Section 6.2: FACTORING TRINOMIALS WHOSE LEADING COEFFICIENT IS 1 When you are done with your homework you should be able to...
$\pi$ Factor trinomials of the form $x^{2}+b x+c$
WARM-UP:
Multiply:
a. $(x+1)(x+8)$
c. $(x+1)(x-8)$
b. $(x-1)(x-8)$
d. $(x-1)(x+8)$

A STRATEGY FOR FACTORING $a x^{2}+b x+c:$ USING GROUPING

1. Multiply the leading coefficient (in this case 1) and the constant, $\qquad$ .
2. Find the $\qquad$ of $\qquad$ whose $\qquad$ is $\qquad$
3. Rewrite the $\qquad$ term, $\qquad$ as a $\qquad$ or a using the factors from step 2.
4. $\qquad$ by $\qquad$ .

## Example 1: Factor each trinomial

a. $x^{2}+9 x+8$
b. $x^{2}+7 x+10$
c. $x^{2}-13 x+40$
d. $x^{2}+3 x-28$
e. $x^{2}-4 x-5$
f. $w^{2}+12 w-64$
g. $y^{2}-15 y+5$
h. $x^{2}-9 x y+14 y^{2}$

Some $\qquad$ can be $\qquad$ using more than one
$\qquad$ Always begin by looking for the $\qquad$ and, if there is one, $\qquad$ it out! A polynomial is $\qquad$
$\qquad$ when it is written as the $\qquad$ of $\qquad$ .

Example 4: Factor completely
a. $3 x^{2}+21 x+36$
c. $y^{4}-12 y^{3}+35 y^{2}$
b. $20 x^{2} y-5 x y-120 y$
d. $(a+b) x^{2}-13(a+b) x+36(a+b)$

## APPLICATION

You dive directly upward from a board that is 48 feet high. After $t$ seconds, your height above the water is described by the polynomial $-16 t^{2}+32 t+48$.
a. Factor the polynomial completely.
b. Evaluate both the original polynomial and its factored form for $t=3$.
c. Do you get the same answer? Describe what this answer means?

