Order of operations and the Use of Brackets

Exercise-10

Solution 1(1):
12 × 14 ÷ 7
= 168 ÷ 7 | Multiplication first.
= 24 | Then, division.

Solution 1(2):
160 × 10 ÷ 5 × 4
= 1600 ÷ 5 × 4 | Multiplication from left.
= 320 × 4 | Division
= 1280 | Multiplication

Solution 1(3):
160 × 10 ÷ (5 × 4)
=160 × 10 ÷ 20 | Multiplication in the brackets.
= 1600 ÷ 20 | Multiplication
= 80 | Division

Solution 1(4):
(160 × 10) ÷ (5 × 4)
= 1600 ÷ 20 | Multiplication in both brackets.
= 80 | Division

Solution 1(5):
94 – 61 – 23
= 33 – 23 | Subtraction on left.
= 10 | Subtraction

Solution 1(6):
94 – (61 – 23)
= 94 – 38 |Subtraction in the brackets.
= 56 | Subtraction

Solution 1(7):
237 – 87 + 30
= 150 + 30 | Subtraction
= 180 | Addition

Solution 1(8):
237 – (87 + 30)

= 237 – 117 | Adding in the brackets.
= 120 | Subtraction

Solution 1(9):
450 ÷ 10 ÷ 5
= 45 ÷ 5 | Division on the left.
= 9 | Division

Solution 1(10):
450 ÷ (10 ÷ 5)
= 450 ÷ 2 | Division in the brackets.
= 225 | Division

Solution 1(11):
103 + 91 × 2 + 8
= 103 + 182 + 8 | Multiplication
= 285 + 8 | Addition on the left.
= 293 | Addition

Solution 1(12):
(103 + 91) × (2 + 8)
= 194 × 10 | Addition in the brackets.
= 1940 | Multiplication

Solution 1(13):
216 ÷ (24 – 6) + 2 × (53 – 14 – 6)
= 216 ÷ 18 + 2 × (39 – 6) | Subtraction in brackets.
= 12 + 2 × 33 | Subtraction in brackets.
= 12 + 66 | Multiplication
= 78 | Addition

Solution 1(14):
[18 + 5(7 – 3)] + 64 ÷ [20 – (8 × 2)]
= (18 + 5 × 4) + 64 ÷ (20 – 16) |Operations in inner brackets of square brackets.
= (18 + 20) + 64 ÷ 4 | Multiplication and subtraction in the brackets.
= 38 + 16 | Addition and division.
= 54 | Addition

Solution 1(15):
210 ÷ {125 – [5 + 3 (14 – 9)]}
= 210 ÷ {125 – (5 + 3 × 5)} | Operation in the innermost brackets.
= 210 ÷ {125 – (5 + 15)} | Multiplication
= 210 ÷ (125 – 20) | Addition

= 210 ÷ 105 | Subtraction
= 2 | Division

Solution 2(1):
18 ÷ 6 + 3 (value 2)
If the brackets are inserted as 18 ÷ (6 + 3),
we get the value 18 ÷ 6 + 3 = 18 ÷ 9 = 2
∴ 18 ÷ (6 + 3) is the required expression.

Solution 2(2):
4 × 13 + 2 + 40
If the brackets are inserted as 4 × (13 + 2) + 40,
we get the value 4 × (13 + 2) + 40 = 4 × 15 + 40 = 60 + 40 = 100
∴ 4 × (13 + 2) + 40 is the required expression.

Solution 2(3):
If the brackets are inserted as (100 + 20) ÷ 5,
we get the value (100 + 20) ÷ 5 = 120 ÷ 5 = 24
∴ (100 + 20) ÷ 5 is the required expression.

Solution 2(4):
If the brackets are inserted as 100 ÷ (20 ÷ 5),
we get the value 100 ÷ (20 ÷ 5) = 100 ÷ 4 = 25
∴ 100 ÷ (20 ÷ 5) is the required expression.

Solution 2(5):
If the brackets are inserted as 13 – (9 + 2),
we get the value 13 – (9 + 2) = 13 – 11 = 2.
∴ 13 – (9 + 2) is the required expression.