October 24, 2025

Solving Quadratics

1) Finding zeros (x-intercepts) on calculator.
2) Factoring
3) Completing the Square
4) Quadratic Formula

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FACTORING

$(x+7)(x-4)=0$

$x^2-4x+7x-28=0$

$x^2+3x-28=0$

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$x^2-8x=-12$

$x^2-8x+12=0$

$(x-2)(x-6)=0$

$-2x$

$-6x$

1 12
2 6
3 4

$x-2=0 \quad x-6=0$

$x=2 \quad x=6$

$2x^2 = 7x + 15$

$2x^2 - 7x - 15 = 0$

$(2x+3)(x-5) = 0$

$+3x \quad -10x$

$1 \quad 15$
$3 \quad 5$

$2x+3=0 \quad x-5=0$

$2x=-3 \quad x=5$

$x=-3/2$

$12x^2 + 9x - 30 = 0$

$3(4x^2+3x-10) = 0$

$3(4x-5)(x+2) = 0$

$-5x \quad +8x$

$1 \quad 10$
$2 \quad 5$

$4x-5=0 \quad x+2=0$

$4x=5 \quad y=-2$

$x=5/4$

$4c^2 = 20c$

$4c^2 - 20c = 0$

$4c(c-5) = 0$

$\frac{4c}{4} = \frac{0}{4}$ $\quad c-5=0$

$c = 0 \quad c = 5$

$x^2 - 25 = 0 \qquad x^2 + 0x - 25$

$(x+5)(x-5) = 0$

$x+5=0 \quad x-5=0$

$x = -5 \quad x = 5$

Solve

$4(x+5)^2 + 1 = 81$

$-1 \quad -1$

$\frac{4(x+5)^2}{4} = \frac{80}{4}$

$\sqrt{(x+5)^2} = \sqrt{20}$

$7 \cdot 5$

$x+5 = \pm 2\sqrt{5}$

$x = -5 \pm 2\sqrt{5}$

Roots: $-7, \frac{2}{3}$

Find eq. – Work factoring problem backwards.

$x = -7$ $\quad$ $x = \frac{2}{3}$

$x + 7 = 0$ $\quad$ $3x = 2$

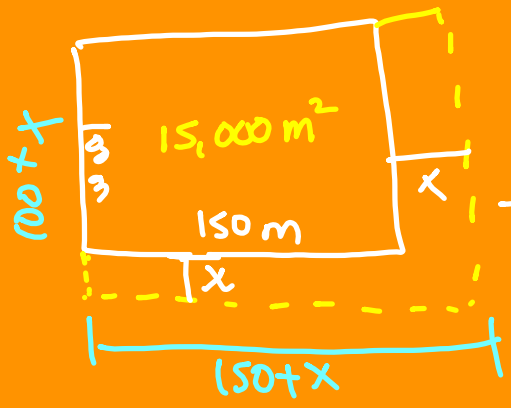
$3x - 2 = 0$

$(x+7)(3x-2) = 0$

$3x^2 - 2x + 21x - 14 = 0$

$3x^2 + 19x - 14 = 0$

Parking Lot – Add on to one side & one end.
150 m x 100 m – Double existing area
How wide is the strip?



$(100+x)(150+x) = 30{,}000$

$15{,}000 + 150x + 100x + x^2 = 30{,}000$

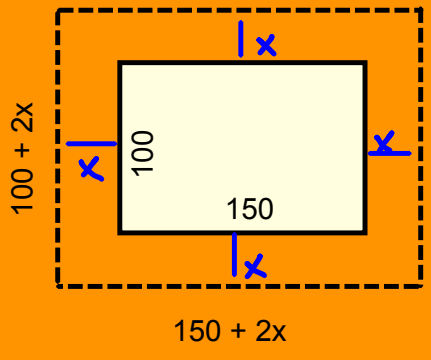
$-30{,}000$

$x^2 + 250x - 15{,}000 = 0$

$(x+300)(x-50) = 0$

$x + 300 = 0$ $\quad x - 50 = 0$

$x = -300$ $\quad x = 50$ m



$(150 + 2x)(100 + 2x) = 30{,}000$