EXERCISE 1.4 PAGE NO: 1.22

1. Simplify each of the following and write as a rational number of the form p/q:
(i) 3/4 + 5/6 + -7/8
Solution:
3/4 + 5/6 -7/8
By taking LCM for 4, 6 and 8 which is 24
((3×6) + (5×4) – (7×3))/24
(18 + 20 - 21)/24
(38-21)/24
17/24

(ii) 2/3 + -5/6 + -7/9
Solution:
2/3 + -5/6 + -7/9
By taking LCM for 3, 6 and 9 which is 18
((2×6) + (-5×3) + (-7×2))/18
(12 - 15 - 14)/18
-17/18

(iii) -11/2 + 7/6 + -5/8
Solution:
-11/2 + 7/6 + -5/8
By taking LCM for 2, 6 and 8 which is 24
((-11×12) + (7×4) + (-5×3))/24
(-132 + 28 - 15)/24
-119/24

(iv) -4/5 + -7/10 + -8/15
Solution:
-4/5 + -7/10 + -8/15
By taking LCM for 5, 10 and 15 which is 30
((-4×6) + (-7×3) + (-8×2))/30
(-24 - 21 - 16)/30
-61/30

(v) -9/10 + 22/15 + 13/-20
Solution:
-9/10 + 22/15 + 13/-20

By taking LCM for 10, 15 and 20 which is 60

((-9×6) + (22×4) + (-13×3))/60

(-54 + 88 - 39)/60

-5/60 = -1/12

(vi) 5/3 + 3/-2 + -7/3 +3

Solution:

5/3 + 3/-2 + -7/3 +3

By taking LCM for 3, 2, 3 and 1 which is 6

((5×2) + (-3×3) + (-7×2) + (3×6))/6

(10 - 9 - 14 + 18)/6

5/6

2. Express each of the following as a rational number of the form p/q:

(i) -8/3 + -1/4 + -11/6 + 3/8 - 3

Solution:

-8/3 + -1/4 + -11/6 + 3/8 – 3

By taking LCM for 3, 4, 6, 8 and 1 which is 24

((-8×8) + (-1×6) + (-11×4) + (3×3) – (3×24))/24

(-64 - 6 - 44 + 9 - 72)/24

-177/24

Further divide by 3 we get,

-177/24 = -59/8

(ii) 6/7 + 1 + -7/9 + 19/21 + -12/7

Solution:

6/7 + 1 + -7/9 + 19/21 + -12/7

By taking LCM for 7, 1, 9, 21 and 7 which is 63

((6×9) + (1×63) + (-7×7) + (19×3) + (-12×9))/63

(54 + 63 - 49 + 57 - 108)/63

17/63

(iii) 15/2 + 9/8 + -11/3 + 6 + -7/6

Solution:

15/2 + 9/8 + -11/3 + 6 + -7/6

By taking LCM for 2, 8, 3, 1 and 6 which is 24

((15×12) + (9×3) + (-11×8) + (6×24) + (-7×4))/24

(180 + 27 - 88 + 144 - 28)/24

235/24

(iv) -7/4 +0 + -9/5 + 19/10 + 11/14
Solution:
-7/4 +0 + -9/5 + 19/10 + 11/14
By taking LCM for 4, 5, 10 and 14 which is 140
((-7×35) + (-9×28) + (19×14) + (11×10))/140
(-245 - 252 + 266 + 110)/140
-121/140

(v) -7/4 +5/3 + -1/2 + -5/6 + 2
Solution:
-7/4 +5/3 + -1/2 + -5/6 + 2
By taking LCM for 4, 3, 2, 6 and 1 which is 12
((-7×3) + (5×4) + (-1×6) + (-5×2) + (2×12))/12
(-21 + 20 - 6 - 10 + 24)/12
7/12

3. Simplify:
(i) -3/2 + 5/4 – 7/4
Solution:
-3/2 + 5/4 – 7/4
By taking LCM for 2 and 4 which is 4
((-3×2) + (5×1) - (7×1))/4
(-6 + 5 - 7)/4
-8/4
Further divide by 2 we get,
-8/2 = -2

(ii) 5/3 - 7/6 + -2/3
Solution:
5/3 - 7/6 + -2/3
By taking LCM for 3 and 6 which is 6
((5×2) - (7×1) + (-2×2))/6
(10 - 7 - 4)/6
-1/6

(iii) 5/4 - 7/6 - -2/3
Solution:
5/4 - 7/6 - -2/3
By taking LCM for 4, 6 and 3 which is 12

((5×3) - (7×2) - (-2×4))/12
(15 - 14 + 8)/12
9/12
Further can divide by 3 we get,
9/12 = 3/4

(iv) -2/5 - -3/10 - -4/7
Solution:
-2/5 - -3/10 - -4/7
By taking LCM for 5, 10 and 7 which is 70
((-2×14) - (-3×7) - (-4×10))/70
(-28 + 21 + 40)/70
33/70

(v) 5/6 + -2/5 - -2/15
Solution:
5/6 + -2/5 - -2/15
By taking LCM for 6, 5 and 15 which is 30
((5×5) + (-2×6) - (-2×2))/30
(25 - 12 + 4)/30
17/30

(vi) 3/8 - -2/9 + -5/36
Solution:
3/8 - -2/9 + -5/36
By taking LCM for 8, 9 and 36 which is 72
((3×9) - (-2×8) + (-5×2))/72
(27 + 16 - 10)/72
33/72
Further can divide by 3 we get,
33/72 = 11/24