Factor Completely.

$-p^2 + 14p - 48$

$-1(p^2 - 14p + 48)$

$-(p-6)(p-8)$

Whenever a is negative, factor out the GCF with a negative.

If there doesn't appear to be a GCF just factor out -1.

Factor Completely.

$-18x^2 - 21x + 60 = -3(6x^2 + 7x - 20)$

-120, $+15$, -8, 7

	$2x$	$+5$
$3x$	$6x^2$	$15x$
-4	$-8x$	-20

$-3(3x-4)(2x+5)$

Factor Completely.

$6Q^2 - 31QT + 35T^2$

210, -21, -10, -31

	$2Q$	$-7T$
$3Q$	$6Q^2$	$-21QT$
$-5T$	$-10QT$	$35T^2$

these two terms always have the variable part as middle term in the original problem

$(2Q-7T)(3Q-5T)$

Factor Completely.

$n^6 + 6n^3 - 40$

-40, 10, -4, 6

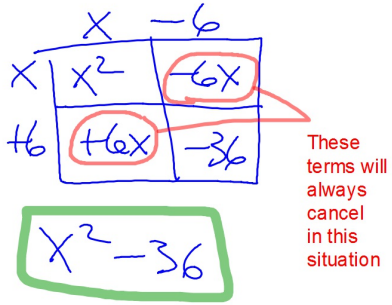
	n^3	-4
n^3	n^6	$-4n^3$
$+10$	$10n^3$	-40

these two terms must always have the same variable part as the middle term in the original problem.

$(n^3+10)(n^3-4)$

Expand each

1. (x - 6)(x + 6)



These terms will always cancel in this situation

$x^2 - 36$

2. (m - 3)(m + 3)

$m^2 - 9$

Factors like these: (a+b) and (a-b) are called conjugates

Whenever you multiply these together the middle two terms cancel and all you have left are $a^2 - b^2$

Expand.

3. (2w + 5)(2w - 5)

$= (2w)^2 - (5)^2$

$= 4w^2 - 25$

4. (15g - 8)(15g + 8)

$= (15g)^2 - (8)^2$

$= 225g^2 - 64$

Fill in the parentheses:

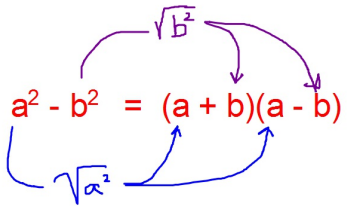
$a^2 - 100 = (a+10)(a-10)$

$a^2 - 169 = (a+13)(a-13)$

$9c^2 - 49 = (3c+7)(3c-7)$

$a^2 - b^2$ is called the difference of PERFECT SQUARES

This ALWAYS factors the same way:



PERFECT SQUARES:

1	49
4	64
9	81
16	100
25	
36	

Factor completely.

1. $e^2 - 81$ $\sqrt{81} = 9$

$(e + 9)(e - 9)$

or

$(e \pm 9)$

2. $b^2 - 289$ $\sqrt{289} = 17$

$(b \pm 17)$

Factor completely.

$121n^2 - 16$ $\sqrt{121} = 11$ $\sqrt{16} = 4$

$(11n \pm 4)$

After removing a GCF, if there is one, ...

If you still have a binomial you should look for the following.....

$a^2 - b^2$ because this ALWAYS factors into...

$(a + b)(a - b) = (a \pm b)$

Factor completely.

$\frac{45P^2}{5} - \frac{80}{5} = 5(9p^2 - 16)$

$= \boxed{5(3p \pm 4)}$

Factor completely.

$24w^3 - 294w$

$= 6w(4w^2 - 49)$

$= \boxed{6w(2w \pm 7)}$

You can now finish Hwk #10 Sec 5-4

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Problems 37, 39, 42, 45, 52, 53, 65