Square-root operations: factor, multiply and combine

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Worked example 1

Simplify exactly. State any restriction that is needed.

$$\sqrt{12}+\sqrt{27}$$

Guided attempt 2

Simplify exactly. State any restriction that is needed.

$$\sqrt{18}\times\sqrt{8}$$

1. Both radicands are nonnegative, so $\sqrt{18}\sqrt{8}=\sqrt{18\times 8}=\sqrt{\square}$.
2. Find the nonnegative number satisfying $\square^2=144$.
3. Check the product by simplifying both original roots separately.

Prerequisite 3

Simplify exactly. State any restriction that is needed.

$$\sqrt{16}$$

Prerequisite 4

Simplify exactly. State any restriction that is needed.

$$\sqrt{3}\times\sqrt{3}$$

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Independent practice 5

Simplify exactly. State any restriction that is needed.

$$\sqrt{75}-\sqrt{12}$$

Independent practice 6

Simplify exactly. State any restriction that is needed.

$$\frac{\sqrt{48}}{\sqrt{3}}$$

Independent practice 7

Simplify exactly. State any restriction that is needed.

$$\sqrt{2}(\sqrt{8}+\sqrt{18})$$

Independent practice 8

Simplify exactly. State any restriction that is needed.

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

Exit question 9

Simplify exactly. State any restriction that is needed.

$$\sqrt{20}+\sqrt{5}$$

Exit question 10

Simplify exactly. State any restriction that is needed.

$$\frac{\sqrt{54}}{\sqrt{6}}$$