

Exercise 1.9

8.1 Simplify each of the following

$$\begin{aligned} \text{(i)} \quad 7 \times 109 &= 7 \times (100 + 9) \\ &= (7 \times 100) + (7 \times 9) = 700 + 63 = 763 \end{aligned}$$

$$\begin{aligned} \text{(ii)} \quad 6 \times 112 &= 6 \times (100 + 12) = 6 \times 100 + 6 \times 12 \\ &= 600 + 72 = 672 \end{aligned}$$

$$\begin{aligned} \text{(iii)} \quad 9 \times 105 &= 9 \times (100 + 5) \\ &= 9 \times 100 + 9 \times 5 = 900 + 45 = 945 \end{aligned}$$

$$\begin{aligned} \text{(iv)} \quad 17 \times 109 &= 17 \times (100 + 9) \\ &= 17 \times 100 + 17 \times 9 \\ &= 1700 + 153 = 1,853 \end{aligned}$$

$$\begin{aligned} \text{(v)} \quad 16 \times 108 &= 16 \times (100 + 8) = 16 \times 100 + 16 \times 8 \\ &= 1600 + 128 = 1728 \end{aligned}$$

$$\begin{aligned} \text{(vi)} \quad 12 \times 105 &= 12 \times (100 + 5) = 12 \times 100 + 12 \times 5 \\ &= 1200 + 60 = 1260 \end{aligned}$$

$$\begin{aligned} \text{(vii)} \quad 102 \times 103 &= 102 \times (100 + 3) \\ &= (102 \times 100) + (102 \times 3) \\ &= (100 + 2) \times 100 + (100 + 2) \times 3 \\ &= 100 \times 100 + 2 \times 100 + 100 \times 3 + 2 \times 3 \\ &= 10000 + 200 + 300 + 6 \\ &= 10506 \end{aligned}$$

$$\begin{aligned}(8) \quad 101 \times 105 &= 101 \times (100 + 5) \\&= (101 \times 100) + (101 \times 5) \\&= (100 + 1) \times 100 + (100 + 1) \times 5 \\&= 100 \times 100 + 1 \times 100 + 100 \times 5 + 1 \times 5 \\&= 10000 + 100 + 500 + 5 = 10,605\end{aligned}$$

$$\begin{aligned}(9) \quad 109 \times 107 &= 109 \times (100 + 7) \\&= 109 \times 100 + 109 \times 7 \\&= (100 + 9) \times 100 + (100 + 9) \times 7 \\&= 100 \times 100 + 9 \times 100 + 100 \times 7 + 9 \times 7 \\&= 10000 + 900 + 700 + 63 \\&= 11,663\end{aligned}$$