes $\frac{7}{4}$minutes to do the same. Who takes less time and by what fraction?

Answer: Time taken by Ravish to walk across the school ground = 2 $\frac{1}{5}$ minutes = $\frac{11}{5}$ minutes

Time taken by Rahul to walk across the school ground = $\frac{7}{4}$ minutes

By comparing $\frac{11}{5}$ and $\frac{7}{4}$ minutes

We know that LCM of 4 and 5 is 20

In order to convert fractions into equivalent fractions having 20 as a denominator

⇨ $\frac{11\ x\ 4}{5\ x\ 4} = \frac{44}{20}$

⇨ $\frac{7\ x\ 5}{4\ x\ 5} = \frac{35}{20}$

So we get $\frac{44}{20}$ > $\frac{35}{20}$

So Rahul takes less time

It can be written as

$\frac{44}{20} - \frac{35}{20} = \frac{44-35}{20} = \frac{9}{20}$ minutes

Hence, Rahul takes less time by $\frac{9}{20}$ minutes.