

# Multiplying Radical Expressions

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

$$\sqrt{x} \cdot \sqrt{x} = x$$

$$\textcircled{1} \sqrt{6} \cdot \sqrt{2} \quad \text{or} \quad = \sqrt{12} = 2\sqrt{3}$$
$$\sqrt{2 \cdot 3 \cdot 2}$$
$$\boxed{2\sqrt{3}}$$

$$\textcircled{2} \sqrt{5} \cdot \sqrt{10} \quad \text{or} \quad \sqrt{50} = \sqrt{25 \cdot 2} = \boxed{5\sqrt{2}}$$
$$\sqrt{5 \cdot 5 \cdot 2}$$
$$\boxed{5\sqrt{2}}$$

$$\textcircled{3} \sqrt{90} \cdot \sqrt{40} \quad \text{multiply First} = \sqrt{3600} = \boxed{60}$$

simplify First

$$3\sqrt{10} \cdot 2\sqrt{10}$$
$$3 \cdot 2 \cdot 10$$
$$\boxed{60}$$

$$\textcircled{4} \sqrt{30x^2} \cdot \sqrt{3x^2} \quad \text{or} \quad = \sqrt{90x^4} = 3x^2\sqrt{10}$$
$$x^2\sqrt{90}$$
$$\boxed{3x^2\sqrt{10}}$$
$$\sqrt{3 \cdot 10 \cdot x^2 \cdot 3 \cdot x^2}$$
$$3x^2\sqrt{10}$$

$$\textcircled{5} \sqrt{12x^5} \cdot \sqrt{12x^5} = \boxed{12x^5}$$

$$\textcircled{6} 5\sqrt{2a^3b^8} \cdot 4\sqrt{12a^2}$$

$$20ab^4\sqrt{24a^2a}$$
$$40a^2b^4\sqrt{6a}$$

$$\sqrt{24} = 2\sqrt{6}$$

# Multiplying Radicals

Simplify the expression. All variables represent nonnegative numbers.

1  $\sqrt{2} \cdot \sqrt{7}$

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

3  $\sqrt{5} \cdot \sqrt{15}$

4  $\sqrt{3} \cdot \sqrt{8}$

5  $\sqrt{10} \cdot \sqrt{30}$

6  $\sqrt{8} \cdot \sqrt{20}$

7  $\sqrt{27} \cdot \sqrt{3}$

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

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

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

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

19  $\sqrt{8x^2} \cdot \sqrt{4x}$

20  $\sqrt{6x^3} \cdot \sqrt{150x^2}$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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