

Section 2.5 Solve Quadratic Equations by Factoring

1. Find the roots of each equation. Verify your answers.
 - a) $x(x - 5) = 0$
 - b) $(y + 2)(y - 9) = 0$
 - c) $(k + 9)(2k + 3) = 0$
 - d) $(3m - 1)(2m + 5) = 0$
 - e) $(3g - 12)(11g + 22) = 0$
 - f) $(3t - 3)(t + 5) = 0$
2. Find the roots of each equation. Verify your answers.
 - a) $x^2 + 6x + 9 = 0$
 - b) $w^2 - 16 = 0$
 - c) $g^2 - 5g + 6 = 0$
 - d) $u^2 - 6u - 7 = 0$
 - e) $z^2 + 21z + 20 = 0$
 - f) $2k^2 - 50 = 0$
 - g) $n^2 - 7n - 8 = 0$
 - h) $2v^2 + 3v - 2 = 0$
 - i) $2p^2 - 30p + 100 = 0$
 - j) $4b^2 - 25 = 0$
 - k) $2t^2 + 21t + 10 = 0$
 - l) $3y^2 - 13y + 4 = 0$
 - m) $9c^2 + 12c + 4 = 0$
 - n) $5x^2 - 25x + 20 = 0$
 - o) $7y^2 - 28y - 35 = 0$
 - p) $6d^2 - 7d + 2 = 0$
 - q) $9x^2 - 15x - 6 = 0$
 - r) $5f^2 - 5f - 100 = 0$
 - s) $12w^2 - 8w + 1 = 0$
 - t) $12d^2 - 10d + 2 = 0$
3. A ball is tossed from a building. Its height as a function of time is given by $h(t) = -5t^2 + 15t + 50$, where h is the height of the ball above ground, in metres, t seconds after being tossed.
 - a) Find the zeros of the function and explain their significance. Reject any inadmissible solutions.
 - b) Graph the function. Which parts of the graph have no meaning in this situation?
4.
 - a) Create a quadratic function in standard form that has zeros at 2 and -3 .
 - b) Explain how you produced this function.
 - c) Is your function the only possible correct answer to part a)? Explain.
5. The sum of the squares of two consecutive whole numbers is 85. What are the numbers?
6. A rectangle is 3 m longer than it is wide. Its area is 154 cm^2 . What are the dimensions of the rectangle?
7. A soccer ball is kicked so that its height, h , after t seconds is modelled by the function $h(t) = 20t - 5t^2$.
 - a) When will the height of the ball be 15 m? Explain why there are two answers.
 - b) What is the maximum height of the ball?
 - c) How long will the ball be in the air?
8. The sum of the first n natural numbers is given by the function $\frac{1}{2}n(n+1)$.
$$1 + 2 + 3 + \dots + n = \frac{1}{2}n(n+1)$$
If the sum is 55, what is the value of n ?
9. A tennis court is 13 m longer than it is wide. Its area is 264 m^2 . What are the lengths of its sides?