GCF

| 2 terms | 3 terms | 4 terms |

$a^2 - b^2$
Difference of Two Squares

26. $4x^2 - 81$ $(2x + 9)(2x - 9)$

28. $16x^2 + 40x + 25$
$2ab$
$(4x + 5)(4x + 5)$

Leading coefficient other than
1. Factor by grouping

$a^2 \pm 2ab + b^2$
Perfect Square Trinomial

Factor each polynomial.

13. $5xy - 10x$ $5x(y - 2)$

14. $7ab + 14ab^2 + 21a^2b$ $7ab(1 + 2b + 3a)$

15. $4x^2 + 8x + x + 2$ $(4x + 1)(x + 2)$

16. $10a^2 - 50a - a + 5$ $(10a - 1)(a - 5)$

GCF: $5x$

(13) $5xy - 10x$

$= 5x(y - 2)$

(16) $10a^2 - 50a - a + 5$

$(10a^2 - 50a) - (a - 5)$

$10a(a - 5) - 1(a - 5)$

$(10a - 1)(a - 5)$

Find each sum or difference. **2.** $3m - 6n^2 + 6n$

1. $(x + 5) + (x^2 - 3x + 7)$ $x^2 - 2x + 12$

2. $(7m - 8n^2 + 3n) - (-2n^2 + 4m - 3n)$

②

$-8n^2 - (-2n^2)$

$-8n^2 + 2n^2 = -6n^2$

$7m - 4m = 3m$

$3n - (-3n) = 6n$

Factor each trinomial.

21. $x^2 + 7x + 6$ $(x + 6)(x + 1)$

22. $x^2 - 3x - 28$ $(x - 7)(x + 4)$

23. $10x^2 - x - 3$ $(5x - 3)(2x + 1)$

24. $15x^2 + 7x - 2$ $(3x + 2)(5x - 1)$

25. $x^2 - 25$ $(x + 5)(x - 5)$

26. $4x^2 - 81$ $(2x + 9)(2x - 9)$

27. $9x^2 - 12x + 4$ $(3x - 2)(3x - 2)$

28. $16x^2 + 40x + 25$ $(4x + 5)(4x + 5)$

21

$x^2 + 7x + 6$

$(x + 1)(x + 6)$

7
1 ✕ 6
6

23

-1
-6 ✕ 5
-30

$3x + 1$

	$5x$	
$5x$	$10x^2$	$5x$
-3	$6x$	-3

$a^2 - b^2$

Difference of Two Squares

26. $4x^2 - 81$ $(2x + 9)(2x - 9)$

$2ab$

28. $16x^2 + 40x + 25$

$(4x + 5)(4x + 5)$

Leading coefficient other than

1. Factor by grouping

$a^2 \pm 2ab + b^2$

Perfect Square Trinomial

Find each product.

4. $a(a^2 + 2a - 10)$ $a^3 + 2a^2 - 10a$

5. $(2a - 5)(3a + 5)$ $6a^2 - 5a - 25$

6. $(x - 3)(x^2 + 5x - 6)$ $x^3 + 2x^2 - 21x + 18$

7. $(x + 3)^2$ $x^2 + 6x + 9$

8. $(2b - 5)(2b + 5)$ $4b^2 - 25$

$$3a \quad + 5$$

	$3a$	$+5$
$2a$	$6a^2$	$+10a$
-5	$-15a$	-25

OR

⑤ $2a(3a+5) - 5(3a+5)$
$6a^2 + 10a - 15a - 25$

④

$$a^2 + 2a - 10$$

	a^3	$2a^2$	$-10a$
a			

⑥
$$\quad x^2 \quad 5x \quad -6$$

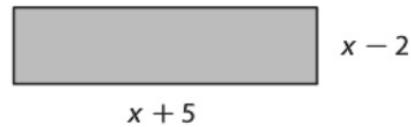|	x^2	$5x$	-6
x	x^3	$5x^2$	$-6x$
-3	$-3x^2$	$-15x$	18

Find each sum or difference. **2. $3m - 6n^2 + 6n$**

1. $(x + 5) + (x^2 - 3x + 7)$ **$x^2 - 2x + 12$**

2. $(7m - 8n^2 + 3n) - (-2n^2 + 4m - 3n)$

3. **MULTIPLE CHOICE** Antonia is carpeting two of the rooms in her house. The dimensions are shown. Which expression represents the total area to be carpeted? **B**
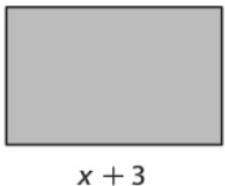
A $x^2 + 3x$

B $2x^2 + 6x - 10$

C $x^2 + 3x - 5$

D $8x + 12$

Find each product.

Solve each equation.

11. $5(t^2 - 3t + 2) = t(5t - 2)$ $\dfrac{10}{13}$

12. $3x(x + 2) = 3(x^2 - 2)$ **-1**

Factor each polynomial.

13. $5xy - 10x$ **$5x(y - 2)$**

14. $7ab + 14ab^2 + 21a^2b$ **$7ab(1 + 2b + 3a)$**

15. $4x^2 + 8x + x + 2$ **$(4x + 1)(x + 2)$**

16. $10a^2 - 50a - a + 5$ **$(10a - 1)(a - 5)$**

Solve each equation. Confirm your answers using a graphing calculator.

17. $y(y - 14) = 0$ **0, 14**

18. $3x(x + 6) = 0$ **0, −6**

19. $a^2 = 12a$ **0, 12**

Find each product.

4. $a(a^2 + 2a - 10)$ $a^3 + 2a^2 - 10a$

5. $(2a - 5)(3a + 5)$ $6a^2 - 5a - 25$

6. $(x - 3)(x^2 + 5x - 6)$ $x^3 + 2x^2 - 21x + 18$

7. $(x + 3)^2$ $x^2 + 6x + 9$

8. $(2b - 5)(2b + 5)$ $4b^2 - 25$

9. **FINANCIAL LITERACY** Suppose you invest $4000 in a 2-year certificate of deposit (CD).

   a. If the interest rate is 5% per year, the expression $4000(1 + 0.05)^2$ can be evaluated to find the total amount of money after two years. Explain the numbers in this expression. **See margin.**

   b. Find the amount at the end of two years. **$4410**

   c. Suppose you invest $10,000 in a CD for 4 years at an annual rate of 6.25%. What is the total amount of money you will have after 4 years? **about $12,744**

10. **MULTIPLE CHOICE** The area of the rectangle shown below is $2x^2 - x - 15$ square units. What is the width of the rectangle? **H**

   F $x - 5$

   G $x + 3$

   H $x - 3$

   J $2x - 3$

$2x + 5$

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19. $a - 12a$ b, 12

20. **MULTIPLE CHOICE** Chantel is carpeting a room that has an area of $x^2 - 100$ square feet. If the width of the room is $x - 10$ feet, what is the length of the room? **B**

   A $x - 10$ ft

   B $x + 10$ ft

   C $x - 100$ ft

   D 10 ft

Factor each trinomial.

21. $x^2 + 7x + 6$ $(x + 6)(x + 1)$

22. $x^2 - 3x - 28$ $(x - 7)(x + 4)$

23. $10x^2 - x - 3$ $(5x - 3)(2x + 1)$

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26. $4x^2 - 81$ $(2x + 9)(2x - 9)$

27. $9x^2 - 12x + 4$ $(3x - 2)(3x - 2)$

28. $16x^2 + 40x + 25$ $(4x + 5)(4x + 5)$

Solve each equation. Confirm your answers using a graphing calculator.

29. $x^2 - 4x = 21$ **−3, 7**

30. $x^2 - 2x - 24 = 0$ **−4, 6**

31. $6x^2 - 5x - 6 = 0$ $-\dfrac{2}{3}, \dfrac{3}{2}$

32. $2x^2 - 13x + 20 = 0$ $4, \dfrac{5}{2}$

33. **MULTIPLE CHOICE** Which choice is a factor of $x^4 - 1$ when it is factored completely? **G**

   F $x^2 - 1$

   G $x - 1$

   H x

   J 1