Name_____ Date _____

5.2 Practice A

In Exercises 1–6, use the properties of rational exponents to simplify the expression.

1. $\left(7^2\right)^{1/4}$

2. $\left(14^3\right)^{1/2}$

3. $\dfrac{5^{1/5}}{5}$

4. $\dfrac{10}{10^{1/4}}$

5. $\left(\dfrac{6^5}{9^5}\right)^{-1/5}$

6. $\left(7^{-3/4} \bullet 7^{1/4}\right)^{-1}$

In Exercises 7–12, use the properties of radicals to simplify the expression.

7. $\sqrt{3} \bullet \sqrt{75}$

8. $\sqrt[3]{81} \bullet \sqrt[3]{9}$

9. $\sqrt[4]{12} \bullet \sqrt[4]{8}$

10. $\sqrt[4]{9} \bullet \sqrt[4]{9}$

11. $\dfrac{\sqrt[5]{128}}{\sqrt[5]{4}}$

12. $\dfrac{\sqrt{5}}{\sqrt{80}}$

In Exercises 13–18, write the expression in simplest form.

13. $\sqrt[4]{208}$

14. $\dfrac{\sqrt[3]{9}}{\sqrt[3]{4}}$

15. $\sqrt{\dfrac{5}{27}}$

16. $\dfrac{1}{2 + \sqrt{3}}$

17. $\dfrac{6}{4 - \sqrt{5}}$

18. $\dfrac{8}{\sqrt{2} + \sqrt{5}}$

In Exercises 19–24, simplify the expression.

19. $8\sqrt[4]{2} + 5\sqrt[4]{2}$

20. $7\sqrt[5]{13} - 17\sqrt[5]{13}$

21. $4\left(9^{1/4}\right) + 7\left(9^{1/4}\right)$

22. $4\sqrt{18} - 15\sqrt{2}$

23. $8\sqrt{7} + 12\sqrt{63}$

24. $\sqrt[4]{405} + 2\sqrt[4]{5}$

25. The volume of a cube is 80 cubic centimeters.

a. Use exponents to solve the formula for the volume V of a cube with side length s, $V = s^3$, for s.

b. Substitute the expression for s from part (a) into the formula for the surface area of a cube, $S = 6s^2$.

c. Substitute the volume of the given cube into the formula found in part (b) to find the surface area, S. Simplify, if possible.