

## 8-6

## Practice

Form K

Factoring  $ax^2 + bx + c$ 

Factor each expression.

1.  $3n^2 - 8n - 3$   
 $(3n + 1)(n - 3)$

2.  $5a^2 - 22a + 8$   
 $(5a - 2)(a - 4)$

3.  $2s^2 + 13s + 6$   
 $(2s + 1)(s + 6)$

4.  $6t^2 + 21t - 12$   
 $3(2t - 1)(t + 4)$

5.  $9b^2 - 65b + 14$   
 $(9b - 2)(b - 7)$

6.  $5z^2 + 11z + 6$   
 $(5z + 6)(z + 1)$

7.  $7r^2 - 9r - 10$   
 $(7r + 5)(r - 2)$

8.  $2m^2 + m - 21$   
 $(2m + 7)(m - 3)$

9.  $3g^2 + 20g + 32$   
 $(3g + 8)(g + 4)$

10. The area of a rectangular driveway is  $2x^2 + 15x + 25$ . The width of the driveway is  $x + 5$ . What is the length of the driveway?  $2x + 5$ 11. The area of a rectangular floor is  $8x^2 + 6x - 20$ . The width of the floor is  $2x + 4$ . What is the length of the floor?  $4x - 5$ 12. The area of a rectangular desktop is  $6x^2 - 3x - 3$ . The width of the desktop is  $2x + 1$ . What is the length of the desktop?  $3x - 3$ 

Factor each expression completely.

13.  $24n^2 + 2n - 12$   
 $2(4n + 3)(3n - 2)$

14.  $72q^2 - 12q - 40$   
 $4(3q + 2)(6q - 5)$

15.  $30j^2 - 27j - 21$   
 $3(2j + 1)(5j - 7)$

16.  $60h^2 + 280h + 45$   
 $5(6h + 1)(2h + 9)$

17.  $40a^2 + 126a + 44$   
 $2(4a + 11)(5a + 2)$

18.  $45f^2 + 24f - 189$   
 $3(5f - 9)(3f + 7)$

## 8-6

## Practice (continued)

Form K

Factoring  $ax^2 + bx + c$ 

**Open-Ended** Find two different values that complete each expression so that the trinomial can be factored into the product of two binomials. Factor your trinomials.

19.  $4n^2 + \square n - 3$

Answers may vary. Sample:

$-4, 11; 4n^2 - 4n - 3 = (2n - 3)(2n + 1);$

$4n^2 + 11n - 3 = (n + 3)(4n - 1)$

20.  $12r^2 + \square + 6$

Answers may vary. Sample:

$17, 38; 12r^2 + 17r + 6 = (3r + 2)(4r + 3);$

$12r^2 + 38r + 6 = (2r + 6)(6r + 1)$

21.  $24a^2 + \square a - 15$

Answers may vary. Sample:  $-18, 37;$ 

$24a^2 - 18a - 15 = (6a + 3)(4a - 5);$

$24a^2 + 37a - 15 = (8a + 15)(3a - 1)$

22.  $18b^2 + \square b + 8$

Answers may vary. Sample:  $24, 74;$ 

$18b^2 + 24b + 8 = (3b + 2)(6b + 4);$

$18b^2 + 74b + 8 = (9b + 1)(2b + 8)$

23. A parallelogram has an area of  $8x^2 - 2x - 45$ . The height of the parallelogram is  $4x + 9$ .

a. Write the formula for the area of a parallelogram.  $A = bh$

b. What is the length of the base of the parallelogram?  $2x - 5$

c. **Writing** Explain how you solved the problem.

**Sample:** You know that the product of  $4x + 9$  and another factor is  $8x^2 - 2x - 45$ .

$4x$  times  $2x$  is  $8x^2$  and  $9$  times  $-5$  is  $-45$ . So,  $8x^2 - 2x - 45 = (4x + 9)(2x - 5)$ . Then use FOIL to check.

24. A rectangular athletic field has an area of  $40x^2 + 190x - 50$ . The width of the athletic field is  $8x - 2$ . What is the length of the athletic field?  $5x + 25$

**Factor each expression.**

25.  $96d^2 - 76d - 77$

$(12d + 7)(8d - 11)$

26.  $48h^2 - 86h + 35$

$(8h - 5)(6h - 7)$

27.  $24m^2 + 18m - 15$

$3(2m - 1)(4m + 5)$

28.  $36c^2 + 27c - 55$

$(3c + 5)(12c - 11)$