

P. 586 # 3 - 19 all, 47 - 49 all

**FACTORING TRINOMIALS** Factor the trinomial.

3.  $x^2 + 4x + 3$

4.  $a^2 + 6a + 8$

5.  $b^2 - 17b + 72$

6.  $s^2 - 10s + 16$

7.  $z^2 + 8z - 48$

8.  $w^2 + 18w + 56$

9.  $y^2 - 7y - 18$

10.  $n^2 - 9n + 14$

11.  $x^2 + 3x - 70$

12.  $f^2 + 4f - 32$

13.  $m^2 - 7m - 120$

14.  $d^2 - 20d + 99$


15.  $p^2 + 20p + 64$

16.  $x^2 + 6x - 72$


17.  $c^2 + 15c + 44$

**ERROR ANALYSIS** Describe and correct the error in factoring the trinomial.

18.

$$s^2 - 17s - 60 = (s - 5)(s - 12)$$


19.

$$m^2 - 10m + 24 = (m - 12)(m + 2)$$


**EXAMPLE** Factor a trinomial in two variables

Factor  $x^2 + 9xy + 14y^2$ .

**Solution**

To factor the trinomial, you must find factors of the form  $x + py$  and  $x + qy$ .

First, consider the signs of the factors needed. In this example,  $b$  is 9, and  $c$  is 14. Because both  $b$  and  $c$  are positive, you must find two positive factors of 14 that have a sum of 9.

Factors of 14	Sum of factors
14, 1	$14 + 1 = 15$ <span style="color: red;">✗</span>
7, 2	$7 + 2 = 9$ <span style="color: blue;">← Correct sum</span>

The factors 7 and 2 have a sum of 9, so 7 and 2 are the correct values of  $p$  and  $q$ .

▶  $x^2 + 9xy + 14y^2 = (x + 7y)(x + 2y)$

**FACTORIZING TRINOMIALS** In Exercises 47–55, use the example below to factor the trinomial.

47.  $x^2 - 4xy + 4y^2$

48.  $y^2 - 6yz + 5z^2$

49.  $c^2 + 13cd + 36d^2$