

SIMPLIFYING RADICALS

Directions: Simplify each square root.

1.) $\sqrt{245}$

$$\begin{array}{c} \wedge \\ 49 \cdot 5 \\ \hline 7\sqrt{5} \end{array}$$

2.) $\sqrt{196}$

$$\boxed{14}$$

3.) $7\sqrt{128}$

$$\begin{array}{c} \wedge \\ 64 \cdot 2 \\ \hline 56\sqrt{2} \end{array}$$

4.) $-8\sqrt{392}$

$$\begin{array}{c} \wedge \\ 196 \cdot 2 \\ \hline -112\sqrt{2} \end{array}$$

5.) $3\sqrt{12}$

$$\begin{array}{c} \wedge \\ 4 \cdot 3 \\ \hline 6\sqrt{3} \end{array}$$

6.) $-7\sqrt{63}$

$$\begin{array}{c} \wedge \\ 49 \cdot 3 \\ \hline -21\sqrt{7} \end{array}$$

Directions: Simplify each cube root.

7.) $\sqrt[3]{625}$

$$\begin{array}{c} \wedge \\ 125 \cdot 5 \\ \hline 5\sqrt[3]{5} \end{array}$$

8.) $\sqrt[3]{-375}$

$$\begin{array}{c} \wedge \\ -125 \cdot 3 \\ \hline -5\sqrt[3]{3} \end{array}$$

9.) $\sqrt[3]{108}$

$$\begin{array}{c} \wedge \\ 27 \cdot 4 \\ \hline 3\sqrt[3]{4} \end{array}$$

10.) $7\sqrt[3]{128}$

$$\begin{array}{c} \wedge \\ 64 \cdot 2 \\ \hline 28\sqrt[3]{2} \end{array}$$

11.) $-2\sqrt[3]{40}$

$$\begin{array}{c} \wedge \\ 8 \cdot 5 \\ \hline -4\sqrt[3]{5} \end{array}$$

12.) $3\sqrt[3]{-81}$

$$\begin{array}{c} \wedge \\ 27 \cdot 3 \\ \hline -9\sqrt[3]{3} \end{array}$$

Directions: Simplify each square root with variables.

13.) $\sqrt{m^{24}}$

$$\boxed{m^{12}}$$

14.) $\sqrt{p^{13}}$

$$\boxed{p^6\sqrt{p}}$$

15.) $5\sqrt{u^{21}}$

$$\boxed{5u^{10}\sqrt{u}}$$

16.) $\sqrt{x^2y^7z^5}$

$$\boxed{xy^3z^2\sqrt{yz}}$$

17.) $\sqrt{a^3b^{12}c^{10}}$

$$\boxed{ab^6c^5\sqrt{a}}$$

18.) $-2\sqrt{j^4k^9l^{16}}$

$$\boxed{-2j^2k^4l^8\sqrt{k}}$$

Directions: Simplify each cube root with variables.

19.) $\sqrt[3]{m^{24}}$

m^8

20.) $\sqrt[3]{p^{13}}$

$p^4 \sqrt[3]{p}$

21.) $5\sqrt[3]{u^{21}}$

$5u^7$

22.) $\sqrt[3]{x^2y^7z^5}$

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

23.) $\sqrt[3]{a^3b^{12}c^{10}}$

$ab^4c^3 \sqrt[3]{c}$

24.) $-2\sqrt[3]{j^4k^9l^{16}}$

$-2j^k^3l^5 \sqrt[3]{jl}$

Directions: Simplify each radical expression. Remember to look for square roots vs cube roots!!!

25.) $\sqrt{36x^2y^3}$

$6xy\sqrt{y}$

26.) $\sqrt[3]{192a^8b^5c}$

$4a^2b\sqrt[3]{3a^2b^2c}$

27.) $\sqrt{384x^4y^3}$

$8x^2y\sqrt{6y}$

28.) $\sqrt[3]{-135x^5y^3}$

$-3xy\sqrt[3]{5x^2}$

29.) $7\sqrt{96m^3}$

$28m\sqrt{6m}$

30.) $2\sqrt[3]{125m^6p^9q^2}$

$10m^2p^3\sqrt[3]{q^2}$

31.) $\sqrt[3]{54x^5y^3z^2}$

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

32.) $6\sqrt{75mp^2q^3}$

~~$30pq\sqrt{3mq}$~~

33.) $4\sqrt{36x^2y^3z^4}$

$24xy^2z^2\sqrt{y}$

34.) $-2\sqrt[3]{-48v^7}$

$4v^2\sqrt[3]{6v}$

35.) $-2\sqrt{48a^3b^4c^2}$

$-8abc^2\sqrt{3a}$

36.) $7\sqrt[3]{-81x^3y^7}$

$-21xy^2\sqrt[3]{3y}$