

10-2 Simplifying Radicals

Simplify each radical expression.

$$\begin{aligned}
 1. \quad 5\sqrt{700} &= 5\sqrt{100 \cdot 7} \\
 &= 5\sqrt{100} \cdot \sqrt{7} \\
 &= 5 \cdot 10 \cdot \sqrt{7} \\
 &= \boxed{50\sqrt{7}}
 \end{aligned}$$

$$\begin{aligned}
 2. \quad \sqrt{8x} \cdot \sqrt{24x^3} &= \sqrt{192x^4} \\
 &= \sqrt{64} \sqrt{3} \sqrt{x^4} \\
 &= 8 \cdot \sqrt{3} \cdot x^2 \\
 &= \boxed{8x^2\sqrt{3}}
 \end{aligned}$$

$$\begin{aligned}
 3. \quad -5\sqrt{21} \cdot (-3\sqrt{14}) \\
 &= 15\sqrt{21 \cdot 14} \\
 &= 15\sqrt{3 \cdot 7 \cdot 2 \cdot 7} \\
 &= 15\sqrt{49} \sqrt{6} \\
 &= 15 \cdot 7 \cdot \sqrt{6} \\
 &= \boxed{105\sqrt{6}}
 \end{aligned}$$

$$4. \quad \frac{1}{\sqrt{6}} \cdot \frac{\sqrt{6}}{\sqrt{6}} = \boxed{\frac{\sqrt{6}}{6}}$$

$$5. \quad \frac{2\sqrt{3} \cdot \sqrt{5}}{\sqrt{5} \cdot \sqrt{5}} = \boxed{\frac{2\sqrt{15}}{5}}$$

$$\begin{array}{r}
 21 \\
 14 \\
 \hline
 84 \\
 21
 \end{array}$$