REVIEW GCF
For help with finding the GCF, see p. 910.

FACTORING To solve a polynomial equation using the zero-product property, you may need to *factor* the polynomial, or write it as a product of other polynomials. Look for the *greatest common factor* (GCF) of the polynomial's terms. This is a monomial with an integer coefficient that divides evenly into each term.

EXAMPLE 2 Find the greatest common monomial factor

Factor out the greatest common monomial factor.

a. $12x + 42y$ **b.** $4x^4 + 24x^3$

Solution

a. The GCF of 12 and 42 is 6. The variables x and y have no common factor. So, the greatest common monomial factor of the terms is 6.

▶ $12x + 42y = 6(2x + 7y)$

b. The GCF of 4 and 24 is 4. The GCF of x^4 and x^3 is x^3. So, the greatest common monomial factor of the terms is $4x^3$.

▶ $4x^4 + 24x^3 = 4x^3(x + 6)$

✓ GUIDED PRACTICE for Example 2

2. Factor out the greatest common monomial factor from $14m + 35n$.

EXAMPLE 3 Solve an equation by factoring

Solve $2x^2 + 8x = 0$.

$2x^2 + 8x = 0$	Write original equation.
$2x(x + 4) = 0$	Factor left side.
$2x = 0$ *or* $x + 4 = 0$	Zero-product property
$x = 0$ *or* $x = -4$	Solve for x.

▶ The solutions of the equation are 0 and -4.

EXAMPLE 4 Solve an equation by factoring

Solve $6n^2 = 15n$.

AVOID ERRORS
To use the zero-product property, you must write the equation so that one side is 0. For this reason, $15n$ must be subtracted from each side.

$6n^2 - 15n = 0$	Subtract $15n$ from each side.
$3n(2n - 5) = 0$	Factor left side.
$3n = 0$ *or* $2n - 5 = 0$	Zero-product property
$n = 0$ *or* $n = \frac{5}{2}$	Solve for n.

▶ The solutions of the equation are 0 and $\frac{5}{2}$.