

## Multiply and Divide Radical Expressions

$2 \cdot 5 = \underline{\hspace{2cm}}$

$2 \cdot \sqrt{5} = \underline{\hspace{2cm}}$

$\sqrt{2} \cdot 5 = \underline{\hspace{2cm}}$

$\sqrt{2} \cdot \sqrt{5} = \underline{\hspace{2cm}}$

$2\sqrt{3} \cdot 5 = \underline{\hspace{2cm}}$

$2\sqrt{3} \cdot \sqrt{5} = \underline{\hspace{2cm}}$

$2\sqrt{3} \cdot 4\sqrt{5} = \underline{\hspace{2cm}}$

Perform the indicated operations and simplify.

1.  $\sqrt{5}\sqrt{7}$

2.  $\sqrt{3}\sqrt{21}$

3.  $\sqrt{10}\sqrt{30}$

4.  $4(\sqrt{2} - \sqrt{7})$

5.  $\sqrt{5}(6 - \sqrt{5})$

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

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

8.  $\sqrt{3x}(\sqrt{6x} - \sqrt{12})$

9.  $3\sqrt{2}(\sqrt{2} - 4) + \sqrt{2}(5 - \sqrt{2})$

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

11.  $(\sqrt{m} - \sqrt{5})^2$

12.  $(5\sqrt{x} + 2)(2\sqrt{x} - 1)$

13.  $(\sqrt{5} - x)(\sqrt{5} + x)$

14.  $(5\sqrt{2} + 3)(\sqrt{2} - 3)$

15.  $(3 + 2\sqrt{5})^2$

$$\frac{6}{3} = \underline{\hspace{2cm}}$$

$$\frac{\sqrt{6}}{\sqrt{2}} = \underline{\hspace{2cm}}$$

$$\frac{\sqrt{6}}{2} = \underline{\hspace{2cm}}$$

$$\frac{12\sqrt{6}}{2} = \underline{\hspace{2cm}}$$

$$\frac{12\sqrt{6}}{\sqrt{2}} = \underline{\hspace{2cm}}$$

### Simplest form for fractions with $\sqrt{\hspace{1cm}}$

1. No perfect square factor under  $\sqrt{\hspace{1cm}}$       ex.  $\sqrt{75} = \sqrt{25}\sqrt{3} = 5\sqrt{3}$

2. No fractions under a  $\sqrt{\hspace{1cm}}$       ex.  $\sqrt{\frac{3}{4}} = \frac{\sqrt{3}}{\sqrt{4}} = \frac{\sqrt{3}}{2}$

3. No  $\sqrt{\hspace{1cm}}$  in a denominator      ex.  $\frac{2}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{2\sqrt{3}}{\sqrt{9}} = \frac{2\sqrt{3}}{3}$

4. Must be reduced      ex.  $\frac{8\sqrt{5}}{2} = 4\sqrt{5}$

1.  $\sqrt{\frac{8}{9}}$

2.  $\sqrt{\frac{18}{x^2}}$

3.  $\sqrt{\frac{15}{36}}$

4.  $\sqrt{\frac{2}{3}}$

5.  $\sqrt{\frac{5}{7}}$

6.  $\frac{5}{\sqrt{2}}$

7.  $\frac{2}{\sqrt{7}}$

8.  $\frac{4}{\sqrt{10}}$

9.  $\frac{2}{\sqrt{6}}$

# Multiply and Divide Radical Homework

Name \_\_\_\_\_

Class Time \_\_\_\_\_

*Perform the indicated operations. Simplify all answers completely.*

1.  $\sqrt{5} \sqrt{15}$

2.  $\sqrt{14} \sqrt{35}$

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

4.  $\sqrt{3}(\sqrt{27} - \sqrt{3})$

5.  $\sqrt{2}(\sqrt{6} + \sqrt{10})$

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

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

8.  $\sqrt{y}(\sqrt{y} - \sqrt{5})$

9.  $\sqrt{2x}(\sqrt{8x} - \sqrt{32})$

10.  $\sqrt{5}(3 + \sqrt{15})$

11.  $4\sqrt{x}(2\sqrt{x} + 3\sqrt{7})$

12.  $5\sqrt{3}(\sqrt{3} - 2) + \sqrt{3}(7 - \sqrt{3})$

13.  $(\sqrt{10} - 5)(\sqrt{10} + 2)$

14.  $(2 + \sqrt{x})(8 + \sqrt{x})$

15.  $(\sqrt{x} - \sqrt{7})(\sqrt{x} + \sqrt{7})$

16.  $(\sqrt{a} - \sqrt{5})^2$

17.  $(4 + 5\sqrt{3})^2$

18.  $(\sqrt{x} - y)(\sqrt{x} + y)$

19.  $(4\sqrt{x} + 1)(3\sqrt{x} + 2)$

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

21.  $\sqrt{\frac{27}{16}}$

22.  $\sqrt{\frac{14}{y^2}}$

23.  $\sqrt{\frac{24}{25}}$

24.  $\sqrt{\frac{7}{5}}$

25.  $\sqrt{\frac{10}{7}}$

26.  $\frac{2}{\sqrt{3}}$

27.  $\frac{5}{\sqrt{10}}$

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

29.  $\frac{2}{\sqrt{6}}$

**Answers to odd problems:**

1.  $5\sqrt{3}$

3.  $\sqrt{6} - \sqrt{10}$

5.  $2\sqrt{3} + 2\sqrt{5}$

7.  $15 - 4\sqrt{15}$

9.  $4x - 8\sqrt{x}$

11.  $8x + 12\sqrt{7x}$

13.  $-3\sqrt{10}$

15.  $x - 7$

17.  $81 + 40\sqrt{3}$

19.  $12x + 11\sqrt{x} + 2$

21.  $\frac{3\sqrt{3}}{4}$

23.  $\frac{2\sqrt{6}}{5}$

25.  $\frac{\sqrt{70}}{7}$

27.  $\frac{\sqrt{10}}{2}$

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