Unit 8, Lesson 12

Forms of Quadratic Equations

Let's explore different forms of quadratic equations.

12.1 Math Talk: Quadratics into Standard Form

Create equivalent expressions in standard form mentally.

- $(x + 1)(x + 1)$
- $(x + 3)(x + 3)$
- $(x - 2)(x - 2)$
- $(x + 2)(x - 2)$

12.2 Matching Perfect Squares

Take turns with your partner to match an expression in factored form with an associated function in standard form.

1. For each match that you find, explain to your partner how you know it's a match.
2. For each match that your partner finds, listen carefully to their explanation. If you disagree, discuss your thinking and work to reach an agreement.

1. $(x+9)^2$	• $f(x) = x^2 + 2x + 1$
2. $(x-3)^2$	• $g(x) = x^2 - 6x + 9$
3. $(x+8)^2$	• $h(x) = x^2 + 16x + 64$
4. $(4-x)^2$	• $j(x) = x^2 + 10x + 25$
5. $(5+x)^2$	• $k(x) = x^2 - 8x + 16$
6. $(x+1)^2$	• $m(x) = x^2 + 18x + 81$
7. $(x-1)^2$	• $n(x) = 9x^2 + 6x + 1$
8. $(3x+1)^2$	• $p(x) = x^2 - 2x + 1$

12.3 Examining the Matches

1. Complete the table.

function	expression in factored form	expression in standard form	constant term of the standard form	coefficient of the linear term of the standard form	quadratic term of the standard form
$f(x)$	$(x+1)^2$	x^2+2x+1			
$g(x)$	$(x-3)^2$	x^2-6x+9			
$h(x)$	$(x+8)^2$	$x^2+16x+64$			
$j(x)$	$(5+x)^2$	$x^2+10x+25$			
$k(x)$	$(4-x)^2$	$x^2-8x+16$			
$m(x)$	$(x+9)^2$	$x^2+18x+81$			
$n(x)$	$(3x+1)^2$	$9x^2+6x+1$			
$p(x)$	$(x-1)^2$	x^2-2x+1			

2. What do you notice about the constant terms from the standard form compared with the expression in factored form?

3. What do you notice about the coefficient of the linear terms from the standard form compared with the expression in factored form?

4. What do you notice about the quadratic term from the standard form compared with the expression in factored form?