Practice Run

Simplify the following and express each answer as an exact value.

1. $-3\sqrt{360}$

2. $(-4\sqrt{12})(-3\sqrt{2})$

3. $\sqrt{5}(\sqrt{8}-\sqrt{3})$

4. $(2\sqrt{2}+3\sqrt{5})(2\sqrt{7}+3\sqrt{3})$

5. $(\sqrt{3}-\sqrt{2})(2\sqrt{2}+3\sqrt{3})$

Compare your answers

Simplify the following and express each answer as an exact value.

1. $-3\sqrt{360}$
$=-3\sqrt{36\cdot 10}$
$=-3\sqrt{6^2\cdot 10}$
$=-3\cdot 6\sqrt{10}$
$=-18\sqrt{10}$

2. $(-4\sqrt{12})(-3\sqrt{2})$
$=(-4\cdot -3)(\sqrt{12}\cdot\sqrt{2})$
$=(12)(\sqrt{12\cdot 2})$
$=12\sqrt{24}$
$=12\sqrt{4\cdot 6}$
$=12\sqrt{2^2\cdot 6}$
$=12\cdot 2\sqrt{6}$
$=24\sqrt{6}$

3. $\sqrt{5}(\sqrt{8}-\sqrt{3})$
$=(\sqrt{5}\cdot\sqrt{8})+(\sqrt{5}\cdot(-\sqrt{3}))$
$=(\sqrt{40})+(-\sqrt{15})$
$=(\sqrt{4\cdot 10})+(-\sqrt{15})$
$=(\sqrt{2^2\cdot 10})+(-\sqrt{15})$
$=2\sqrt{10}-\sqrt{15}$

4. $(2\sqrt{2}+3\sqrt{5})(2\sqrt{7}+3\sqrt{3})$
$=(2\sqrt{2}\cdot 2\sqrt{7})+(2\sqrt{2}\cdot 3\sqrt{3})+(3\sqrt{5}\cdot 2\sqrt{7})+(3\sqrt{5}\cdot 3\sqrt{3})$
$=(4\sqrt{14})+(6\sqrt{6})+(6\sqrt{35})+(9\sqrt{15})$
$=4\sqrt{14}+6\sqrt{6}+6\sqrt{35}+9\sqrt{15}$

5. $(\sqrt{3}-\sqrt{2})(2\sqrt{2}+3\sqrt{3})$
$=(\sqrt{3}\cdot 2\sqrt{2})+(\sqrt{3}\cdot 3\sqrt{3})+((-\sqrt{2})\cdot 2\sqrt{2})+(-\sqrt{2}\cdot 3\sqrt{3})$
$=(2\sqrt{6})+(3\sqrt{9})+(-2\sqrt{4})+(-3\sqrt{6})$
$=(2\sqrt{6})+(3\sqrt{3^2})+(-2\sqrt{2^2})+(-3\sqrt{6})$
$=(2\sqrt{6})+(3\cdot 3)+(-2\cdot 2)+(-3\sqrt{6})$
$=(2\sqrt{6})+9-4+(-3\sqrt{6})$
$=2\sqrt{6}-3\sqrt{6}+5$
$=-\sqrt{6}+5$