

What you will learn about:
Use strategies to rewrite quadratics in equivalent forms

1. Use the distributive property to expand and combine like terms to write each of the following expressions in equivalent standard form. $ax^2 + bx + c$

a. $(3 + x)x$

b. $5x(4x - 11) = 20x^2 - 55x$

c. $7x(11 - 4x)$

d. $7x(x + 2) - 19$

e. $-9(5 - 3x) + 7x(x + 4)$

GCF (Greatest
Common
Factor)

Largest value that
divides into numbers
evenly.

2. Use the distributive property to write each of these quadratic expressions in equivalent form as a product of two linear factors.

GCF = X

a. $7x^2 - 11x$

$x(7x - 11)$

b. $12x + 4x^2$ GCF = $4x$

$$4x(3 + x)$$

c. $-3x^2 - 9x$ GCF = $-3x$ GCF = $3x$

$$-3x(x + 3)$$

$$3x(-x - 3)$$

3. Use what you know about ways of writing algebraic expressions in equivalent forms to produce simplest possible expanded and where possible factored forms of these expressions. Make sure all answers are in standard form.

a. $(14x^2 + 3x)(-7)(4 + x)$

$$14x^2 + 3x - 28x - 7x^2$$

Standard Form \rightarrow

$$7x^2 - 25x$$

GCF = x

$$x(7x - 25)$$

Factored Form

b. $-x + 4x(9 - 2x) + 3x^2$

$$-x + 36x - 8x^2 + 3x^2$$

$$35x - 5x^2$$

$$-5x^2 + 35x$$

GCF = $-5x$

$$-5x(x - 7)$$

$$5x(-x + 7)$$

c. $5x(2x - 1) + 4x^2 - 2x$

$$10x^2 - 5x + 4x^2 - 2x$$

$$14x^2 - 7x$$

GCF = $7x$

$$7x(2x - 1)$$

d. $(5x^2 - 4) - 3(4x + 8x^2) - 25x$

$$5x^2 - 4 - 12x - 24x^2 - 25x$$

$$-19x^2 - 37x - 4$$

$(x-3) \rightarrow$ binomial
(2 term)

$x^2+7x+5 \rightarrow$ trinomial
3 terms

binomial \cdot binomial

FOIL
i n n e r
r t e r t

Can't Foil

4. Multiply the polynomials

a. $(x+2)(x+4) = x^2 + 4x + 2x + 8$
 $x^2 + 6x + 8$

b. $(x-3)(x-5) = x^2 - 5x - 3x + 15$
 $x^2 - 8x + 15$

c. $(x+6)(x-3) = x^2 - 3x + 6x - 18$
 $x^2 + 3x - 18$

d. $(2x-7)(x+2) = 2x^2 - 3x - 14$

e. $(3x+1)(2x+9) = 6x^2 + 29x + 9$
 $x^2 - 6x + 8x - 48$

f. $3(x+8)(x-6) = 3(x^2 + 2x - 48)$
 $3x^2 + 6x - 144$

g. $-4(2x-1)(x+5) = -4(2x^2 + 9x - 5)$
 $-8x^2 - 36x + 20$

h. $(x+3)(x^2-2x+1) = x^3 - 2x^2 + x$
 $3x^2 - 6x + 3$
 $x^3 + x^2 - 5x + 3$

i. $(3x-1)(x^2-x+5) = 3x^3 - 3x^2 + 15x$
 $-x^2 + x - 5$
 $3x^3 - 4x^2 + 16x - 5$

Foil 2 and
distr the 3rd

j. $(x-2)(x+5)(x-6)$

$$\begin{array}{r} (x-2)(x^2-x-30) = x^3 - x^2 - 30x \\ \quad \quad \quad -2x^2 + 2x + 60 \\ \hline x^3 - 3x^2 - 28x + 60 \end{array}$$

k. $(x-6)(x-2)(x+7)$

$$\begin{array}{r} (x-6)(x^2+5x-14) = x^3 + 5x^2 - 14x \\ \quad \quad \quad -6x^2 - 30x + 84 \\ \hline x^3 - x^2 - 44x + 84 \end{array}$$

5. Special Products

$$(x+a)^2 = (x+a)(x+a)$$

a. $(x+5)^2$

b. $(x-3)^2$

c. $(x+7)^2$

d. $(2x-3)^2$

e. $(x+4)(x-4)$

f. $(x-8)(x+8)$