We know that the general form of a quadratic equation is $ax^2+bx+c=0$. When some of the coefficients a,b or c is zero, the solutions can be found in a very simple way.

1. If a=0, the equation is written as bx+c=0. Its immediate solution is $x=\frac{-c}{b}$. We will not consider this case since this is not a quadratic equation, but a linear equation or a first degree equation (the greatest exponent of x is 1).

2. If b=0 the equation can be written as $ax^2+c=0$ and we can apply the formula, but it is easier to solve it by isolating the unknown: $x=\pm\sqrt{\frac{-c}{a}}$

$x^2 - 16 = 0$

$$x = \pm\sqrt{\frac{16}{4}} = \pm\sqrt{4} = \pm 2 = \begin{cases} x_1 = 2 \\ x_2 = -2 \end{cases}$$

1. When c=0 the equation is $ax^2+bx=0$.

In this case we just extract common factor: $x\cdot(ax+b)=0$. When the product of two factors is zero, at least one of them must be a zero, so we can obtain the solutions by making each of the factors zero:

$$x = 0$$

$$ax + b = 0 \Rightarrow x = -\frac{b}{a}$$

$12x^2 - 4x = 0$

$$x_1 = 0$$
$$x_2 = \frac{1}{3}$$

Quadratic equations such as:

$$ax^2 + c = 0$$
$$ax^2 + bx = 0$$

are called incomplete quadratic equations.