

## Intermediate Algebra

### Skill Builder # PF - 5

#### Factoring Two-Variable Quadratic Trinomials with Leading Coefficient of 1

A two-variable quadratic trinomial with leading coefficient of 1 looks like

$$x^2 + bxy + cy^2.$$

To factor such a trinomial find two numbers that multiply to the constant term  $c$  and that add up to the middle coefficient  $b$ .

#### Examples

1.  $x^2 + 13xy + 36y^2$

Solution:

$\Rightarrow$  the factored form of  $x^2 + 13xy + 36y^2$  is  $(x + 9y)(x + 4y)$

2.  $x^2 - 17xy + 66y^2$

$\Rightarrow$  the factored form of  $x^2 - 17xy + 66y^2$  is  $(x - 11y)(x - 6y)$

3.  $a^2 + 8ab - 48b^2$

$\Rightarrow$  the factored form of  $a^2 + 8ab - 48b^2$  is  $(a + 12b)(a - 4b)$

4.  $m^2 - 16mn - 80n^2$

$\Rightarrow$  the factored form of  $m^2 - 16mn - 80n^2$  is  $(m - 20n)(m + 4n)$

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Factor the given quadratic trinomial.

1.  $x^2 + 12xy + 35y^2$

2.  $x^2 - 15xy + 54y^2$

3.  $a^2 + 11ab - 60b^2$

4.  $a^2 - 13ab - 48b^2$

5.  $n^2 - 12nm - 85m^2$

6.  $m^2 + 8mn - 84n^2$

7.  $s^2 + 18st + 81t^2$

8.  $t^2 - 28ts + 160s^2$

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**Answers**

1.  $(x+7y)(x+5y)$

2.  $(x-6y)(x-9y)$

3.  $(a+15b)(a-4b)$

4.  $(a-16b)(a+3b)$

5.  $(n-17m)(n+5m)$

6.  $(m+14n)(m-6n)$

7.  $(s+9t)(s+9t)$  or  $(s+9t)^2$

8.  $(t-20s)(t-8s)$

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