Sec 9-8: Factoring a polynomial with 4 terms.

$2m^3 + 3m^2 - 8m - 12$

The textbook calls this

"Factor by Grouping"

$2m^3 + 3m^2$ $- 8m - 12$

GCF GCF

$m^2(2m + 3)$ $- 4(2m + 3)$

$m^2(2m + 3)$ $- 4(2m + 3)$

GCF

$(2m + 3)(m^2 - 4)$

$(2m + 3)(m^2 - 4)$

What can you still do? factor $m^2 - 4$ using difference of perfect squares.

$2m^3 + 3m^2 - 8m - 12 = (2m + 3)(m + 2)(m - 2)$

Another way to factor with 4 terms

$2m^3 + 3m^2 - 8m - 12$

$(2m+3)(m^2-4)$

$(2m+3)(m\pm 2)$

Use the Box!

	$2m$	$+3$
m^2	$2m^3$	$+3m^2$
-4	$-8m$	-12

Factor. $2m^3 + 7m^2 - 12m - 42$ = $(2m+7)(m^2-6)$

	$2m$	$+7$
m^2	$2m^3$	$7m^2$
-6	$-12m$	-42

Factor completely. $15a^4 + 5a^3 - 135a^2 - 45a$

$5a(3a^3+a^2-27a-9)$

$5a(3a+1)(a^2-9)$

$5a(3a+1)(a\pm 3)$

	$3a$	$+1$
a^2	$3a^3$	$+a^2$
-9	$-27a$	-9

Factor. $14j^3 - 35j^2k^2 + 4jk^3 - 10k^5$

$(2j-5k^2)(7j^2+2k^3)$

	$2j$	$-5k^2$
$7j^2$	$14j^3$	$-35j^2k^2$
$2k^3$	$4jk^3$	$-10k^5$

Factor.

$$-4a^3h^2 + 3ga^3 - 8bh^2 + 6bg$$

	$+4h^2$	$-3g$
$-a^3$	$-4a^3h^2$	$3ga^3$
$-2b$	$-8bh^2$	$6bg$

$$(-4h^2+3g)(a^3+2b)$$