**2A/B Solving Quadratic Equations**

1. Solve the Equation
2. $x^{2}=9x$
3. $x^{2}-2x-15=0$
4. $2x^{2}-9x-5=0$
5. $6x^{2}+13x-5=0$
6. $x^{2}-5x+18=2+3x$
7. $(2x-3)^{2}=25$
8. $(x-3)^{2}=7$
9. Solve 4x2 – 3x – 2 = 0 by using the Quadratic formula.

**2C/D Completing the Square**

1. Complete the square for the following expressions
2. $x^{2}+8x$
3. $x^{2}-4x$
4. $x^{2}-2x$
5. $x^{2}+16x$
6. Solve the following equations. You can use completing the square, but I prefer to stick to the Quadratic formula – give both a go and see if you have a preference (and get the same answer)
7. $x^{2}+4x-3=0$
8. $x^{2}-6x+4=0$
9. $2x^{2}+12x-10=0$
10. $ax^{2}+bx+c=0$ (complete the square only – what do you find?)

**2E Part 1 Quadratics as a Function**

1. The function f and g are given by $f\left(x\right)=2x-10$ and $g\left(x\right)=x^{2}-9$, $x\in R$.
2. Find the values of $f(5)$ and $g(10)$
3. Find the value of $x$ for which $f(x)=g(x)$
4. The function f is defined as $f\left(x\right)=x^{2}+6x-5,  x\in R$.
5. Write $f(x)$ in the form $\left(x+p\right)^{2}+q$
6. Hence, or otherwise, find the roots of $f(x)$, leaving all your answers in surd form
7. Write down the minimum value of $f(x)$ and state the value of $x$ for which it occurs

**2E Part 2 Hidden Quadratics**

1. Find the roots of the function $f\left(x\right)=x^{6}+7x^{3}-8,  x\in R$

**2F Sketching Quadratics**

1. Sketch the graph of the function $y=x^{2}-5x+4$, and find the coordinates of its turning point.

$$x$$

$$y$$

1. Sketch the graph of the function $y=4x-2x^{2}-3$, and find the coordinates of its turning point.

$$x$$

$$y$$

**2G The Discriminant**



1. Find the values of k for which;

x2 + kx + 9 = 0

has equal roots.

1. Find the values of k for which;

x2 + 4x + k = 0

 has two distinct real solutions.

**2H Modelling with Quadratics**

1. A spear is thrown over level ground from the top of a tower. The height, $h$, in metres, of the spear above the ground after $t$ seconds is modelled by the function:

$$h\left(t\right)=12.25+14.7t-4.9t^{2},  t\geq 0$$

1. Interpret the meaning of the constant 12.25 in the question
2. After how many seconds does the spear hit the ground?
3. Write $h(t)$ in the form $A-B(t-C)^{2}$, where $A$, $B$ and $C$ are constants to be found.
4. Using your answer to part c), or otherwise, find out the maximum height of the spear, and when it reaches this height