

## Crack the Code

## Using the Discriminant

<b>A</b>	The quadratic $2x^2 - x - k = 0$ has a discriminant of 105. Find the value of $k$ .	<b>B</b>	Given the value of the discriminant of the equation $x^2 + ax - 1 = 0$ is 85, find the positive value of $a$ .
<b>C</b>	Find the value of $b$ for which the function $f(x) = bx^2 + 10x + 3$ has a discriminant of 40.	<b>D</b>	Without solving the equation, find the number of real solutions to the equation $7x^2 - 15x + 3 = 0$
<b>E</b>	Find the largest integer value of $c$ for which $x^2 + 10x + c = 0$ has two real solutions.	<b>F</b>	Find the positive value of $p$ for which $3x^2 - px + 12 = 0$ has only one solution.
<b>G</b>	The function $f(x) = 9x^2 - 30x + k$ has equal roots. Find the value of $k$ .	<b>H</b>	Find the smallest positive integer value of $a$ for which $a - 5x + x^2 = 0$ has no real solutions.
<b>I</b>	The equation $x^2 + (2 - 3b)x + b^2 = 0$ has equal roots. Find the integer value of $b$ .	<b>J</b>	Find the largest positive integer value for $a$ for which the function $f(x) = 3x^2 - ax + 3 = 0$ has no real roots.

To get the three-digit code, add together all your answers.