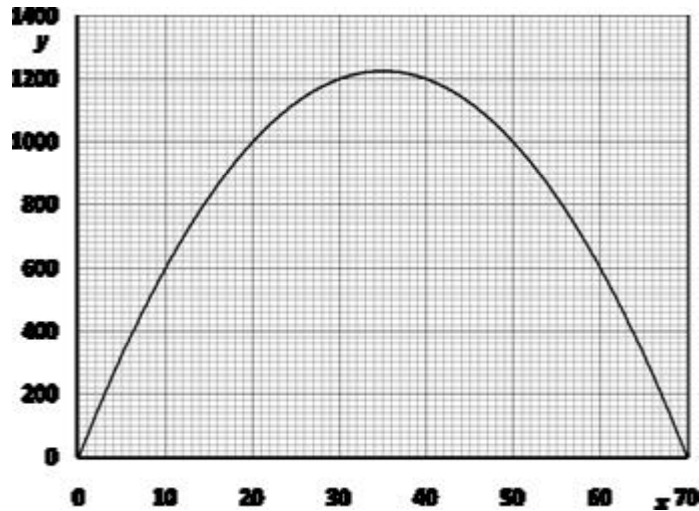


AS Use of Mathematics assessment – GOLF

Chris is attempting to model the path of a golf ball which lands 70m from where it was hit as shown below:



1(i) Briefly explain why each of the models $y = R + kx$ and $y = x(x+R)$ is unsuitable.

(ii) Initially, Chris uses the Quadratic model $y = x(R - x)$. State the value of R .

(iii) By considering values of y , comment on the suitability of the model.

2. (i) Chris now uses a modified model $y = kx(R - x)$, where k is chosen to adjust the predicted heights.

Given that the golf ball has a height of 10 metres when its horizontal distance is 20 metres, show that $k = 0.01$.

(ii) Complete the table of values for the value of k .

x metres	0	10	20	30	40	50	60	70
y metres			10					

(iii) On the axes provided. Plot the values from your table and sketch the trajectory.

(iv) Use your graph to find the horizontal distance travelled before the ball first reaches a height of 8.5 metres.

(v) Describe 2 ways in which the graph of the path of the golf ball whose equation is given by $y = 0.015x(40 - x)$ would differ from that drawn in 2(iii).

(vi) For the path $y = 0.015x(40 - x)$.

- What is the value of x for which the greatest height is reached?
- Calculate this height.

