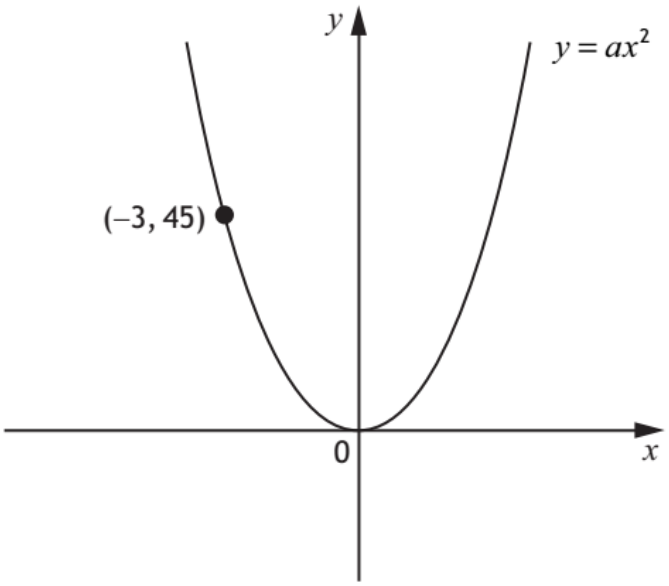
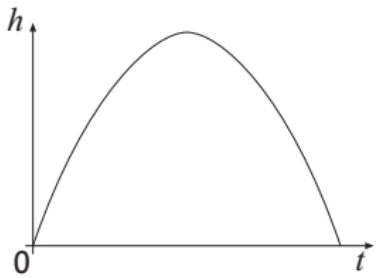
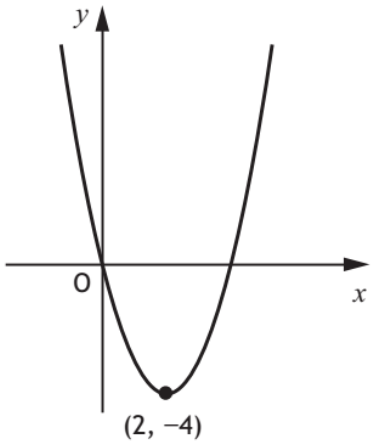
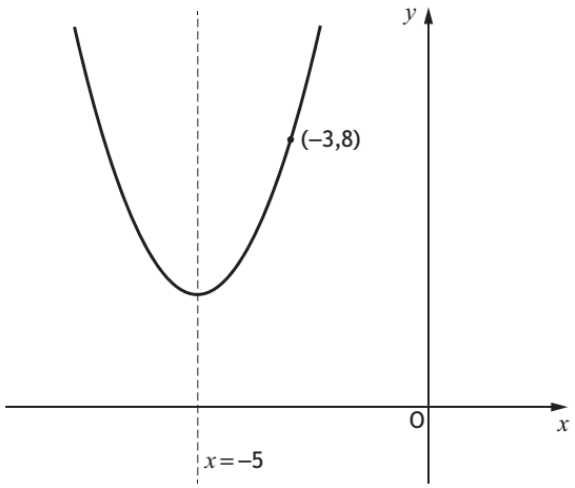
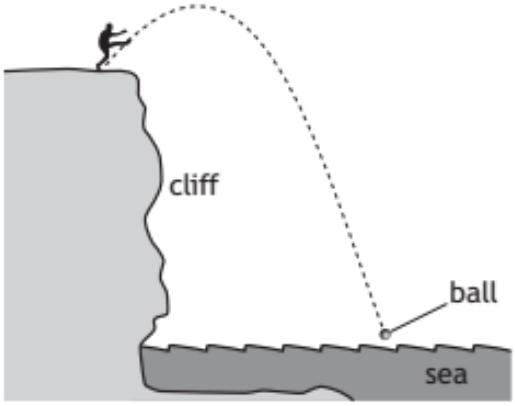
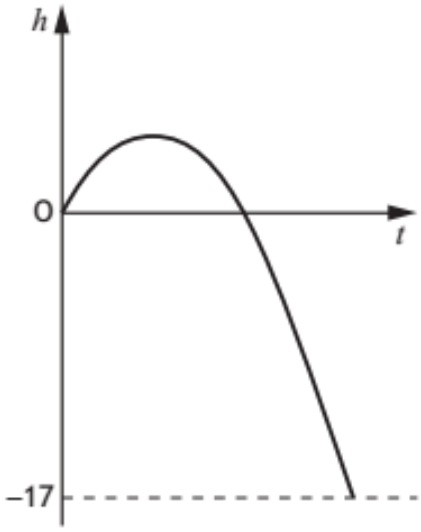
Quadratic Graphs

YEAR	PAPER	QUESTION
2014	1	The diagram below shows part of the graph of $y = ax^2$  Find the value of a. **2**
2014	1	The diagram below shows the path of a small rocket which is fired into the air. The height, h metres, of the rocket after t seconds is given by $h(t) = 16t - t^2$  (a) After how many seconds will the rocket first be at a height of 60 metres? **4** (b) Will the rocket reach a height of 70 metres? **Justify your answer.** **3**

2015	1	The graph below shows part of the parabola with equation of the form $y=(x+a)^2+b.$  The minimum turning point (2, −4) is shown in the diagram. (a) State the values of (i) a **1** (ii) b. **1** (b) Write down the equation of the axis of symmetry of the graph. **1**
2016	1	**10.** Sketch the graph of $y=(x-3)^2+1$. On your sketch, show clearly the coordinates of the turning point and the point of intersection with the y–axis. **3**
2017	1	**14.** The graph below shows a parabola with equation of the form $y=(x+a)^2+b$.  The equation of the axis of symmetry of the parabola is $x=-5$. (a) State the value of a. **1** The point (−3,8) lies on the parabola. (b) Calculate the value of b. **2**

2018	1	Sketch the graph of $y=(x-6)(x+4)$. On your sketch, show clearly the points of intersection with the x-axis and the y-axis, and the coordinates of the turning point. **3**
2019	2	A ball is kicked from a clifftop.  The height, h metres, of the ball relative to the clifftop after t seconds is given by $h=12t-5t^2$. (a) Calculate the height of the ball above the clifftop after 2 seconds. **1** The graph below represents the height, h metres, of the ball relative to the clifftop after t seconds.  The sea is 17 metres below the clifftop. (b) After how many seconds will the ball hit the sea? **4**

2022	1	Sketch the graph of $y = (x+1)(x-3)$ using the axes provided below. On your sketch, show clearly the points of intersection with the x-axis and the y-axis, and the coordinates of the turning point. **3**