Warm Up

Simplify:

① $2\sqrt{3}(5-2\sqrt{8})+3\sqrt{24}$

$= 10\sqrt{3}-4\sqrt{24}+3\sqrt{24}$

$= 10\sqrt{3}-1\sqrt{24}$

$= 10\sqrt{3}-2\sqrt{6}$

② $(6\sqrt{3}-\sqrt{10})(\sqrt{6}+3\sqrt{5})$

$= 6\sqrt{18}+18\sqrt{15}-\sqrt{60}-3\sqrt{50}$

$= 6(3\sqrt{2})+18\sqrt{15}-2\sqrt{15}-3(5\sqrt{2})$

$= 18\sqrt{2}+18\sqrt{15}-2\sqrt{15}-15\sqrt{2}$

$= 3\sqrt{2}+16\sqrt{15}$

$\frac{2\sqrt{10}}{3\sqrt{3}}$

④ $\frac{2\sqrt{20}}{3\sqrt{6}}\left(\frac{\sqrt{6}}{\sqrt{6}}\right)$ ← Monomial

$= \frac{2\sqrt{120}}{3(6)}$ ← $\sqrt{4\times 30}$, $2\sqrt{30}$

$= \frac{2(2\sqrt{30})}{18}$

$= \frac{4\sqrt{30}}{18}$

$= \frac{2\sqrt{30}}{9}$

③ $(10\sqrt{2})^2+(5\sqrt{6})^2$

$(10\sqrt{2})(10\sqrt{2})+(5\sqrt{6})(5\sqrt{6})$

$= 100(2)+25(6)$

$= 200+150$

$= 350$

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

$= 9(5)$ $9(5)$

$= 45$

$(3+\sqrt{3})^2$ $\qquad$ $(3\sqrt{3})^2 = 9(3) = 27$

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

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

$= 9+3\sqrt{3}+3\sqrt{3}+3$

$= 12+6\sqrt{3}$

$9+6\sqrt{3}+3$

$(3+2)^2 \neq 9+4$

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

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

$= 25-15\sqrt{2}-15\sqrt{2}+9(2)$

$= 43-30\sqrt{2}$ $\qquad$ $25-30\sqrt{2}+18$

$(a+b)^2 \Rightarrow \cancel{a^2+b^2}$

$= (a+b)(a+b)$

$= a^2+ab+ab+b^2$

$= a^2+2ab+b^2$

Squaring Binomial:

3 Step Rule:

$(a+b)^2$ (1st term, 2nd term) $= a^2+2ab+b^2$

① Square 1st term

② (1st term) × (2nd term) × 2

③ Square 2nd term

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

$= 18+30\sqrt{2}+25$

$= 43+30\sqrt{2}$

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

$= 24-12\sqrt{30}+45$

$= 69-12\sqrt{30}$

Homework:

Finish left side of Radicals Worksheet