

Multiplying and Dividing Radicals

Multiply and simplify the following radicals.

$$1. \sqrt{5} \cdot \sqrt{20} = \sqrt{100}$$

$$= 10$$

$$2. \sqrt{4} \cdot \sqrt{18}$$

$$3. \sqrt[3]{3c^3} \cdot \sqrt[3]{9c^8}$$

$$= \sqrt[3]{27c^{11}}$$

$$= 3c^3 \sqrt[3]{c^2}$$

$$4. \sqrt[5]{8d^3} \cdot \sqrt[5]{8d^5}$$

$$5. \sqrt[3]{4a^3} \cdot \sqrt[3]{6a^6b^4} = \sqrt[3]{24a^9b^4}$$

$$= 2a^3b^3 \sqrt[3]{3b}$$

$$6. \sqrt[3]{2x^5} \cdot \sqrt[3]{2x^6y^4} \cdot \sqrt[3]{2y^4}$$

Simplify the following radicals by using the quotient property of radicals (see notes.)

$$7. \sqrt{\frac{20}{25}} = \sqrt{\frac{4}{5}}$$

$$= \frac{2\sqrt{5}}{5}$$

$$8. \sqrt[4]{\frac{16a^5}{81}}$$

$$9. \sqrt[3]{\frac{27a^{11}}{64b^6}}$$

$$= \frac{3}{4} \frac{a^3}{b^2} \sqrt[3]{a^2}$$

$$10. \frac{\sqrt{48s^3}}{\sqrt{3s}}$$

$$11. \frac{\sqrt[3]{81a}}{\sqrt[3]{3a^4}} = \sqrt[3]{\frac{81a}{3a^4}}$$

$$12. \frac{\sqrt{147a^5b^7}}{\sqrt{3a^3b^5}}$$

$$= \frac{3}{a}$$

Rationalize and simplify if possible the following.

$$13. \frac{5 \cdot \sqrt{10}}{\sqrt{10} \cdot \sqrt{10}}$$

$$= \frac{\sqrt{10}}{2}$$

$$14. \frac{\sqrt{7}}{\sqrt{5}}$$

$$15. \frac{\sqrt{4x}}{\sqrt{3x}}$$

$$= \frac{2\sqrt{3}}{3}$$