2.3 Multiplying Radicals
remember $\sqrt[n]{a} \cdot \sqrt[n]{b}=\sqrt[n]{a b}$

$$
\text { ex.l } 2 \sqrt{3}(2 \sqrt{6}+\sqrt{5})
$$

remember distributive property.
simplify?

$$
\begin{aligned}
& =4 \cdot \begin{array}{l}
9 \cdot 2 \\
\downarrow \sqrt{2}
\end{array} \\
& =12 \sqrt{2}+2 \sqrt{15}
\end{aligned}
$$

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

$$
\begin{array}{ll}
=(3 \sqrt{2})(2 \sqrt{5})-(3 \sqrt{2})(3 \sqrt{2}) & \sqrt{2} \sqrt{2}=2 \\
=6 \sqrt{10}-9 \sqrt{4} & \sqrt{2} \sqrt{2}=7 \\
=6 \sqrt{247} \sqrt{247}=247 \\
=6 \sqrt{10}-9(2) & \\
=6 \sqrt{10}-18
\end{array}
$$

$$
=6 \sqrt{10}-18
$$

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

AD.P.
(B) F.O.I.L.
(A) DP (c) Box

$$
\begin{aligned}
& D D P \\
& 5(4-\sqrt{2})+3 \sqrt{2}(4-\sqrt{2}) \\
& =20-5 \sqrt{2}+12 \sqrt{2}-3(2) \\
& =14+7 \sqrt{2}
\end{aligned}
$$

$$
\sqrt{2} \sqrt{2}=2
$$

SIMPLIFY - Like Terms
(B) First Outide Inside Last

$$
\text { B) } \begin{aligned}
& \begin{array}{c}
\text { First } \\
5(4)
\end{array} \begin{array}{c}
\text { Outide } \\
5(-\sqrt{2})
\end{array} \begin{array}{c}
\text { Inside } \\
(3 \sqrt{2})(4)
\end{array} \begin{array}{c}
(3 \sqrt{2})(-\sqrt{2}) \\
\sqrt{4}
\end{array} \\
& =\frac{20}{}-5 \sqrt{2}+12 \sqrt{2}-3(2)
\end{aligned}
$$

(C) Box

$$
\begin{aligned}
& \text { (*) } \begin{array}{l}
5 \quad 3 \sqrt{2} \\
\begin{array}{l}
4-20 \\
\hline-12 \sqrt{2} \\
-\sqrt{2}-5 \sqrt{2} \\
\hline
\end{array}=2(2)+12 \sqrt{2}-5 \sqrt{2}-6 \\
=
\end{array}=14+7 \sqrt{2}
\end{aligned}
$$

$$
-\sqrt{2}+-5 \sqrt{2} \mid-3(2)=14+7 \sqrt{2}
$$

4. $(3 \sqrt{x}+\sqrt{y})^{2}=(3 \sqrt{x}+\sqrt{y})(3 \sqrt{x}+\sqrt{y})$
foin
Box
$\sqrt{y^{2}}=y$

$$
\begin{aligned}
& =9 x+3 \sqrt{x y}+3 \sqrt{x y}+y \\
& =9 x+6 \sqrt{x y}+y
\end{aligned}
$$

$$
\begin{aligned}
& (3 \sqrt{x}+\sqrt{y})^{2} \\
& \text { square } \\
& (3 \sqrt{x})^{2}+(3 \sqrt{x})(\sqrt{y})(2)+(\sqrt{2} \\
& 9 x+6 \sqrt{x y}+y
\end{aligned}
$$

p121 \# 3-5,7,8

