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 14C.2 – More Multiplying Radicals

#1-10, Simplify each radical expression.

1. $\sqrt{4f^3g}\cdot\sqrt{9f^2g}$

$= \sqrt{36f^5g^2}$

$= \sqrt{36\cdot f^4\cdot f\cdot g^2}$

$= \boxed{6f^2g\sqrt{f}}$

2. $-2\sqrt{12ab}\cdot -4\sqrt{3a^5b}$

$= 8\sqrt{36a^6b^2}$

$= \boxed{48a^3b}$

3. $3\sqrt{6}(-7+6\sqrt{8})$

$= -21\sqrt{6} + 18\sqrt{48}$

$= -21\sqrt{6} + 18\sqrt{16\cdot 3}$

$= \boxed{-21\sqrt{6} + 72\sqrt{3}}$

4. $-6\sqrt{3}(4\sqrt{6}-4\sqrt{3})$

$= -24\sqrt{18} + 24\sqrt{9}$

$= -24\sqrt{9\cdot 2} + 72$

$= \boxed{-72\sqrt{2} + 72}$

5. $(8+\sqrt{12})(3-\sqrt{12})$

$= \overset{F}{24} \overset{O}{-8\sqrt{12}} \overset{I}{+3\sqrt{12}} \overset{L}{-\sqrt{144}}$

$= 24 - 5\sqrt{4\cdot 3} - 12$

$= \boxed{12 - 10\sqrt{3}}$

6. $(2+3\sqrt{7})(2-3\sqrt{7})$

$= \overset{F}{4} \overset{O}{-6\sqrt{7}} \overset{I}{+6\sqrt{7}} \overset{L}{-9\sqrt{49}}$

$= 4 - 63$

$= \boxed{-59}$

7. $(4\sqrt{5}-6)(-4+3\sqrt{2})$

$= \boxed{-16\sqrt{5} + 12\sqrt{10} + 24 - 18\sqrt{2}}$

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

$= \overset{F}{20\sqrt{9}} \overset{O}{-15\sqrt{15}} \overset{I}{+8\sqrt{15}} \overset{L}{-6\sqrt{25}}$

$= 60 - 7\sqrt{15} - 30$

$= \boxed{30 - 7\sqrt{15}}$

9. $\sqrt[3]{25d^6}\cdot\sqrt[3]{25e^{12}}$

$= \sqrt[3]{625d^6e^{12}}$

$= \sqrt[3]{125\cdot 5\cdot d^6\cdot e^{12}}$

$= \boxed{5d^2e^4\sqrt[3]{5}}$

10. $5\sqrt[3]{98g^5h^4}\cdot -2\sqrt[3]{21g^4h^{10}}$

$= -10\sqrt[3]{7^2\cdot 2\cdot 7\cdot 3\cdot g^9\cdot h^{14}}$

$= -10\sqrt[3]{7^3\cdot 6\cdot g^9\cdot h^{12}\cdot h^2}$

$= \boxed{-70g^3h^4\sqrt[3]{6h^2}}$