

10-3**Practice**

Form K

Operations with Radical Expressions

Simplify each sum or difference.

1. $11\sqrt{7} - 4\sqrt{7}$ **$7\sqrt{7}$**

2. $5\sqrt{5} + \sqrt{5}$ **$6\sqrt{5}$**

3. $9\sqrt{10} - 8\sqrt{10}$ **$\sqrt{10}$**

4. $8\sqrt{2} - \sqrt{98}$ **$\sqrt{2}$**

5. $\sqrt{245} + 2\sqrt{320}$ **$23\sqrt{5}$**

6. $2\sqrt{54} - 3\sqrt{96}$ **$-6\sqrt{6}$**

Simplify each product.

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

8. $-\sqrt{8}(2 - 3\sqrt{6})$ **$-4\sqrt{2} + 12\sqrt{3}$**

9. $2\sqrt{10}(\sqrt{5} - 4\sqrt{10})$ **$10\sqrt{2} - 80$**

10. $(3\sqrt{3} - 2\sqrt{2})^2$ **$35 - 12\sqrt{6}$**

11. $(\sqrt{3} + \sqrt{6})(\sqrt{3} - \sqrt{6})$ **-3**

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

13. An area rug is shaped like a golden rectangle. Its length is 8 ft. What is the rug's width? Write your answer in simplified radical form and rounded to the nearest tenth of a foot. **$4\sqrt{5} - 4$ ft; 4.9 ft**

14. A car fits onto a golden rectangle with a length of 12 ft. What is the car's width? Write your answer in simplified radical form and rounded to the nearest tenth of a foot. **$6\sqrt{5} - 6$ ft; 7.4 ft**

10-3 Practice (continued)

Operations with Radical Expressions

Form K

Simplify each quotient.

15. $\frac{3}{\sqrt{5}-1} \cdot \frac{3\sqrt{5}+3}{4}$

16. $\frac{7}{\sqrt{2}-\sqrt{3}} \cdot \frac{-7\sqrt{2}-7\sqrt{3}}{1}$

17. $\frac{-1}{9-\sqrt{3}} \cdot \frac{-9-\sqrt{3}}{78}$

18. $\frac{-3}{\sqrt{2}+\sqrt{5}} \cdot \frac{\sqrt{2}-\sqrt{5}}{1}$

Find the exact solution for each equation. Find the approximate solution to the nearest tenth.

19. $\frac{3\sqrt{3}}{\sqrt{1}+1} = \frac{x}{\sqrt{3}} \cdot \frac{9\sqrt{2}}{2}; 6.4$

20. $\frac{5}{1-\sqrt{2}} = \frac{1+\sqrt{2}}{x} \cdot \frac{-1}{5}; -0.2$

21. $\frac{4-\sqrt{5}}{4+\sqrt{5}} = \frac{x}{2} \cdot \frac{42-16\sqrt{5}}{11}; 0.6$

22. $\frac{x}{3-\sqrt{2}} = \frac{2+\sqrt{2}}{5} \cdot \frac{4+\sqrt{2}}{5}; 1.1$

Simplify each expression.

23. $\sqrt{108} + \sqrt{147} \cdot 13\sqrt{3}$

24. $2\sqrt{3}(6 + 2\sqrt{6}) \cdot 12\sqrt{3} + 12\sqrt{2}$

25. $(\sqrt{2} + \sqrt{3})^2 \cdot 5 + 2\sqrt{6}$

26. $5\sqrt{96} - 8\sqrt{150} \cdot -20\sqrt{6}$

27. **Writing** Are $\sqrt{2}$ and $\sqrt{32}$ like radicals? Can their sum be simplified?

Explain.

No; $\sqrt{32}$ can be simplified to $4\sqrt{2}$ which is a like radical with $\sqrt{2}$. To find their sum add the numbers in front of the radicals without changing the value of the radicand. The result is $5\sqrt{2}$.