Box 5 (Dr. Drone)

O – H

(O) $\sqrt{25x^2y}$

$\sqrt{25x^2}$ $\sqrt{y}$

$5x\sqrt{y}$ (37)

(D) $\sqrt{90x^4y^2}$

$\sqrt{9x^4y^2}$ $\sqrt{10}$

$3x^2y\sqrt{10}$ (28)

(G) $\sqrt{81x^3y^4}$

$\sqrt{81x^2y^4}$ $\sqrt{x}$

$9xy^2\sqrt{x}$ (35)

(I) $\sqrt{24x^2y^6}$

$\sqrt{4x^2y^6}$ $\sqrt{6}$

$2xy^3\sqrt{6}$ (24)

(C) $\sqrt{15xy^3}$

$\sqrt{y^2}$ $\sqrt{15xy}$

$y\sqrt{15xy}$ (10)

(P) $3\sqrt{500x^8y^2}$

$3\sqrt{100x^8y^2}$ $\sqrt{5}$

$30x^4y\sqrt{5}$ (8)

(N) $-2\sqrt{121x^3y}$

$-2\sqrt{121x^2}$ $\sqrt{xy}$

$-22x\sqrt{xy}$ (19)

(H) $4\sqrt{44x^6y^5}$

$4\sqrt{4x^6y^4}$ $\sqrt{11y}$

$8x^3y^2\sqrt{11y}$ (5)

Box 6 (Nurse)

(8) $8\sqrt{3} \cdot 5\sqrt{2}$

$40\sqrt{6}$

(9) $-4\sqrt{5} \cdot 9\sqrt{6}$

$-36\sqrt{30}$

(10) $3\sqrt{8} \cdot 2\sqrt{5}$

$6\sqrt{40}$

$6\sqrt{4} \quad \sqrt{10}$

$12\sqrt{10}$

(11) $12\sqrt{3} \cdot 5\sqrt{15}$

$60\sqrt{45}$

$60\sqrt{9} \quad \sqrt{5}$

$180\sqrt{5}$

(12) $5\sqrt{18}(-2\sqrt{8})$

$-10\sqrt{144}$

$-10\sqrt{144}$

-120

(13) $2\sqrt{5} \cdot 7\sqrt{35}$

$14\sqrt{175}$

$14\sqrt{25} \quad \sqrt{7}$

$70\sqrt{7}$

(14) $-6\sqrt{32}(-6\sqrt{2})$

$36\sqrt{64}$

$36\sqrt{64}$

288

(15) $\sqrt{5x} \cdot \sqrt{2x}$

$\sqrt{10x^2}$

$\sqrt{x^2} \quad \sqrt{10}$

$x\sqrt{10}$

(16) $\sqrt{2x} \cdot \sqrt{6x}$

$\sqrt{12x^2}$

$\sqrt{4x^2} \quad \sqrt{3}$

$2x\sqrt{3}$

(17) $\sqrt{30x} \cdot \sqrt{3x^3}$

$\sqrt{90x^4}$

$\sqrt{9x^4} \quad \sqrt{10}$

$3x^2\sqrt{10}$

(18) $\sqrt{15x^2} \cdot \sqrt{10x^2}$

$\sqrt{150x^4}$

$\sqrt{25x^4} \quad \sqrt{6}$

$5x^2\sqrt{6}$

(19) $\sqrt{18x^2} \cdot \sqrt{4x}$

$\sqrt{32x^3}$

$\sqrt{16x^2} \quad \sqrt{2x}$

$4x\sqrt{2x}$

(20) $\sqrt{10x^3} \cdot \sqrt{150x^2}$

$\sqrt{900x^5}$

$\sqrt{900x^4} \quad \sqrt{x}$

$30x^2\sqrt{x}$

(21) $\sqrt{7x^5} \cdot \sqrt{14x^3}$

$\sqrt{98x^8}$

$\sqrt{49x^8} \quad \sqrt{2}$

$7x^4\sqrt{2}$

(22) $5\sqrt{ab} \cdot 3\sqrt{ab}$

$15\sqrt{a^2b^2}$

$\sqrt{a^2b^2}$

$15ab$

(23) $\sqrt{10ab^2} \cdot \sqrt{2ab^2}$

$\sqrt{20a^2b^4}$

$\sqrt{4a^2b^4} \quad \sqrt{5}$

$2ab^2\sqrt{5}$

(24) $\sqrt{3a^2b} \cdot \sqrt{18a^2}$

$\sqrt{54a^4b}$

$\sqrt{9a^4}$ $\sqrt{6b}$

$3a^2\sqrt{6b}$

(25) $\sqrt{5ab} \cdot \sqrt{10ab^2}$

$\sqrt{50a^2b^3}$

$\sqrt{25a^2b^2}$ $\sqrt{2b}$

$5ab\sqrt{2b}$

(26) $\sqrt{18b^5} \cdot \sqrt{2ab}$

$\sqrt{36a^1b^6}$

$\sqrt{36b^6}$ $\sqrt{a}$

$6b^3\sqrt{a}$

(27) $\sqrt{20ab^2} \cdot \sqrt{35ab^3}$

$\sqrt{700a^2b^5}$

$\sqrt{100a^2b^4}$ $\sqrt{7b}$

$10ab^2\sqrt{7b}$

(28) $\sqrt{98a^3b^3} \cdot \sqrt{5a^7b}$

$\sqrt{490a^{10}b^4}$

$\sqrt{49a^{10}b^4}$ $\sqrt{10}$

$7a^5b^2\sqrt{10}$

Box 8 (4 legs)

① $\sqrt{\frac{49}{4}} = \boxed{\frac{7}{2}}$

② $\sqrt{\frac{20}{81}} = \frac{\sqrt{20}}{9} \to \sqrt{4}\cdot\sqrt{5} = \boxed{\frac{2\sqrt{5}}{9}}$

③ $\sqrt{\frac{75}{x^4}} = \frac{\sqrt{75}}{x^2} \to \sqrt{25}\cdot\sqrt{3} = \boxed{\frac{5\sqrt{3}}{x^2}}$

④ $\sqrt{\frac{64}{36a^2}} = \frac{8}{6a} = \boxed{\frac{4}{3a}}$

⑤ $\sqrt{\frac{54}{24}} = \frac{\sqrt{54}}{\sqrt{24}} \to \sqrt{9}\cdot\sqrt{6}, \sqrt{4}\cdot\sqrt{6} = \frac{3\sqrt{6}}{2\sqrt{6}} = \boxed{\frac{3}{2}}$

⑥ $-\sqrt{\frac{40}{5}} = -\sqrt{12} \to \sqrt{4}\cdot\sqrt{3} = \boxed{-2\sqrt{3}}$

⑦ $\sqrt{\frac{3x^3}{10x}} = \frac{\sqrt{3x^2}}{\sqrt{10}} = \frac{\sqrt{3x^2}}{4} \to \sqrt{x^2}\cdot\sqrt{3} = \boxed{\frac{x\sqrt{3}}{4}}$

⑧ $\sqrt{\frac{22a^5}{20a}} = \sqrt{\frac{11a^4}{100}} = \boxed{\frac{a^2\sqrt{11}}{10}}$

⑨ $\frac{5}{\sqrt{2}}\cdot\frac{\sqrt{2}}{\sqrt{2}} = \boxed{\frac{5\sqrt{2}}{2}}$

⑩ $\frac{4}{\sqrt{7}}\cdot\frac{\sqrt{7}}{\sqrt{7}} = \boxed{\frac{4\sqrt{7}}{7}}$

⑪ $\frac{20}{\sqrt{5}}\cdot\frac{\sqrt{5}}{\sqrt{5}} = \frac{20\sqrt{5}}{5} = \boxed{4\sqrt{5}}$

⑫ $\frac{10}{\sqrt{30}}\cdot\frac{\sqrt{30}}{\sqrt{30}} = \frac{10\sqrt{30}}{30} = \boxed{\frac{\sqrt{30}}{3}}$

⑬ $\sqrt{\frac{1}{18}} = \frac{1}{\sqrt{18}}\cdot\frac{\sqrt{18}}{\sqrt{18}} = \frac{\sqrt{18}}{18} \to \sqrt{9}\cdot\sqrt{2} = \frac{3\sqrt{2}}{18} = \boxed{\frac{\sqrt{2}}{6}}$

⑭ $\frac{5}{\sqrt{40}}\cdot\frac{\sqrt{40}}{\sqrt{40}} = \frac{5\sqrt{40}}{40} \to \sqrt{4}\cdot\sqrt{10} = \frac{10\sqrt{10}}{40} = \boxed{\frac{\sqrt{10}}{4}}$

⑮ $-\frac{9}{2\sqrt{45}}\cdot\frac{\sqrt{45}}{\sqrt{45}} = \frac{-9\sqrt{45}}{2\cdot 45} \to \sqrt{9}\cdot\sqrt{5} = \frac{-27\sqrt{5}}{90} = \boxed{-\frac{3\sqrt{5}}{10}}$

⑯ $\sqrt{\frac{8}{3}} = \frac{\sqrt{8}}{\sqrt{3}}\cdot\frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{24}}{3} \to \sqrt{4}\cdot\sqrt{6} = \boxed{\frac{2\sqrt{6}}{3}}$

⑰ $\sqrt{\frac{7}{2t}} = \frac{\sqrt{7}}{\sqrt{2t}}\cdot\frac{\sqrt{2t}}{\sqrt{2t}} = \boxed{\frac{\sqrt{14t}}{2t}}$

(18) $\frac{5\sqrt{3}}{\sqrt{10}} \cdot \frac{\sqrt{10}}{\sqrt{10}} = \frac{5\sqrt{30}}{10} = \boxed{\frac{\sqrt{30}}{2}}$

(19) $\frac{2\sqrt{11t^2}}{\sqrt{6t}} \cdot \frac{\sqrt{6t}}{\sqrt{6t}} = \frac{2\sqrt{66t^3}}{6t} \to \sqrt{t^2}$, $\sqrt{66t}$ =

$\frac{2t\sqrt{66t}}{6t} = \boxed{\frac{\sqrt{66t}}{3}}$

(20) $\frac{10\sqrt{6}}{\sqrt{15}} \cdot \frac{\sqrt{15}}{\sqrt{15}} = \frac{10\sqrt{90}}{15} \to \sqrt{9}\sqrt{10}$ $= \frac{30\sqrt{10}}{15} = \boxed{2\sqrt{10}}$

10-2 #9

Radical Expressions

Name Key date _____

Simplify the Expression:

$9\sqrt{72}$ $\sqrt{36}\ \sqrt{2}$ $9 \cdot 6\sqrt{2}$ $\boxed{54\sqrt{2}}$	$-6\sqrt{32}(-6\sqrt{2})$ $36\sqrt{64}$ $36 \cdot 8 =$ $\boxed{288}$	$\sqrt{\frac{1}{18}}\ \frac{\sqrt{1}}{3\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$ $\sqrt{9}\ \sqrt{2}$ $\frac{\sqrt{2}}{3(2)} = \boxed{\frac{\sqrt{2}}{6}}$
$\frac{10\sqrt{5}}{\sqrt{15}} \cdot \frac{\sqrt{15}}{\sqrt{15}}$ $\frac{10\sqrt{75}}{15} = \frac{50\sqrt{3}}{15} =$ $\boxed{\frac{10\sqrt{3}}{3}}$	$\sqrt{10ab^2} \cdot \sqrt{2ab^2}$ $\sqrt{20a^2b^4}$ $\sqrt{4a^2b^4}\ \sqrt{5}$ $\boxed{2ab^2\sqrt{5}}$	$\sqrt{\frac{22a^5}{200a}} = \sqrt{\frac{11a^4}{100}}$ $\frac{\sqrt{11a^4}}{10}$ $\frac{a^2\sqrt{11}}{10}$
$\sqrt{8} \cdot \sqrt{20}$ $\sqrt{160}$ $\sqrt{16}\ \sqrt{10}$ $\boxed{4\sqrt{10}}$	$3\sqrt{500x^8y^3}$ $\sqrt{100x^8y^2}\ \sqrt{5y}$ $3 \cdot 10 \cdot x^4 \cdot y\sqrt{5y} =$ $\boxed{30x^4y\sqrt{5y}}$	$-\sqrt{900n^7}$ $-1\sqrt{900n^6}\ \sqrt{n}$ $\boxed{-30n^3\sqrt{n}}$
$\frac{2\sqrt{11n^2}}{\sqrt{6n}} \cdot \frac{\sqrt{6n}}{\sqrt{6n}} =$ $\frac{2\sqrt{66n^3}}{6n} = \frac{2n\sqrt{66n}}{6n} = \boxed{\frac{\sqrt{66n}}{3}}$	$\sqrt{\frac{8}{3}}\ \frac{2\sqrt{2}}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$ $\boxed{\frac{2\sqrt{6}}{3}}$	$\frac{20}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} =$ $\frac{20\sqrt{5}}{5} =$ $\boxed{4\sqrt{5}}$

10-2 #10

Write in radical form:

(1) $7^{\frac{1}{2}} = \sqrt{7}$

(2) $4^{\frac{4}{3}}$ $\sqrt[3]{4^4}$

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

(4) $7^{\frac{4}{3}} = \sqrt[3]{7^4}$

Write in exponential form:

(5) $(\sqrt{10})^3 = 10^{\frac{3}{2}}$

(6) $\sqrt[4]{2} = 2^{\frac{1}{4}}$

(7) $(\sqrt[4]{2})^5 = 2^{\frac{5}{4}}$

(8) $(\sqrt[4]{5})^5 = 5^{\frac{5}{4}}$

Simplify:

(9) $\sqrt[3]{8x^2y^3z^4}$

$\sqrt[3]{8y^3}$ $\sqrt[3]{x^2z^4}$ =

$2y x^{\frac{2}{3}} z^{\frac{4}{3}}$

(10) $\sqrt[4]{81x^{10}y^{12}}$

$\sqrt[4]{81}$ $\sqrt[4]{x^{10}y^{12}}$

$3x^{\frac{10}{4}} y^{\frac{12}{4}} = 3x^{\frac{5}{2}}y^3$

(11) $\left(x^{\frac{2}{3}}\right)^{-3} =$

$x^{-\frac{6}{3}} = x^{-2} = \frac{1}{x^2}$

(12) $\sqrt[3]{x^{\frac{2}{3}}} =$

$\left(x^{\frac{2}{3}}\right)^{\frac{1}{3}} = x^{\frac{2}{9}}$