LESSON 9.2

NAME _____ DATE _____

Challenge: Skills and Applications

For use with pages 511–516

Throughout this page, assume that all variables represent nonnegative real numbers.

In Exercises 1–8, simplify the expression.

1. $\sqrt{26} \cdot \sqrt{39}$

2. $\sqrt{34} \cdot \sqrt{323}$

3. $\dfrac{\sqrt{57}}{\sqrt{76}}$

4. $\dfrac{\sqrt{161}}{5\sqrt{368}}$

5. $5\sqrt{6} \cdot \sqrt{10} \cdot \sqrt{21}$

6. $7\sqrt{20} \cdot \sqrt{15} \cdot 2\sqrt{33}$

7. $\dfrac{\sqrt{pq}}{\sqrt{(p^2q)}}$

8. $\dfrac{\sqrt{(p^2q^4)}}{\sqrt{(pq)}}$

In Exercises 9–12, evaluate the radical expressions $\sqrt{(a + b)}$ and $\sqrt{a} + \sqrt{b}$ for the given values of a and b.

9. $a = 4, b = 9$

10. $a = 49, b = 0$

11. $a = 9, b = 16$

12. $a = 36, b = 9$

13. Based on your answers from Exercises 9–12, what can you conclude?

14. Try examples to make a similar conclusion about $\sqrt{(a - b)}$ and $\sqrt{a} - \sqrt{b}$.

In Exercises 15–17, use the fact that $a^{\frac{1}{2}}$ is defined as $\sqrt{a}$.

15. Simplify $\sqrt{a} \cdot \sqrt{a}$.

16. Simplify $a^{\frac{1}{2}} \cdot a^{\frac{1}{2}}$ using the product of powers property.

17. Based on the answers from Exercises 15 and 16, do you think the product of powers property holds for fractional exponents?

18. Simplify $\left(\sqrt{a}\right)^4$.

19. Simplify $\left(a^{\frac{1}{2}}\right)^4$ using the power of a power property.

20. Based on the answers from Exercises 18 and 19, do you think the power of a power property holds for fractional exponents?