1. General form of a quadratic function is $ax^2 + bx + c$, where a is not equal to 0. When plotted, it gives a parabola.
2. When x = 0 is substituted in above function, it reduces to c, which is equal to the y-intercept.
3. All parabolas have an axis of symmetry, whose x-coordinate is given by -b/2a. Note that the axis of symmetry passes through the vertex of the parabola.
4. In order to plot a parabola, we need it vertex, the y-intercept, and the line of symmetry. All of these can be computed given the quadratic function.
5. If a is positive, the parabola opens upwards; and when a is negative, the parabola opens downwards.
6. If parabola opens upwards (a is positive), the function has a minimum value; if it opens downwards (a is negative), the function has a maximum value.
7. Slope of a parabola changes at each point in it. It can be found by taking the differential of the function. Thus, in $y = x^2$, the slope at the point (1,5, 2.25) is given by substituting into $dy/dx = 2x$. Substituting 1.5 into the above, we get the slope at (1.5, 2.25) is $2 * 1.5 = 3$.
8. Thus, slope of a general quadratic function $ax^2 + bx + c$ is given as $2ax + b$
9. When you equate a quadratic function to 0, it's called quadratic equation
10. Zeros of the quadratic function are called solutions/roots of the equation. They are the x-intercepts of the graph.