

**8-2**  
EXERCISES

**Chapter 8**  
Factoring Polynomials

Homework Help Online

Online Support for Lesson 8-2 Homework

**GUIDED PRACTICE**

Click a video icon to see a Lesson Tutorial Video. Click a pencil icon to practice similar problems.



VIDEO

**See Example 1**

Factor each polynomial. Check your answer.

- |                        |                        |
|------------------------|------------------------|
| 1. $15a - 5a^2$        | 2. $10g^3 - 3g$        |
| 3. $-35x + 42$         | 4. $-4x^2 - 6x$        |
| 5. $12h^4 + 8h^2 - 6h$ | 6. $3x^2 - 9x + 3$     |
| 7. $9m^2 + m$          | 8. $14n^3 + 7n + 7n^2$ |
| 9. $36f + 18f^2 + 3$   | 10. $-15b^2 + 7b$      |



PRACTICE



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**See Example 2**

11. **Physics** A model rocket is fired vertically into the air at 320 ft/s. The expression  $-16t^2 + 320t$  gives the rocket's height after  $t$  seconds. Factor this expression.



PRACTICE





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**See Example 3**

Factor each expression.

12.  $5(m - 2) - m(m - 2)$     13.  $2b(b + 3) + 5(b + 3)$     14.  $4(x - 3) - x(y + 2)$



VIDEO

**See Example 4**

Factor each polynomial by grouping. Check your answer.

15.  $x^3 + 4x^2 + 2x + 8$     16.  $6x^3 + 4x^2 + 3x + 2$     17.  $4b^3 - 6b^2 + 10b - 15$   
18.  $2m^3 + 4m^2 + 6m + 12$     19.  $7r^3 - 35r^2 + 6r - 30$     20.  $10a^3 + 4a^2 + 5a + 2$



PRACTICE



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**See Example 5**

21.  $2r^2 - 6r + 12 - 4r$

22.  $6b^2 - 3b + 4 - 8b$

23.  $14q^2 - 21q + 6 - 4q$

24.  $3r - r^2 + 2r - 6$

25.  $2m^3 - 6m^2 + 9 - 3m$

26.  $6a^3 - 9a^2 - 12 + 8a$



PRACTICE

**PRACTICE AND PROBLEM SOLVING**

Click a video icon to see a Lesson Tutorial Video. Click a lightbulb icon to see a complete solution.



VIDEO

**Factor each polynomial. Check your answer.**

27.  $9y^2 + 45y$

28.  $36d^3 + 24$

29.  $-14x^4 + 5x^2$

30.  $-15f - 10f^2$

31.  $-4d^4 + d^3 - 3d^2$

32.  $14x^3 + 63x^2 - 7x$

33.  $21c^2 + 14c$

34.  $33d^3 + 22d + 11$

35.  $-5g^3 - 15g^2$



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36. **Finance** After  $t$  years, the amount of money in a savings account that earns simple interest is  $P + Prt$ , where  $P$  is the starting amount and  $r$  is the yearly interest rate. Factor this expression.



VIDEO

Factor each expression.

37.  $6a(a - 2) - 5b(b + 4)$     38.  $-4x(x + 2) + 9(x + 2)$     39.  $6y(y - 7) + (y - 7)$   
40.  $a(x - 3) + 2b(x - 3)$     41.  $-3(2 + b) + 4b(b + 2)$     42.  $5(3x - 2) + x(3x - 2)$



VIDEO

Factor each polynomial by grouping. Check your answer.

43.  $2a^3 - 8a^2 + 3a - 12$

44.  $x^3 + 3x^2 + 5x + 15$

45.  $6x^3 + 18x^2 + x + 3$

46.  $7x^3 + 2x^2 + 28x + 8$

47.  $n^3 - 2n^2 + 5n - 10$

48.  $10b^3 - 16b^2 + 25b - 40$



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49.  $2m^3 - 2m^2 + 3 - 3m$

50.  $2d^3 - d^2 - 3 + 6d$

51.  $6f^3 - 8f^2 + 20 - 15f$

52.  $5k^2 - k^3 + 4k - 20$

53.  $b^3 - 2b - 8 + 4b^2$

54.  $20 - 15x - 6x^2 + 8x$



SOLUTION

Fill in the missing part of each factorization.

55.  $16v + 12v^2 = 4v(4 + \square)$



$$57. -16k^3 - 24k^2 = -8k^2(\square + 3)$$



Copy and complete the table.

	Polynomial	Number of Terms	Name	Completely Factored Form
	$3y + 3x + 9$	3	trinomial	$3(y + x + 3)$
59.	$x^2 + 5x$	■	■	■



61.	$a^4 + a^3 + a^2$	■	■	■
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Fill in each blank with a property or definition that justifies the step.

$$69. \begin{aligned} 7x^3 + 2x + 21x^2 + 6 &= 7x^3 + 21x^2 + 2x + 6 & \text{a. } \underline{\quad? \quad} \\ &= (7x^3 + 21x^2) + (2x + 6) & \text{b. } \underline{\quad? \quad} \\ &= 7x^2(x + 3) + 2(x + 3) & \text{c. } \underline{\quad? \quad} \\ &= (x + 3)(7x^2 + 2) & \text{d. } \underline{\quad? \quad} \end{aligned}$$