

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

Homework: This worksheet PLUS Page 385: 52; Page 395: 15, 21

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