

AIM: How do we solve for Perfect Square Trinomials?

Directions: Using the tabular method simplify the following expressions.

1. $(x+2)^2$

x^2	$2x$	x
$2x$	4	$+2$

$x^2 + 4x + 4$

2. Simplify $(x+3)^2$

x^2	$3x$	x
$3x$	9	$+3$

$x^2 + 6x + 9$

3. Simplify $(x+4)^2$

x^2	$4x$	x
$4x$	16	$+4$

$x^2 + 8x + 16$

4. Simplify $(x+5)^2$

x^2	$5x$	x
$5x$	25	$+5$

$x^2 + 10x + 25$

Directions: Factor the following trinomials using the tabular method:

5. $x^2 + 2x + 1$

x^2	$1x$	x
$1x$	1	$+1$

$(x+1)(x+1)$
 $(x+1)^2$

Factored Form: $(x+1)^2$

6. $x^2 + 4x + 4$

x^2	$2x$	x
$2x$	4	$+2$

$(x+2)(x+2)$
 $(x+2)^2$

Factored Form: $(x+2)^2$

7. $x^2 + 6x + 9$

x^2	$3x$	x
$3x$	$+9$	$+3$

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

$$(x+3)^2$$

Factored Form:

8. $x^2 + 8x + 16$

x^2	$4x$	x
$4x$	16	$+4$

$$(x+4)(x+4)$$

$$(x+4)^2$$

Factored Form:

Standard form of a Quadratic Equation:

$$ax^2 + bx + c$$

Steps to determine the "c-value" of a perfect square trinomial:

1. Take the b-value; Divide by two
2. Square it

9. $x^2 + 10x + 25$

$$b = \frac{10}{2} = (\underline{5})^2$$

Factored Form:

$$(x+5)^2$$

10. $x^2 + 12x + 36$

$$b = \frac{12}{2} = (\underline{6})^2 = 36$$

Factored Form:

$$(x+6)^2$$

11. $x^2 + 6x + 9$

$$b = \frac{6}{2} = (\underline{3})^2 = 9$$

Factored Form:

$$(x+3)^2$$

12. $x^2 + 4x + 4$

$$b = \frac{4}{2} = (\underline{2})^2 = 4$$

Factored Form:

$$(x+2)^2$$

$$13. x^2 + 8x + \underline{16}$$

$$b = \frac{8}{2} = (4)^2 = 16$$

$$\text{Factored Form: } \underline{(x+4)^2}$$

$$14. x^2 + 14x + \underline{49}$$

$$b = \frac{14}{2} = (7)^2 = 49$$

$$\text{Factored Form: } \underline{(x+7)^2}$$

$$15. x^2 + 20x + \underline{100}$$

$$b = \frac{20}{2} = (10)^2 = 100$$

$$\text{Factored Form: } \underline{(x+10)^2}$$

$$16. x^2 + 30x + \underline{225}$$

$$b = \frac{30}{2} = (15)^2 = 225$$

$$\text{Factored Form: } \underline{(x+15)^2}$$

Standard form of a Quadratic Equation: _____

Steps to determine the "b-value" of a perfect square trinomial:

1. Square root the c-value
2. multiply by two

$$17. x^2 + \underline{14}x + 49$$

$$c = \sqrt{49}$$

$$7(2)$$

$$\boxed{14}$$

$$\text{Factored Form: } \underline{(x+7)^2}$$

$$18. x^2 + \underline{16}x + 64$$

$$c = \sqrt{64}$$

$$8(2)$$

$$16$$

$$\text{Factored Form: } \underline{(x+8)^2}$$

$$19. x^2 + \underline{12x} + 36$$

$$c = \sqrt{36}$$
$$6(2)$$
$$12$$

Factored Form: $(x + 6)^2$

$$20. x^2 + \underline{8x} + 16$$

$$c = \sqrt{16}$$
$$4(2)$$
$$8$$

Factored Form: $(x + 4)^2$

$$21. x^2 + \underline{4x} + 4$$

$$c = \sqrt{4}$$
$$2(2)$$
$$4$$

Factored Form: $(x + 2)^2$

$$22. x^2 + \underline{20x} + 100$$

$$c = \sqrt{100}$$
$$10(2)$$
$$20$$

Factored Form: $(x + 10)^2$

$$23. x^2 + \underline{24x} + 144$$

$$c = \sqrt{144}$$
$$12(2)$$
$$24$$

Factored Form: $(x + 12)^2$

$$24. x^2 + \underline{18x} + 81$$

$$c = \sqrt{81}$$
$$9(2)$$
$$18$$

Factored Form: $(x + 9)^2$

Partner Practice

1. Simplify $(x+6)^2$

$$(x+6)(x+6)$$

$x+6$		
x^2	$6x$	x
$6x$	36	$+6$

$$\boxed{x^2 + 12x + 36}$$

2. Express in factored form: $x^2 + 10x + 25$

$x+5$		
x^2	$5x$	x
$5x$	25	$+5$

$$\boxed{(x+5)^2}$$

3. $x^2 + \underline{8x} + 16$

$$c = \sqrt{16}$$

$$4(2)$$

$$\boxed{8}$$

Factored Form: $(x+4)$

4. $x^2 + \underline{12x} + 36$

$$c = \sqrt{36}$$

$$6(2)$$

$$\boxed{12}$$

Factored Form: _____

5. $x^2 + 10x + \underline{25}$

$$b = \frac{10}{2}$$

$$(5)^2 = \boxed{25}$$

Factored Form: $(x+5)^2$

6. $x^2 + 14x + \underline{49}$

$$b = \frac{14}{2}$$

$$(7)^2 = \boxed{49}$$

Factored Form: $(x+7)^2$