NAME _____ DATE_____ PERIOD _____

10-2 Practice

Operations with Radical Expressions

Simplify.

1. $8\sqrt{30} - 4\sqrt{30}$

2. $2\sqrt{5} + 7\sqrt{5} - 5\sqrt{5}$

3. $7\sqrt{13x} - 14\sqrt{13x} + 2\sqrt{13x}$

4. $2\sqrt{45} + 4\sqrt{20}$

5. $\sqrt{40} - \sqrt{10} + \sqrt{90}$

6. $2\sqrt{32} + 3\sqrt{50} - 3\sqrt{18}$

7. $\sqrt{27} + \sqrt{18} + \sqrt{300}$

8. $5\sqrt{8} + 3\sqrt{20} - \sqrt{32}$

9. $\sqrt{14} - \sqrt{\frac{2}{7}}$

10. $\sqrt{50} + \sqrt{32} - \sqrt{\frac{1}{2}}$

11. $5\sqrt{19} + 4\sqrt{28} - 8\sqrt{19} + \sqrt{63}$

12. $3\sqrt{10} + \sqrt{75} - 2\sqrt{40} - 4\sqrt{12}$

Find each product.

13. $\sqrt{6}(\sqrt{10} + \sqrt{15})$

14. $\sqrt{5}(5\sqrt{2} - 4\sqrt{8})$

15. $2\sqrt{7}(3\sqrt{12} + 5\sqrt{8})$

16. $(5 - \sqrt{15})^2$

17. $(\sqrt{10} + \sqrt{6})(\sqrt{30} - \sqrt{18})$

18. $(\sqrt{8} + \sqrt{12})(\sqrt{48} + \sqrt{18})$

19. $(\sqrt{2} + 2\sqrt{8})(3\sqrt{6} - \sqrt{5})$

20. $(4\sqrt{3} - 2\sqrt{5})(3\sqrt{10} + 5\sqrt{6})$

SOUND For Exercises 21 and 22, use the following information.

The speed of sound V in meters per second near Earth's surface is given by $V = 20\sqrt{t + 273}$, where t is the surface temperature in degrees Celsius.

21. What is the speed of sound near Earth's surface at 15°C and at 2°C in simplest form?

22. How much faster is the speed of sound at 15°C than at 2°C?

GEOMETRY For Exercises 23 and 24, use the following information.

A rectangle is $5\sqrt{7} + 2\sqrt{3}$ centimeters long and $6\sqrt{7} - 3\sqrt{3}$ centimeters wide.

23. Find the perimeter of the rectangle in simplest form.

24. Find the area of the rectangle in simplest form.

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10-3 Practice

Radical Equations

Solve each equation. Check your solution.

1. $\sqrt{-b} = 8$

2. $4\sqrt{3} = \sqrt{x}$

3. $2\sqrt{4c} + 3 = 11$

4. $6 - \sqrt{2y} = -2$

5. $\sqrt{k + 2} - 3 = 7$

6. $\sqrt{m - 5} = 4\sqrt{3}$

7. $\sqrt{6t + 12} = 8\sqrt{6}$

8. $\sqrt{3j - 11} + 2 = 9$

9. $\sqrt{2x + 15} + 5 = 18$

10. $\sqrt{\frac{3s}{5}} - 4 = 2$

11. $6\sqrt{\frac{3x}{3}} - 3 = 0$

12. $6 + \sqrt{\frac{5r}{6}} = -2$

13. $y = \sqrt{y + 6}$

14. $\sqrt{15 - 2x} = x$

15. $\sqrt{w + 4} = w + 4$

16. $\sqrt{17 - k} = k - 5$

17. $\sqrt{5m - 16} = m - 2$

18. $\sqrt{24 + 8q} = q + 3$

19. $\sqrt{4s + 17} - s - 3 = 0$

20. $4 - \sqrt{3m + 28} = m$

21. $\sqrt{10p + 61} - 7 = p$

22. $\sqrt{2x^2 - 9} = x$

ELECTRICITY For Exercises 23 and 24, use the following information.

The voltage V in a circuit is given by $V = \sqrt{PR}$, where P is the power in watts and R is the resistance in ohms.

23. If the voltage in a circuit is 120 volts and the circuit produces 1500 watts of power, what is the resistance in the circuit?

24. Suppose an electrician designs a circuit with 110 volts and a resistance of 10 ohms. How much power will the circuit produce?

FREE FALL For Exercises 25 and 26, use the following information.

Assuming no air resistance, the time t in seconds that it takes an object to fall h feet can be determined by the equation $t = \frac{\sqrt{h}}{4}$.

25. If a skydiver jumps from an airplane and free falls for 10 seconds before opening the parachute, how many feet does the skydiver fall?

26. Suppose a second skydiver jumps and free falls for 6 seconds. How many feet does the second skydiver fall?