Adding & Subtracting Radical Expressions - 2

You know

$3\sqrt{6} + 2\sqrt{6} = 5\sqrt{6}$

Today

$2\sqrt{20} + 3\sqrt{45} + \sqrt{180}$

$20 \to 4, 5 \to 2, 2$

$45 \to 9, 5 \to 3, 3$

$180 \to 9, 20 \to 3, 3, 4, 5 \to 2, 2$

$2\sqrt{2 \cdot 2 \cdot 5} + 3\sqrt{3 \cdot 3 \cdot 5} + \sqrt{3 \cdot 3 \cdot 2 \cdot 2 \cdot 5}$

$2 \cdot 2\sqrt{5} + 3 \cdot 3\sqrt{5} + 3 \cdot 2\sqrt{5}$

$4\sqrt{5} + 9\sqrt{5} + 6\sqrt{5}$

$(4 + 9 + 6)\sqrt{5}$

$19\sqrt{5}$

* MUST SIMPLIFY RADICANDS TO LOOK FOR <u>LIKE</u> RADICANDS *

EX: $4\sqrt{54} + 2\sqrt{24} - \sqrt{150}$

$54 \to 9, 6 \to 3, 3, 2, 3$

$24 \to 6, 4 \to 2, 3, 2, 2$

$150 \to 10, 15 \to 2, 5, 5, 3$

$4\sqrt{3 \cdot 3 \cdot 2 \cdot 3} + 2\sqrt{3 \cdot 2 \cdot 2 \cdot 2} - \sqrt{2 \cdot 5 \cdot 5 \cdot 3}$

$4 \cdot 3\sqrt{6} + 2 \cdot 2\sqrt{6} - 5\sqrt{6}$

$12\sqrt{6} + 4\sqrt{6} - 5\sqrt{6}$

$(12 + 4 - 5)\sqrt{6}$

$11\sqrt{6}$

EX: $4\sqrt{12} - 6\sqrt{48} + 5\sqrt{24}$

$12 \to 6, 2 \to 3, 2$

$48 \to 12, 4 \to 6, 2, 2, 2 \to 3, 2$

$24 \to 12, 2 \to 6, 2 \to 3, 2$

$4\sqrt{3 \cdot 2 \cdot 2} - 6\sqrt{2 \cdot 2 \cdot 2 \cdot 2 \cdot 3} + 5\sqrt{3 \cdot 2 \cdot 2 \cdot 2}$

$4 \cdot 2\sqrt{3} - 6 \cdot 2 \cdot 2 \cdot \sqrt{3} + 5 \cdot 2\sqrt{6}$

$8\sqrt{3} - 24\sqrt{3} + 10\sqrt{6}$

$(8 - 24)\sqrt{3} + 10\sqrt{6}$

$-16\sqrt{3} + 10\sqrt{6}$

Practice

$\sqrt{18} + \sqrt{12} + \sqrt{8}$

$\sqrt{6} + 2\sqrt{3} + \sqrt{12}$

$2\sqrt{50} - 3\sqrt{32}$

Find the perimeter.