perfect squares: 1 4 9 16 25 36 49 64 81 100 121 144 169 196 225 256 289 324 361 400
perfect cubes: 1 8 27 64 125 216 343 512 729 1000

Principles of Algebra Name/Date Clee / Today

ALL PROBLEMS CAN BE COMPLETED ON THIS WORKSHEET

WS 14B.1 – Adding & Subtracting Radicals

#1-10, Simplify each radical expression.

1. $8\sqrt{5} - 3\sqrt{5}$

$= \boxed{5\sqrt{5}}$

2. $6\sqrt[3]{10} + \sqrt[3]{10}$

$= \boxed{7\sqrt[3]{10}}$

3. $2\sqrt{27} + 5\sqrt{48}$

$= 2\sqrt{9\cdot3} + 5\sqrt{16\cdot3}$

$= 6\sqrt{3} + 20\sqrt{3}$

$= \boxed{26\sqrt{3}}$

4. $6\sqrt[3]{54} + \sqrt[3]{250}$

$= 6\sqrt[3]{27\cdot2} + \sqrt[3]{125\cdot2}$

$= 18\sqrt[3]{2} + 5\sqrt[3]{2}$

$= \boxed{23\sqrt[3]{2}}$

5. $\sqrt{8} + 2\sqrt{50} - \sqrt{18}$

$= \sqrt{4\cdot2} + 2\sqrt{25\cdot2} - \sqrt{9\cdot2}$

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

$= \boxed{9\sqrt{2}}$

6. $8\sqrt{72} - 3\sqrt{8} - \sqrt{98}$

$= 8\sqrt{36\cdot2} - 3\sqrt{4\cdot2} - \sqrt{49\cdot2}$

$= 48\sqrt{2} - 6\sqrt{2} - 7\sqrt{2}$

$= \boxed{35\sqrt{2}}$

7. $\sqrt{12x} - \sqrt{27x} + \sqrt{48x}$

$= \sqrt{4\cdot3\cdot x} - \sqrt{9\cdot3\cdot x} + \sqrt{16\cdot3\cdot x}$

$= 2\sqrt{3x} - 3\sqrt{3x} + 4\sqrt{3x}$

$= \boxed{3\sqrt{3x}}$

8. $\sqrt{100x^2y} - 2\sqrt{144x^2y} - 5\sqrt{100xy^2}$

$= \sqrt{100\cdot x^2\cdot y} - 2\sqrt{144\cdot x^2\cdot y} - 5\sqrt{100\cdot x\cdot y^2}$

$= 10x\sqrt{y} - 24x\sqrt{y} - 50y\sqrt{x}$

$= \boxed{-14x\sqrt{y} - 50y\sqrt{x}}$

9. $\sqrt[3]{216m^5n^{10}} + 2\sqrt[3]{512m^5n^{10}}$

$= \sqrt[3]{216\cdot m^3\cdot m^2\cdot n^9\cdot n} + 2\sqrt[3]{512\cdot m^3\cdot m^2\cdot n^9\cdot n}$

$= 6mn^3\sqrt[3]{m^2n} + 16mn^3\sqrt[3]{m^2n}$

$= \boxed{22mn^3\sqrt[3]{m^2n}}$

10. $3\sqrt{175a^{10}b^7c^{15}} - 4\sqrt{112a^{10}b^7c^{15}}$

$= 3\sqrt{25\cdot7\cdot a^{10}\cdot b^6\cdot b\cdot c^{14}\cdot c} - 4\sqrt{16\cdot7\cdot a^{10}\cdot b^6\cdot b\cdot c^{14}\cdot c}$

$= 15a^5b^3c^7\sqrt{7bc} - 16a^5b^3c^7\sqrt{7bc}$

$= \boxed{-a^5b^3c^7\sqrt{7bc}}$