Simplify. Rationalize the denominator.

$$\frac{\sqrt[3]{33}}{\sqrt[3]{11m^2n}} = \sqrt[3]{\frac{33}{11m^2n}} = \sqrt[3]{\frac{3}{m^2n}}$$

$$= \frac{\sqrt[3]{3}}{\sqrt[3]{m^2n}} \cdot \frac{\sqrt[3]{mn^2}}{\sqrt[3]{mn^2}} = \boxed{\frac{\sqrt[3]{3mn^2}}{mn}}$$

$$\sqrt[3]{m^3n^3}$$

Simplify. Rationalize the denominator.

$$\frac{(7-\sqrt{3})}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \boxed{\frac{7\sqrt{3}-3}{3}}$$

You can now do Hwk #16
Sec 7-2

Pages 377-378

Problems 19, 20, 24, 25, 28, 30, 43, 46, 50, 53

Simplify:

$$\sqrt{72} + 3\sqrt{200} - 5\sqrt{18}$$

$$36\cdot 2 \qquad 100\cdot 2 \qquad 9\cdot 2$$

$$6\sqrt{2} + 30\sqrt{2} - 15\sqrt{2} = \boxed{21\sqrt{2}}$$

Expand each.

1. $(2-\sqrt{3})(4+10\sqrt{3})$

	4	$+10\sqrt{3}$
2	8	$20\sqrt{3}$
$-\sqrt{3}$	$-4\sqrt{3}$	-30

$= \boxed{-22+16\sqrt{3}}$

2. $(2+\sqrt{10})(4-\sqrt{3})$

	4	$-\sqrt{3}$
2	8	$-2\sqrt{3}$
$+\sqrt{10}$	$4\sqrt{10}$	$-\sqrt{30}$

$\boxed{8-2\sqrt{3}+4\sqrt{10}-\sqrt{30}}$

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

	7	$-\sqrt{5}$
7	49	$\cancel{-7\sqrt{5}}$
$+\sqrt{5}$	$\cancel{+7\sqrt{5}}$	-5

$= 49-5 = \boxed{44}$

Expand.

$(2P + 3Q)(2P - 3Q) = \boxed{4P^2 - 9Q^2}$

$(2P)^2 - (3Q)^2$

Conjugates:

Factors such as (a + b) and (a - b)
are called conjugates

Whenever you multiply conjugates
you always get the same result:

$(a + b)(a - b) = a^2 - b^2$

Whenever you multiply conjugates involving square roots the result is ALWAYS a constant.

To rationalize a denominator that contains a radical expression with a sum or difference such as

$$\frac{10}{2+\sqrt{5}}$$

You multiply the numerator and denominator by the conjugate of the denominator.

$$\frac{10}{2+\sqrt{5}} \cdot \frac{(2-\sqrt{5})}{2-\sqrt{5}} = \frac{20-10\sqrt{5}}{-1}$$

$$2^2-(\sqrt{5})^2$$

$$4-5$$

or

$$= -20+10\sqrt{5}$$

Rationalize the denominator.

1. $\frac{-7}{8+\sqrt{2}} \cdot \frac{8-\sqrt{2}}{8-\sqrt{2}} = \boxed{\frac{-56+7\sqrt{2}}{62}}$

$$a^2-b^2$$

$$8^2-(\sqrt{2})^2$$