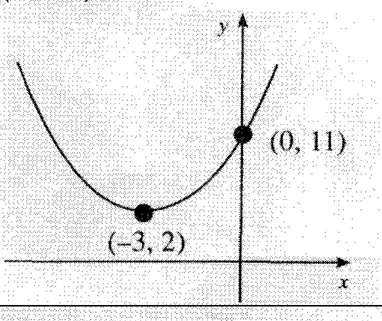
Higher : Quadratic Theory Revision

2018 P2 Q4	$-3(x+1)^2 + 10$	
2018 P2 Q10	$m < 1, m > 9$ *with eg sketch or table of signs*	
2017 P1 Q4	$k = 9$	
2017 P2 Q4	$3(x+4)^2 + 2$	
2016 P2 Q2	$p < 2$	
2015 P1 Q8	$2 < x < 5$	
2014 P1 Q17	q = 5	
2013 P1 Q21	$2(x+3)^2 - 17$	

2012 P1 Q3	q = 5	
2012 P1 Q19	$x < -3, x > 2$	
2011 P1 Q5	q = -9	
2010 P1 Q18	$x < -4, x > 0$	
2010 P1 Q6	$\frac{9}{8}$	
2009 P1 Q19	$x < -2, x > 3$	
2008 P1 Q16	q = 5	

2007 P1Q4	$k < -\frac{1}{4}$	

2006 P1 Q8	(a) $2(x+1)^2 - 5$ (b) $(-1, -5)$	
2006 P2 Q2	$k = 24$	
2006 P2 Q3	(a) $y - 5 = 2(x - 8)$ (b) Q $= (4, -3)$	
2004 P1 Q8	(a) $(x-5)^2 + 2$ (b) $g'(x) = x^2 - 10x + 27$ $= (x-5)^2 + 2$ $g'(x) > 0$ for all x and so $g(x)$ is always increasing.	
2004 P1 Q11	(a) $a = 6$, $b = 2$ (b) $f(x) = 2x^3 - 6x^2 + 8$	
2004 P2 Q3	$b^2 - 4ac = p^2 - 4 \times 2 \times (-3)$ $= p^2 + 24$ p^2 is positive, so $b^2 - 4ac$ is positive too and roots are real.	
2003 P1 Q2	(a) $(x+3)^2 + 2$ (b)  	
2003 P1 Q7	$x^2 + 3x + 4 = 2x + 1$ $x^2 + x + 3 = 0$ $b^2 - 4ac = -11$ $b^2 - 4ac < 0$ therefore no intersection	

2002W P2 Q6	Evaluate $f(0{\cdot}1)$ and $f(0{\cdot}5)$, for example, to start with $a = 0{\cdot}2$	
2002 P1 Q7	$(a)\ \ f(x) = (x-2) + 1$	
2002 P2 Q9	discriminant $= (-5k)^2 - 4(1-2k)(-2k)$ $= 9k^2 + 8k$ for real roots, discriminant ≥ 0 ie $9k^2 + 8k \geq 0$ $k(9k+8) \geq 0$ $k \geq 0$ or $k \leq \frac{-8}{9}$ no integers between 0 and $\frac{-8}{9}$ hence no integral values of k give non - real roots	
2001 P1 Q2	$k = \frac{1}{4}$	
2001 P1 Q4	$(x+1)^2 - 9$	
2001 P2 Q11	(a) $y = k(x+1)(x-p)$ $k = -1$ with justification ie substitute $(0,p)$ $y = -1(x+1)(x-p)$ and complete (b) 2	
2000 P2 Q4	$(a)\ \ y = 4x - x^2$	

Specimen 2 P2 Q1	$4x - x^2 = 2 - \frac{1}{2}x \Rightarrow 2x^2 - 9x + 4 = 0$ $x = \frac{1}{2}, x = 4 \Rightarrow \mathrm{P} = (4,0), \quad \mathrm{Q} = \left(\frac{1}{2}, \frac{7}{4}\right)$	
Specimen 1 P2 Q3	$(a)\quad 2(x+2)^2 - 11$ $(b)\quad (-2, -11)$	
Specimen 1 P2 Q8	$-5,\ 3$	