EXERCISE 3D

Simplify:

1. 6 + {4/3 + (3/4 – 1/3)}

Solution:

It is given that
6 + {4/3 + (3/4 – 1/3)}
We can write it as
= 6 + {4/3 + 3/4 – 1/3}
By further calculation
= 6/1 + 4/3 + 3/4 – 1/3
Here the LCM of 3 and 4 is 12
= (72 + 16 + 9 – 4)/ 12
So we get
= (97 – 4)/ 12
= 93/12
= 31/4
= 7 ¾

2. 8 – {3/2 + (3/5 – 1/2)}

Solution:

It is given that
8 – {3/2 + (3/5 – 1/2)}
We can write it as
= 8 – {3/2 + 3/5 – 1/2}
By further calculation
= 8/1 – 3/2 – 3/5 + 1/2
Here the LCM of 2 and 5 is 10
= (80 – 15 – 6 + 5)/ 10
So we get
= (85 – 21)/ 10
= 64/10
Dividing by 2
= 32/5
= 6 2/5

3. 1/4 (1/4 + 1/3) – 2/5

Solution:

It is given that
1/4 (1/4 + 1/3) – 2/5
We can write it as
= 1/4 [(3 + 4)/ 12] – 2/5
By further calculation
= 1/4 × 7/12 – 2/5
= 7/48 – 2/5
Here the LCM of 48 and 5 is 240
= (35 – 96)/ 240

So we get
= -61/240

4. 2 3/4 – [3 1/8 ÷ {5 – (4 2/3 – 11/12)}]
Solution:

It is given that
2 3/4 – [3 1/8 ÷ {5 – (4 2/3 – 11/12)}]
We can write it as
= 11/4 – [25/8 ÷ {5 – (14/3 – 11/12)}]
By further calculation
= 11/4 – [25/8 ÷ {5 – (56 – 11)/12}]
So we get
= 11/4 – [25/8 ÷ {5 – 45/12}]
LCM of 12 and 1 is 12
= 11/4 – [25/8 ÷ {(60 – 45)/12}]
By subtraction
= 11/4 – [25/8 ÷ 15/12]
We get
= 11/4 – [25/8 × 12/15]
On further calculation
= 11/4 – 5/2
LCM of 4 and 2 is 4
= (11 – 10)/ 4
= 1/4

5. 12 1/2 – [8 1/2 + {9 – (5 - $\overline{3-2}$)
Solution:

It is given that
12 1/2 – [8 1/2 + {9 – (5 - $\overline{\quad\quad}$)
We can write it as
= 25/2 – [17/2 + {9 – (5 – 1)}]
By further calculation
= 25/2 – [17/2 + {9 – 4}]
So we get
= 25/2 – [17/2 + 5]
It can be written as
= 25/2 – 17/2 – 5/1
LCM of 2 and 1 is 2
= (25 – 17 – 10)/ 2
= (25 – 27)/ 2
We get
= - 2/2
= -1

6. 1 1/5 ÷ {2 1/3 – (5 + $\overline{2-3}$)} – 3 ½
Solution:

It is given that

1 1/5 ÷ {2 1/3 – (5 + $\overline{2 - 3}$)} – 3 ½
We can write it as
= 6/5 ÷ {7/3 – (5 – 1)} – 7/2
By further calculation
= 6/5 ÷ {7/3 – 4} – 7/2
LCM of 3 and 1 is 3
= 6/5 ÷ {(7 – 12)/ 3} – 7/2
So we get
= 6/5 ÷ -5/3 – 7/2
It can be write as
= 6/5 × 3/-5 – 7/2
= - 18/25 – 7/2
LCM of 25 and 2 is 50
= (- 36 – 175)/ 50
= - 211/50
= - 4 11/50

7. (1/2 + 2/3) ÷ (3/4 – 2/9)
Solution:

It is given that
(1/2 + 2/3) ÷ (3/4 – 2/9)
LCM of 2 and 3 is 6 and 4 and 9 is 36
= (3 + 4)/ 6 ÷ (27 – 8)/ 36
By further calculation
= 7/6 ÷ 19/36
We can write it as
= 7/6 × 36/19
= 42/19
= 2 4/19

8. 6/5 of (3 1/3 – 2 1/2) ÷ (2 5/21 – 2)
Solution:

It is given that
6/5 of (3 1/3 – 2 1/2) ÷ (2 5/21 – 2)
We can write it as
= 6/5 of (10/3 – 5/2) ÷ (47/21 – 2/1)
LCM of 3 and 2 is 6 and 1 and 21 is 21
= 6/5 of [(20 – 15)/ 6] ÷ [(47 – 42)/ 21]
So we get
= 6/5 of 5/6 ÷ 5/21
= 1 ÷ 5/21
It can be written as
= 1 × 21/5
= 21/5
= 4 1/5

9. 10 1/8 of 4/5 ÷ 35/36 of 20/49
Solution:

It is given that
10 1/8 of 4/5 ÷ 35/36 of 20/49
We can write it as
= 81/8 of 4/5 ÷ 35/36 of 20/49
By further calculation
= 81/10 ÷ 25/63
So we get
= 81/10 × 63/25
= 5103/250
= 20 103/250

10. 5 3/4 – 3/7 × 15 3/4 + 2 2/35 ÷ 1 11/25
Solution:

It is given that
5 3/4 – 3/7 × 15 3/4 + 2 2/35 ÷ 1 11/25
We can write it as
= 23/4 – 3/7 × 63/4 + 72/35 ÷ 36/25
By further calculation
= 23/4 – 3/7 × 63/4 + 72/35 × 25/36
So we get
= 23/4 – 27/4 + 10/7
LCM of 4 and 7 is 28
= (161 – 189 + 40)/ 28
= 12/28
= 3/7

11. 3/4 of 7 3/7 – 5 3/5 ÷ 3 4/15
Solution:

It is given that
3/4 of 7 3/7 – 5 3/5 ÷ 3 4/15
We can write it as
= 3/4 of 52/7 – 28/5 ÷ 49/15
By further calculation
= 39/7 – 28/5 ÷ 49/15
So we get
= 39/7 – 28/5 × 15/49
By multiplication
= 39/7 – 12/7
= (39 – 12)/ 7
= 27/7
= 3 6/7