

# Expanding Brackets with Surds *fluency*

ANSWERS

 Expand and simplify

1  $\sqrt{3}(2 + \sqrt{3})$   
 $3 + 2\sqrt{3}$

2  $\sqrt{5}(\sqrt{5} - 1)$   
 $5 - \sqrt{5}$

3  $2(4 + \sqrt{7})$   
 $8 + 2\sqrt{7}$

4  $\sqrt{2}(\sqrt{8} + 3)$   
 $4 + 3\sqrt{2}$

5  $\sqrt{6}(\sqrt{2} + \sqrt{3})$   
 $3\sqrt{2} + 2\sqrt{3}$

6  $3\sqrt{2}(\sqrt{2} - 5)$   
 $6 - 15\sqrt{2}$

 Expand and simplify

7  $(1 + \sqrt{2})(3 + \sqrt{2})$   
 $5 + 4\sqrt{2}$

8  $(4 + \sqrt{3})(2 - \sqrt{3})$   
 $5 - 2\sqrt{3}$

9  $(\sqrt{5} + 2)(\sqrt{5} + 6)$   
 $17 + 8\sqrt{5}$

10  $(3 - \sqrt{7})(1 - \sqrt{7})$   
 $10 - 4\sqrt{7}$

11  $(2 + \sqrt{6})(5 + \sqrt{6})$   
 $16 + 7\sqrt{6}$

12  $(\sqrt{3} - 4)(\sqrt{3} + 1)$   
 $-1 - 3\sqrt{3}$

 Expand and simplify

13  $(3 + \sqrt{2})(3 - \sqrt{2})$   
 $7$

14  $(\sqrt{7} + 2)(\sqrt{7} - 2)$   
 $3$

15  $(5 - \sqrt{3})(5 + \sqrt{3})$   
 $22$

16  $(2\sqrt{5} + 1)(2\sqrt{5} - 1)$   
 $19$

17  $(\sqrt{6} + \sqrt{2})(\sqrt{6} - \sqrt{2})$   
 $4$

18  $(4 - 3\sqrt{2})(4 + 3\sqrt{2})$   
 $-2$

 Expand and simplify

19  $(1 + \sqrt{3})^2$   
 $4 + 2\sqrt{3}$

20  $(\sqrt{5} - 2)^2$   
 $9 - 4\sqrt{5}$

21  $(3 + \sqrt{6})^2$   
 $15 + 6\sqrt{6}$

22  $(2\sqrt{2} + 1)^2$   
 $9 + 4\sqrt{2}$

23  $(\sqrt{7} - \sqrt{3})^2$   
 $10 - 2\sqrt{21}$

24  $(4 - 2\sqrt{5})^2$   
 $36 - 16\sqrt{5}$

 Expand and simplify

25  $(2 + 3\sqrt{2})(1 + \sqrt{2})$   
 $8 + 5\sqrt{2}$

26  $(3\sqrt{5} - 1)(\sqrt{5} + 4)$   
 $11 + 11\sqrt{5}$

27  $(\sqrt{2} + 1)(\sqrt{3} + 1)$   
 $1 + \sqrt{2} + \sqrt{3} + \sqrt{6}$

28  $(2\sqrt{3} + \sqrt{2})(\sqrt{3} - \sqrt{2})$   
 $4 - \sqrt{6}$

29  $(5 - 2\sqrt{3})(4 + 3\sqrt{3})$   
 $2 + 7\sqrt{3}$

30  $(1 + \sqrt{2})^3$   
 $7 + 5\sqrt{2}$