

Find the sum or difference.

- $(a^2 - 4a + 6) + (-3a^2 + 13a + 1)$
- $(5x^2 - 2) + (8x^3 + 2x^2 - x + 9)$
- $(15n^2 + 7n - 1) - (4n^2 - 3n - 8)$
- $(9c^3 - 11c^2 + 2c) - (-6c^2 - 3c + 11)$

Find the product.

- $(2z + 9)(z - 7)$
- $(5m - 8)(5m - 7)$
- $(b + 2)(-b^2 + 4b - 3)$
- $(5 + 7y)(1 - 9y)$
- $(2x^2 - 3x + 5)(x - 4)$
- $(5p - 6)(5p + 6)$
- $(12 - 3g)^2$
- $(2s + 9t)^2$
- $(11a - 4b)(11a + 4b)$

Factor the polynomial.

- $x^2 + 8x + 7$
- $2n^2 - 11n + 15$
- $-12r^2 + 5r + 3$
- $t^2 - 10t + 25$
- $-3n^2 + 75$
- $3x^2 + 29x - 44$
- $x^2 - 49$
- $2a^4 + 21a^3 + 49a^2$
- $y^3 + 2y^2 - 81y - 162$

Solve the equation.

- $25a = 10a^2$
- $21z^2 + 85z - 26 = 0$
- $x^2 - 22x = -121$
- $a^2 - 11a + 24 = 0$
- $t^2 + 7t = 60$
- $4x^2 = 22x + 42$
- $56b^2 + b = 1$
- $n^3 - 121n = 0$
- $a^3 + a^2 = 64a + 64$

32. **VERTICAL MOTION** A cricket jumps off the ground with an initial vertical velocity of 4 feet per second.

- Write an equation that gives the height (in feet) of the cricket as a function of the time (in seconds) since it jumps.
- After how many seconds does the cricket land on the ground?

33. **POSTER AREA** Two posters have the lengths and widths shown. The posters have the same area.

- Write an equation that relates the areas of the two posters.
- Find the length and width of each poster.



34. **CONSTRUCTION** A construction worker is working on the roof of a building. A drop of paint falls from a rafter that is 225 feet above the ground. After how many seconds does the paint hit the ground?

35. **BOX DIMENSIONS** A cardboard box that is a rectangular prism has the dimensions shown.

- Write a polynomial that represents the volume of the box.
- The volume of the box is 60 cubic inches. What are the length, width, and height of the box?

