


Algebra II - Radical Practice

Simplify.

1. $\sqrt{81}$

A handwritten green box containing the number 9, representing the simplified value of the square root of 81.

Algebra II - Radical Practice

Simplify.

2. $\sqrt{18}$

$$\begin{array}{l} \sqrt{9 \cdot 2} \\ \sqrt{9} \sqrt{2} \\ \boxed{3\sqrt{2}} \end{array}$$

3. $\sqrt{128}$

$$\begin{array}{l} \sqrt{64 \cdot 2} \\ \boxed{8\sqrt{2}} \end{array}$$

4. $\sqrt{50}$

$$\begin{array}{l} \sqrt{25 \cdot 2} \\ \boxed{5\sqrt{2}} \end{array}$$

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Simplify.

11. $\sqrt{14}$

$$\boxed{\sqrt{14}}$$

16. $3\sqrt{100}$

$$3 \cdot 10$$

$$\boxed{30}$$

18. $-2\sqrt{75}$

$$-2 \sqrt{25} \sqrt{3}$$

$$-2 \cdot 5 \sqrt{3}$$

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

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Simplify.

$$6\sqrt{4}\sqrt{15}$$

$$6 \cdot 2\sqrt{15}$$
$$\boxed{12\sqrt{15}}$$

20. $6\sqrt{60}$

$$6\sqrt{2 \cdot 2 \cdot 3 \cdot 5}$$

$$6 \cdot 2\sqrt{3 \cdot 5}$$
$$\boxed{12\sqrt{15}}$$

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Multiply

25. $(3\sqrt{12})(\sqrt{6})$

$$3\sqrt{12 \cdot 6}$$

$$3\sqrt{72}$$

$$3\sqrt{36 \cdot 2}$$

$$3 \cdot 6 \sqrt{2}$$

$$\boxed{18\sqrt{2}}$$

Algebra II - Radical Practice

Rationalize

37. $\frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$

$$\frac{\sqrt{3}}{3}$$

Algebra II - Radical Practice

Rationalize

38. $\frac{1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$

$$\frac{\sqrt{2}}{2}$$

39. $\frac{3}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}}$

$$\frac{3\sqrt{5}}{5}$$

44. $\frac{\sqrt{2}}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$

$$\frac{\sqrt{6}}{3}$$

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Rationalize

46. $\frac{1}{2\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$

$$\frac{\sqrt{2}}{2 \cdot 2}$$
$$\boxed{\frac{\sqrt{2}}{4}}$$

47. $\frac{2\sqrt{3}}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$

$$\frac{\cancel{2}\sqrt{6}}{\cancel{2}} = \boxed{\sqrt{6}}$$

49. $\sqrt{\frac{9}{4}}$

$$\frac{\sqrt{9}}{\sqrt{4}}$$
$$\boxed{\frac{3}{2}}$$

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Rationalize

51. $\frac{5\sqrt{\frac{81}{49}}}{1}$

$$\frac{5\sqrt{81}}{1\sqrt{49}}$$

$$\frac{5 \cdot 9}{7} = \boxed{\frac{45}{7}}$$

52. $6\sqrt{\frac{72}{50}}$

$$6\sqrt{\frac{36}{25}}$$

$$\frac{6\sqrt{36}}{\sqrt{25}}$$

$$\frac{6 \cdot 6}{5} = \boxed{\frac{36}{5}}$$

53. $15\sqrt{\frac{54}{6}}$

$$15\sqrt{9}$$

$$15 \cdot 3$$

$$\boxed{45}$$

Algebra II - Radical Practice

Rationalize

54. $\sqrt{\frac{1}{3}}$

$$\frac{\sqrt{1}}{\sqrt{3}} = \frac{1}{\sqrt{3}}$$
$$\frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{3}$$

58. $3\sqrt{\frac{1}{2}}$

$$\frac{3\sqrt{1}}{\sqrt{2}} = \frac{3}{\sqrt{2}}$$
$$\frac{3}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{3\sqrt{2}}{2}$$