Practice and Problem Solving

A Practice by Example

Example 1 (page 486)

Factor each expression.

1. $2n^2 + 15n + 7$
2. $7d^2 + 50d + 7$
3. $11w^2 - 14w + 3$
4. $3x^2 - 17x + 10$
5. $6t^2 + 25t + 11$
6. $3d^2 - 17d + 20$
7. $16m^2 + 26m + 9$
8. $15p^2 - 26p + 11$
9. $8y^2 + 30y + 13$
10. $2y^2 + 35y + 17$
11. $7x^2 - 30x + 27$
12. $8x^2 + 18x + 9$

Example 2 (page 487)

Factor each expression.

13. $2t^2 - t - 3$
14. $8y^2 - 10y - 3$
15. $2q^2 - 11q - 21$
16. $7x^2 - 20x - 3$
17. $13p^2 + 8p - 5$
18. $5k^2 - 2k - 7$
19. $10w^2 + 11w - 8$
20. $12d^2 - d - 20$
21. $14n^2 + 23n - 15$

Example 3 (page 487)

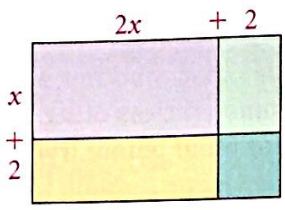
22. $24m^2 - 32m + 8$
23. $21v^2 - 70v + 49$
24. $6t^2 + 26t + 24$
25. $25x^2 - 10x - 15$
26. $11p^2 + 77p + 66$
27. $24v^2 + 10v - 6$

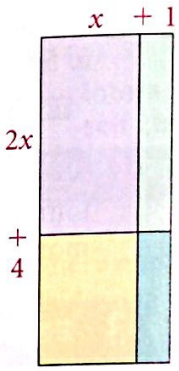
B Apply Your Skills

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

28. $4g^2 + \square g + 10$
29. $15m^2 + \square m - 24$
30. $35g^2 + \square g - 16$

31. **a.** Write each area as a product of two binomials.





b. Are the products equal?

c. **Critical Thinking** Explain how the two products you found in part (a) can equal the same trinomial.

32. **Writing** Explain how you would factor the expression $50x^2 - 90x + 16$.

Factor each expression.

33. $54p^2 + 87p + 28$
34. $66r^2 + 57r + 12$
35. $14x^2 - 53x + 14$
36. $28m^2 + 28m - 56$
37. $21h^2 + 72h - 48$
38. $55n^2 - 52n + 12$
39. $36y^2 + 114y - 20$
40. $63w^2 - 89w + 30$
41. $99q^2 - 92q + 9$

C Challenge

42. **Critical Thinking** If a and c in $ax^2 + bx + c$ are prime numbers, and the trinomial is factorable, how many positive values are possible for b?

43. **Open-Ended** Write three different factorable trinomials that are of the form $\square x^2 - 12x + \square$. Factor your trinomials.

Factor each expression.

44. $56x^3 + 43x^2 + 5x$
45. $49p^2 + 63pq - 36q^2$
46. $108g^2h - 162gh + 54h$

47. The graph of the function $y = x^2 + 5x + 6$ is shown at the right.

a. What are the x-intercepts?

b. Factor $x^2 + 5x + 6$.

c. **Critical Thinking** Describe the relationship between the binomial factors you found in part (b) and the x-intercepts.