L9
Grade A
Progression: Medium

Simplifying Surds (C) with Brackets

cazoom!

Section A: *Simplify the following surds.*

1) $5\sqrt{2} + 7\sqrt{2}$

2) $7\sqrt{2} - 4\sqrt{2} + 9\sqrt{3} - 2\sqrt{3}$

3) $11\sqrt{5} + 3\sqrt{7} + 4\sqrt{5} + 6\sqrt{7}$

4) $16\sqrt{5} + 9\sqrt{7} - 7\sqrt{5} - 4\sqrt{7}$

5) $3\sqrt{2} + 7\sqrt{3} - 7\sqrt{3} - 8\sqrt{2}$

6) $\sqrt{18} + \sqrt{50}$

7) $\sqrt{72} - \sqrt{8}$

8) $4\sqrt{12} + 2\sqrt{27}$

9) $5\sqrt{28} - 3\sqrt{63}$

10) $2\sqrt{45} + 5\sqrt{20} - 4\sqrt{98}$

Section B: *Expand the brackets and simplify the surds.*

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

2) $2\sqrt{7}(7 - \sqrt{7})$

3) $\sqrt{5}(5\sqrt{5} - 3)$

4) $2\sqrt{11}(4 - \sqrt{11})$

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

6) $(8 + \sqrt{5})(8 - \sqrt{5})$

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

8) $(7\sqrt{5} + 2)(\sqrt{5} + 4)$

9) $(1 - 3\sqrt{7})(6 - 3\sqrt{7})$

10) $(\sqrt{3} - 1)(9\sqrt{3} + 5)$

11) $(4\sqrt{7} + 3)(3\sqrt{7} - 1)$

12) $(4\sqrt{3} - \sqrt{2})(3\sqrt{3} - 4\sqrt{2})$

Section C: *Expand the brackets and simplify the surds.*

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

2) $(\sqrt{11} - 2)^2$

3) $(3 - \sqrt{5})^2$

4) $\sqrt{21}(\sqrt{3} + \sqrt{7})^2$

5) $\sqrt{11}(\sqrt{11} - \sqrt{6})^2$

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

Simplifying Surds (C)
with Brackets
ANSWERS

cazoom!

Section A: *Simplify the following surds.*

1) $5\sqrt{2} + 7\sqrt{2}$ $\qquad$ $12\sqrt{2}$

2) $7\sqrt{2} - 4\sqrt{2} + 9\sqrt{3} - 2\sqrt{3}$ $\quad$ $7\sqrt{3} + 3\sqrt{2}$

3) $11\sqrt{5} + 3\sqrt{7} + 4\sqrt{5} + 6\sqrt{7}$ $\quad$ $9\sqrt{7} + 15\sqrt{5}$

4) $16\sqrt{5} + 9\sqrt{7} - 7\sqrt{5} - 4\sqrt{7}$ $\quad$ $5\sqrt{7} + 9\sqrt{5}$

5) $3\sqrt{2} + 7\sqrt{3} - 7\sqrt{3} - 8\sqrt{2}$ $\quad$ $-5\sqrt{2}$

6) $\sqrt{18} + \sqrt{50}$ $\qquad$ $8\sqrt{2}$

7) $\sqrt{72} - \sqrt{8}$ $\qquad$ $4\sqrt{2}$

8) $4\sqrt{12} + 2\sqrt{27}$ $\qquad$ $14\sqrt{3}$

9) $5\sqrt{28} - 3\sqrt{63}$ $\qquad$ $\sqrt{7}$

10) $2\sqrt{45} + 5\sqrt{20} - 4\sqrt{98}$ $\quad$ $16\sqrt{5} - 28\sqrt{2}$

Section B: *Expand the brackets and simplify the surds.*

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

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

3) $\sqrt{5}(5\sqrt{5} - 3)$ $\qquad$ $25 - 3\sqrt{5}$

4) $2\sqrt{11}(4 - \sqrt{11})$ $\qquad$ $-22 + 8\sqrt{11}$

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

6) $(8 + \sqrt{5})(8 - \sqrt{5})$ $\qquad$ 59

7) $(5 + \sqrt{3})(4 + 2\sqrt{3})$ $\quad$ $26 + 14\sqrt{3}$

8) $(7\sqrt{5} + 2)(\sqrt{5} + 4)$ $\quad$ $43 + 30\sqrt{5}$

9) $(1 - 3\sqrt{7})(6 - 3\sqrt{7})$ $\quad$ $69 - 21\sqrt{7}$

10) $(\sqrt{3} - 1)(9\sqrt{3} + 5)$ $\quad$ $22 - 4\sqrt{3}$

11) $(4\sqrt{7} + 3)(3\sqrt{7} - 1)$ $\quad$ $81 + 5\sqrt{7}$

12) $(4\sqrt{3} - \sqrt{2})(3\sqrt{3} - 4\sqrt{2})$ $\quad$ $44 - 19\sqrt{6}$

Section C: *Expand the brackets and simplify the surds.*

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

2) $(\sqrt{11} - 2)^2$ $\qquad$ $15 - 4\sqrt{11}$

3) $(3 - \sqrt{5})^2$ $\qquad$ $14 - 6\sqrt{5}$

4) $\sqrt{21}(\sqrt{3} + \sqrt{7})^2$ $\quad$ $42 + 10\sqrt{21}$

5) $\sqrt{11}(\sqrt{11} - \sqrt{6})^2$ $\quad$ $17\sqrt{11} - 22\sqrt{21}$

6) $((\sqrt{2})^3 + \sqrt{5})^2$ $\quad$ $13 + 4\sqrt{10}$