

11 - 1

**Simplifying Radical
Expressions**


$$\sqrt{ab} =$$

Simplify.

Ex: $\sqrt{100} = 10$

Ex: $\sqrt{12} = 2\sqrt{3}$ $\sqrt{12} = \sqrt{\cancel{4}} \cdot \sqrt{3}$
2 \swarrow \searrow 3
2

Simplify.

Ex: $\sqrt{90}$
3² (9) 10

$3\sqrt{10}$

Ex: $\sqrt{75}$
5 (25) 3

$5\sqrt{3}$

Multiply.

$$\text{Ex: } \sqrt{3} \cdot \sqrt{15} = \sqrt{45} = 3\sqrt{5}$$

Handwritten work for the first example: $\sqrt{45}$ with a circled 9 and a 5 below it. An arrow points from the circled 9 to the number 3 on the left. The final result $3\sqrt{5}$ is circled.

$$\text{Ex: } \sqrt{2} \cdot \sqrt{14} = \sqrt{28} = 2\sqrt{7}$$

Handwritten work for the second example: $\sqrt{28}$ with a circled 4 and a 7 below it. An arrow points from the circled 4 to the number 2 on the left. The final result $2\sqrt{7}$ is circled.

$$\sqrt{x^2} = x$$

$$\sqrt{x^3} = x\sqrt{x}$$

$$\sqrt{x^4} = x^2$$

$$\sqrt{x^5} = x^2\sqrt{x}$$

$$\sqrt{x^{10}}$$

$$x^5\sqrt{x}$$

Simplify.

Ex: $\sqrt{40x^4y^5z^3}$


$\sqrt{4} \cdot 10$ $y^4 \cdot y$ $z^2 \cdot z$

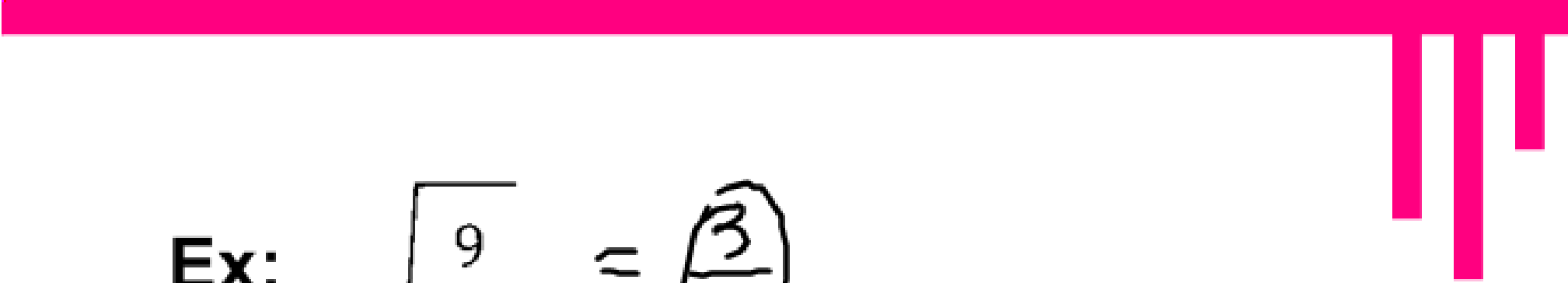
$2x^2y^2z\sqrt{10yz}$

Ex: $\sqrt{60x^3yz^5}$

$\sqrt{4} \cdot 15$ $x^2 \cdot x$ $z^4 \cdot z$

$2x^2z^2\sqrt{15yz}$


$$\sqrt{\frac{a}{b}} =$$



Ex: $\sqrt{\frac{9}{16}} = \frac{3}{4}$

Simplify.

Ex: $\frac{\sqrt{10}}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{30}}{\sqrt{9}} = \frac{\sqrt{30}}{3}$

Ex: $\frac{\sqrt{2}}{\sqrt{6}} \cdot \frac{\sqrt{6}}{\sqrt{6}} = \frac{\sqrt{12}}{6}$ $\sqrt{3}$

~~$\frac{2\sqrt{3}}{6}$~~

~~$\frac{\sqrt{30}}{6}$~~

$\frac{1\sqrt{3}}{3}$ $\frac{1\sqrt{3}}{3}$

Simplify.

Ex: $\frac{2}{6 + \sqrt{3}} \cdot \frac{6 + \sqrt{3}}{6 + \sqrt{3}} = \frac{12 + 2\sqrt{3}}{36 + \cancel{6\sqrt{3}} + \cancel{6\sqrt{3}} + 3}$

$2(6 + \sqrt{3})$

Ex: $\frac{3}{5 + \sqrt{2}} \cdot \frac{5 + \sqrt{2}}{5 + \sqrt{2}} = \frac{15 + 3\sqrt{2}}{25 - 2}$

$\frac{15 + 3\sqrt{2}}{23}$



Homework:

p. 590 # 16 - 36 even