Objective 34

Simplify a monomial numerical expression involving the square root of a whole number

PROBLEM

Simplify: $\frac{\sqrt{252}}{30}$

STEP 1

Rewrite the number under the radical as a product of a perfect square and a whole number.

$$\frac{\sqrt{252}}{30} = \frac{\sqrt{36 \cdot 7}}{30}$$

STEP 2

Apply the product property of radicals. Write the square root of the product as a product of square roots.

$$\frac{\sqrt{36 \cdot 7}}{30} = \frac{\sqrt{36} \cdot \sqrt{7}}{30}$$

STEP 3

Extract the square root of the perfect square.

$$\frac{\sqrt{36} \cdot \sqrt{7}}{30} = \frac{6 \cdot \sqrt{7}}{30}$$

STEP 4

Simplify the fraction.

$$\frac{6 \cdot \sqrt{7}}{30} = \frac{1 \cdot \sqrt{7}}{5} = \frac{\sqrt{7}}{5}$$

ANSWER

$$\frac{\sqrt{7}}{5}$$

Guided Practice: Solve and Graph

Simplify:

1. $\sqrt{27}$ [A] $3\sqrt{3}$ [B] $10\sqrt{3}$ [C] $9\sqrt{3}$ [D] $4\sqrt{3}$

2. $\sqrt{45}$

3. $8\sqrt{200}$ [A] $64\sqrt{5}$ [B] $80\sqrt{10}$ [C] $80\sqrt{2}$ [D] $10\sqrt{2}$

4. $-5\sqrt{63}$

Practice: Solve and Graph

Simplify:

41. $\sqrt{8}$ [A] $5\sqrt{2}$ [B] $3\sqrt{2}$ [C] $2\sqrt{2}$ [D] $4\sqrt{2}$

42. $-2\sqrt{63}$ [A] $-6\sqrt{7}$ [B] $-14\sqrt{3}$ [C] $-18\sqrt{7}$ [D] $-6\sqrt{21}$