EXERCISE 1(B)

Question 1.

Evaluate:

(i) $\frac{2}{3} - \frac{4}{5}$

Solution:

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

Taking LCM

3 3,5

5 1,5

1,1

∴LCM of 3 and 5=15

$\frac{2}{3} - \frac{4}{5} = \frac{2\times5}{3\times5} - \frac{4\times3}{5\times3}$

$= \frac{10-12}{15} = \frac{-2}{15}$

(ii) $\frac{-4}{9} - \frac{2}{-3}$

Solution:

$\frac{-4}{9} - \frac{2}{-3}$

Taking LCM

3 9,3

5 3,1

1,1

(∴LCM of 3 and 9=9)

$\frac{-4}{9} - \frac{2}{-3} = \frac{-4\times1}{9\times1} - \frac{(-2\times3)}{3\times3}$

$= \frac{-4+6}{9} = \frac{2}{9}$

(iii) $-1 - \frac{4}{9}$

Solution:

$-1 - \frac{4}{9} = \frac{-1\times9}{1\times9} - \frac{4\times1}{9\times1}$ (∵ LCM of 3 and 9=9)

$= \frac{-9-4}{9} = \frac{-13}{9}$

(iv) $\frac{-2}{7} - \frac{3}{-14}$

Solution:

$\frac{-2}{7} - \frac{3}{-14}$

Taking LCM

2 2,7

7 7,7

1,1

∴LCM of 7 and 14 = 14

$\frac{-2}{7} - \frac{3}{-14} = \frac{-2\times2}{7\times2} - \frac{(-3\times1)}{14\times1}$

$= \frac{-4+3}{14} = \frac{-1}{14}$

(v) $\frac{-5}{18} - \frac{-2}{9}$

Solution:

Taking LCM

2 18,9

3 9,9

3 3,3

1,1

∴LCM of 9 and 18=2×3×3=18

$\frac{-5}{18} - \frac{-2}{9} = \frac{-5\times1}{18\times1} - \frac{(-2\times2)}{9\times2}$

$= \frac{-5+4}{18}$

$= \frac{-1}{18}$

(vi) $\frac{5}{21} - \frac{-13}{42}$

Solution:

Taking LCM

2 21,42

3 21,21

7 7,7

1,1

∴LCM of 21, 42=2×3×7=42

$= \frac{5\times2}{21\times2} - \frac{(-13\times1)}{42\times1}$

$= \frac{10+13}{42} = \frac{23}{42}$

Question 2.

Subtract:

(i) $\frac{5}{8}$ from $\frac{-3}{8}$

(ii) $\frac{-8}{11}$ from $\frac{4}{11}$

(iii) $\frac{4}{9}$ from $\frac{-5}{9}$

(iv) $\frac{1}{4}$ from $\frac{-3}{8}$

(v) $\frac{-5}{8}$ from $\frac{-13}{16}$

(vi) $\frac{-9}{22}$ from $\frac{5}{33}$

Solution:

(i) Subtracting $\frac{5}{8}$ from $\frac{-3}{8}$

$\frac{-3}{8} - \frac{5}{8} = \frac{-3-5}{8}$

$= \frac{-8}{8} = -1$

(ii) Subtracting $\frac{-8}{11}$ from $\frac{4}{11}$

$\frac{4}{11} - \left(\frac{-8}{11}\right) = \frac{4+8}{11}$

$= \frac{12}{11} = 1\frac{1}{11}$

(iii) Subtracting $\frac{4}{9}$ from $\frac{-5}{9}$

$\frac{-5}{9} - \frac{4}{9} = \frac{-5-4}{9} = \frac{-9}{9} = -1$

(iv) Subtracting $\frac{1}{4}$ from $\frac{-3}{8}$

Taking LCM

2 4,8

2 2,4

2 1,2
1,1

∴LCM of 4,8=2×2×2=8

$$\frac{-3}{8}-\frac{1}{4}=\frac{-3\times1}{8\times1}-\frac{1\times2}{4\times2}$$

$$=\frac{-3-2}{8}=\frac{-5}{8}$$

(v) Subtracting $\frac{-5}{8}$ from $\frac{-13}{16}$ Taking LCM
2 8,16
2 4,8
2 2,4
2 1,2
1,1

∴LCM of 8 and 16=16

$$\frac{-13}{16}-\left(\frac{-5}{8}\right)=\frac{-13\times1}{16\times1}+\frac{5\times2}{8\times2}$$

$$=\frac{-13+10}{16}=\frac{-3}{16}$$

(vi) Subtracting $\frac{-9}{22}$ from $\frac{5}{33}$

Taking LCM
2 22,33
3 11,33
11 1,11
1,1

∴LCM of 22 and 33=2×3×11=66

$$\frac{5}{33}-\left(\frac{-9}{22}\right)=\frac{5\times2}{33\times2}+\frac{9\times3}{22\times3}$$

$$=\frac{10+27}{66}=\frac{37}{66}$$

Question 3.

The sum of two rational numbers is $\frac{9}{20}$ If one of them is $\frac{2}{5}$ find the other.

Solution:

Given, the sum of two rational numbers $=\frac{9}{20}$

One of the numbers $= \frac{2}{5}$

To find the other number, we need to subtract the first number from the sum.

i.e. other rational number $= \frac{9}{20} - \frac{2}{5}$

Taking LCM
2 20,5
2 10,5
5 5,5
1,1
∴LCM of 20 and 5=20

$\frac{9}{20} - \frac{2}{5} = \frac{9\times1}{20\times1} - \frac{2\times4}{5\times4}$

$= \frac{9}{20} - \frac{8}{20}$

$= \frac{9-8}{20} = \frac{1}{20}$

Question 4.

The sum of the two rational numbers is $\frac{-2}{3}$. If one of them is $\frac{-8}{5}$. Find the other?

Solution:

Given, the sum of two rational numbers $= \frac{-2}{3}$

One of the numbers $= \frac{-8}{5}$

To find the other number, we need to subtract the first number from the sum.
i.e. other rational number $= \frac{-2}{3} - \frac{-8}{15}$

Taking LCM
3 3,15
5 1,5
1,1
∴LCM of 3 and 15=15

$\frac{-2}{3} - \frac{-8}{15} = \frac{-2\times5}{3\times5} + \frac{8\times1}{15\times1}$

$= \frac{-10+8}{15} = \frac{-2}{15}$

Question 5.

The sum of the two rational numbers is -6. If one of them is $\frac{-8}{5}$.find the other

Solution:

Given, the sum of two rational numbers =-6

One of the numbers $= \frac{-8}{5}$

To find the other number, we need to subtract the first number from the sum.

i.e. other rational number $= \frac{-6}{1} - \frac{-8}{5}$

$= \frac{-6\times5}{1\times5} + \frac{8\times1}{5\times1}$

$= \frac{-30+8}{5} = \frac{-22}{5}$

Question 6.

Which rational number should be added to $\frac{-7}{8}$ to get $\frac{5}{9}$?

Solution:

Required rational number

$= \frac{5}{9} - \left(\frac{-7}{8}\right)$

$= \frac{5}{9} + \frac{7}{8}$

Taking LCM

2 9,8

2 9,4

2 9,2

3 9,1

3 3,1

1,1

∴LCM of 9 and 8=2×2×2×3×3=72

$\frac{5}{9} + \frac{7}{8} = \frac{5\times8}{9\times8} + \frac{7\times9}{8\times9}$

$= \frac{40}{72} + \frac{63}{72}$

$= \frac{40+63}{72} = \frac{103}{72} = 1\frac{31}{72}$

Question 7

Which rational number should be added to $\frac{-5}{9}$ to get $\frac{-2}{3}$

Solution.

Required rational number

$= \frac{-2}{3} - \left(\frac{-5}{9}\right)$

$= \frac{-2}{3} + \frac{5}{9}$

LCM of 3 and 9=9

$\frac{-2}{3} + \frac{5}{9} = \frac{-2\times3}{3\times3} + \frac{5\times1}{9\times1}$

$= \frac{-6+5}{9} = \frac{-1}{9}$