Fractions and Decimals: Exercise 2.1

Q.1 Solve:

(i) $2-\frac{3}{5}$ **(ii)** $4+\frac{7}{8}$ **(iii)** $\frac{3}{5}+\frac{2}{7}$ **(iv)** $\frac{9}{11}-\frac{4}{15}$

(v) $\frac{7}{10}+\frac{2}{5}+\frac{3}{2}$ **(vi)** $2\frac{2}{3}+3\frac{1}{2}$ **(vii)** $8\frac{1}{2}-3\frac{5}{8}$

Sol: **Given:** $2-\frac{3}{5}$

2- (3/5) = (2/1) – (3/5)
LCM of denominators 1 and 5 is 5.
= [(2x5) - (3x1)]/5
= (10-3)/5
= 7/5

(ii) Given: $4+\frac{7}{8}$

4 + (7/8) = (4/1) + (7/8)
LCM of denominators 1 and 8 is 8.
= [(8x4) + (7x1)]/8
= (32+7)/8
= 39/8 or $4\frac{7}{8}$

(iii) Given: $\frac{3}{5}+\frac{2}{7}$

LCM of denominators 5 and 7 is 35.
(3/5) + (2/7) = [(3x7) + (2x5)]/35
= (21+10)/35
= 31/35

(iv) Given: $\frac{9}{11}-\frac{4}{15}$

LCM of denominators 11 and 15 is 165.
(9/11) – (4/15) = [(9x15) – (4x11)]/165
= (135 – 44)/165
= 91/165

(v) Given: $\frac{7}{10}+\frac{2}{5}+\frac{3}{2}$

LCM of denominators 10, 5 and 2 is 10.
(7/10) + (2/5) + (3/2) = [(7x1) + (2x2) + (3x5)]/10
= (7+4+15)/10
= 26/10 or 13/5 or $2\frac{3}{5}$

(vi) Given: $2\frac{2}{3}+3\frac{1}{2}$

Firstly, we convert mixed fraction into improper fraction,
(8/3) + (7/2)
LCM of denominators 3 and 2 is 6.
(8/3) + (7/2) = [(8x2) + (7x3)]/6
= (16 + 21)/6
= 37/6 or $6\frac{1}{6}$

(vii) Given: $8\frac{1}{2}-3\frac{5}{8}$

Firstly, we convert mixed fraction into improper fraction,
(17/2) - (29/8)
LCM of denominators 2 and 8 is 8.
(17/2) - (29/8) = [(17 x 4) – (29 x 1)]/8
= (68-29)/8
= 39 / 8 or $4\frac{7}{8}$

Q.2 Arrange the following in descending order:

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

Sol: Arrangement of fractions number in descending order:

(i) Given: (2/9), (2/3), (8/21)
Firstly, we change each of the given fraction into an equivalent fraction having same denominator.
For same denominator, we need to take LCM,
LCM of 9, 3 and 21 is 63.
So, [(2x7)/(9x7)], [(2x21)/(3x21)], [(8x3)/(21x3)]
(14/63), (42/63), (24/63)
Thus, descending order: (42/63) > (24/63) > (14/63)
Or (2/3) > (8/21) > (2/9)

(ii) Given: (1/5), (3/7), (7/10)
Firstly, we change each of the given fraction into an equivalent fraction having same denominator.
For same denominator, we need to take LCM,
LCM of (1/5), (3/7) and (7/10) is 70.
So, [(1x14)/(5x14)], [(3x10)/(7x10)], [(7x7)/(10x7)]
(14/70), (30/70), (49/70)
Thus, descending order: (49/70) > (30/70) > (14/70)
Or (7/10) > (3/7) > (1/5)

Q.3 In a "magic square", the sum of the numbers in each row, in each column and along the diagonals is the same. Is this a magic square?

$\frac{4}{11}$	$\frac{9}{11}$	$\frac{2}{11}$
$\frac{3}{11}$	$\frac{5}{11}$	$\frac{7}{11}$
$\frac{8}{11}$	$\frac{1}{11}$	$\frac{6}{11}$

Along the first raw, $\frac{4}{11}+\frac{9}{11}+\frac{2}{11}=\frac{15}{11}$

Sol: Since, in a magic square each row, column and diagonal have the same sum.
Now adding,
For 1st row, (4/11) + (9/11) + (2/11) = (15/11)
For 2nd row, (3/11) + (5/11) + (7/11) = (15/11)
For 3rd row, (8/11) + (1/11) + (6/11) = (15/11)
For 1st column, (4/11) + (3/11) + (8/11) = (15/11)
For 2nd column, (9/11) + (5/11) + (1/11) = (15/11)
For 3rd column, (2/11) + (7/11) + (6/11) = (15/11)
For 1st diagonal, (4/11) + (5/11) + (6/11) = (15/11)
For 2nd diagonal, (2/11) + (5/11) + (8/11) = (15/11)
Thus, it is a magic square.

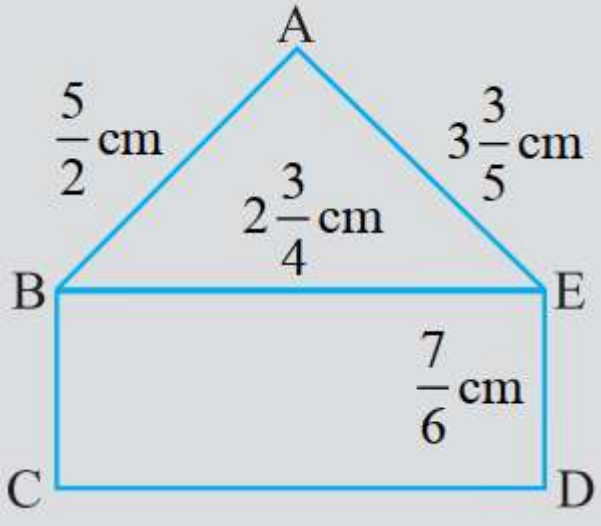
Q.4 A rectangular sheet of paper is $12\frac{1}{2}$ cm long and $10\frac{2}{3}$ cm wide. Find its perimeter.

Sol: **Given:** Dimension of rectangle sheet, length, $l = 12\frac{1}{2}$ cm or 25/2 cm and width, b = $10\frac{2}{3}$ cm or 32/3 cm.

Since, Perimeter of the rectangle = 2 × (length + breadth)
So, Perimeter of the rectangle = 2 x [(25/2) + (32/3)]
= 2 x [{(25x3) + (32x2)}/6]
= (75 + 64)/3
= 139/3 or $46\frac{1}{3}$

Thus, Perimeter of the rectangle 139/3 cm or $46\frac{1}{3}$ cm.

Q.5 Find the perimeters of (i) Δ ABE (ii) the rectangle BCDE in this figure. Whose perimeter is greater?



Sol: **(i)** Perimeter of Δ ABE,

Given: Dimension of ΔABE, sides AB = (5/2) cm, BE = $2\frac{3}{4}$ cm or (11/4) cm and AE = $3\frac{3}{5}$ cm or (18/5) cm.

Since, perimeter of Δ ABE = AB + BE +AE
= (5/2) + (11/4) + (18/5)
= [(5x10) + (11x5) + (18x4)]/10
= (50 + 55 + 72)/10
= (177/20) cm or $8\frac{17}{20}$ cm

Thus, Perimeter of Δ ABE is (177/20) cm or $8\frac{17}{20}$ cm.

(ii) Perimeter of rectangle BCDE,

Given: Dimension of rectangle BCDE, length (BE) l = $2\frac{3}{4}$ cm or (11/4) cm

And width (DE) b = (7/6) cm.
Since, Perimeter of the rectangle, BCDE = 2 × (length + breadth)
So, Perimeter of the rectangle, BCDE = 2 x [(11/4) + (7/6)]
= 2 x [{(11x3) + (7x2)}/12]
= 2 x [(33+14)/12]
= (47/6) cm or $7\frac{5}{6}$ cm

Thus, Perimeter of rectangle BCDE is (47/6) cm or $7\frac{5}{6}$ cm.

Since, both the perimeters have different denominators. So, we need to make it same by taking LCM.
LCM of 20 and 6 is 60.
(177/20) = (177x3)/(20x3) = 531/60
(47/6) = (47x10)/(6x10) = 470/60
From above calculation, (531/60) > (470/60)
Thus, Perimeter of Δ ABE > Perimeter of the rectangle, BCDE

Q.6 Salil wants to put a picture in a frame. The picture is $7\frac{3}{5}$ cm wide. To fit in the frame the picture cannot be more than $7\frac{3}{10}$ cm wide. How much should the picture be trimmed?

Sol: **Given:** width of Picture = $7\frac{3}{5}$ = 38/5 cm

Width of Frame = $7\frac{3}{10}$ = 73/10 cm

Thus, picture should be trimmed = [(38/5) – (73/10)]

The LCM of 5 and 10 is10.

= [(38x2) – (73x1)]/10

= (76 – 73)/10

= 3/10 cm

Thus, the picture should be trimmed by the width of (3/10) cm.

Q.7 Ritu ate $\frac{3}{5}$ part of an apple and the remaining apple was eaten by her brother Somu. How much part of the apple did Somu eat? Who had the larger share? By how much?

Sol: Since, part of apple is eaten by Ritu = (3/5)

Part of apple is eaten by Somu = 1 – (Part of apple is eaten by Ritu)

= 1 – (3/5)

The LCM of 1 and 5 is = 5

= [(1x5) - (3x1)]/5

= (5-3)/5

= 2/5

Thus Part of apple is eaten by Somu = (2/5)

Since, (3/5) > (2/5)

Thus, Ritu ate larger size of apple.

And difference between the both the shares = (3/5) – (2/5)

= (3 – 2)/5

= 1/5

Therefore, Ritu's share is larger than share of Somu by (1/5) part.

Q.8 Michael finished colouring a picture in $\frac{7}{12}$ hour. Vaibhav finished colouring the same picture in $\frac{3}{4}$ hour. Who worked longer? By what fraction was it longer?

Sol: **Given:** Michael takes time to colour the picture = (7/12)

And Vaibhav takes time to colour the picture = (3/4)

The LCM of 12, 4 = 12

Now, let us change both fractions into an equivalent fraction having same denominator 12.

(7/12) = (7x1)/(12x1) = 7/12

(3/4) = (3x3)/(4x3) = 9/12

From above calculation, (7/12) < (9/12)

Thus, (7/12) < (3/4)

Therefore, Vaibhav worked for longer time by = (3/4) – (7/12)

= (9/12) – (7/12)

= [(3x3) – (7x1)]/12

= (9-7)/12

= (2/12) or (1/6) hour.