UNIT 1 • RELATIONSHIPS BETWEEN QUANTITIES AND EXPRESSIONS
Lesson 1: Working with Radicals and Properties of Real Numbers

Scaffolded Practice 1.1.1

Example 1

Reduce the radical expression $\sqrt{\dfrac{80}{5^4}}$. If the result has a root in the denominator, rationalize it. Is the result rational or irrational?

1. Rewrite each number in the expression as a product of prime numbers.

2. Cancel where possible to reduce the resulting expression.

3. Use the properties of radicals to rewrite the reduced expression.

4. Rationalize the denominator of the resulting fraction.

5. Determine whether the resulting expression is rational or irrational.

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Example 2

Reduce the radical expression $\sqrt{16a^2} + \sqrt{32a^4}$. Assuming a is a whole number, is the result rational or irrational?

Example 3

Evaluate the radical expression $\sqrt{\dfrac{2^6}{45}\left(\sqrt{\dfrac{64}{5^3}} + \sqrt{\dfrac{18}{250}}\right)}$. Then, determine whether the answer is rational or irrational.

Example 4

Professor Oak is building a new paddock in the back of his research facility so his pets can stay outside while he's at work. According to his calculations, the amount of fencing required will be $2\sqrt{4800} + \left(160 - 8\sqrt{300}\right)$ feet. If fencing is sold in 5-foot lengths, how many pieces of fencing will he need to purchase to complete the paddock?