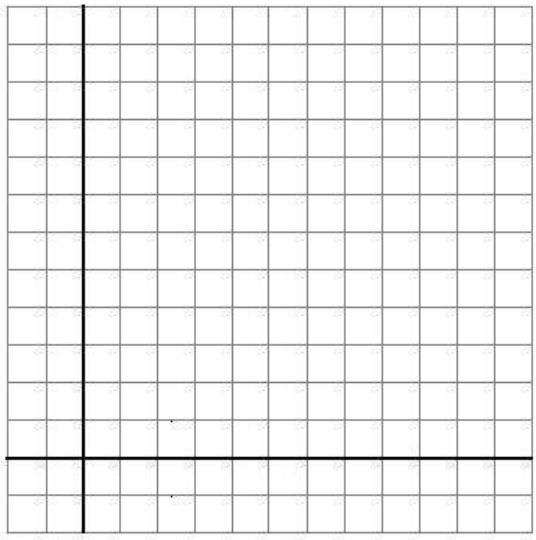
SOLVING QUADRATIC WORD PROBLEMS

1. The path of a paper airplane is represented by $h = -t^2 + 14t - 45$ where t is the time in seconds, and h is the height in feet.

a) Graph the path of the paper airplane, using Key Features:

[Factor to find **zeros**]



[Find the **axis of symmetry**]

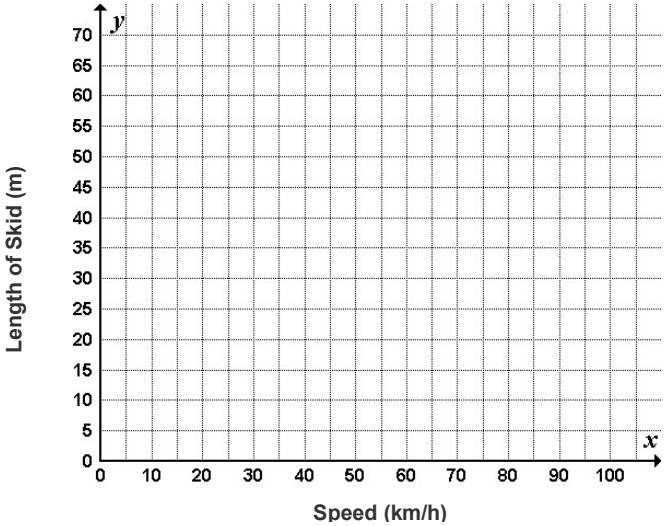
[Find the **vertex,** using the x-value from the axis of symmetry]

a) What is the **MAX height** the airplane reaches?

b) **When** does the airplane reach that MAX height?

2. A car driver brakes and skids through an intersection. The investigating police officer knows that the distance a car skids depends on the speed of the car just before the brakes are applied. She uses a chart to determine the car's speed before the skid. *Draw the graph*

Speed (km/h)	Length of Skid (m)
0	0
10	0.7
20	2.9
30	6.6
40	11.8
50	18.5
60	26.7
70	36.4
80	47.6
90	60.3



a) Use the curve to **ESTIMATE** the initial speed of the car if the skid mark is 41 m long.

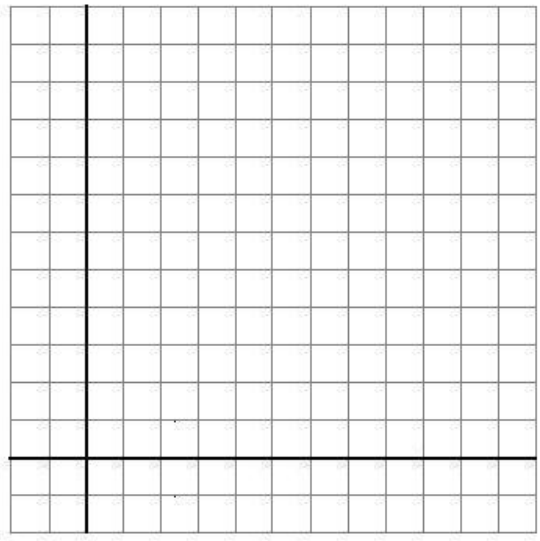
b) Use the curve to **ESTIMATE** the length of the skid mark if the speed of the car is 95 km/h.

3. The relation $h = -5t^2 + 210$ describes the path of a rock that falls from the top of a cliff, with h representing the height in metres and t representing the time in seconds.

a) Complete the table.

t (s)	*h (m)*	(x , y)
0	$=-5(\ \ )^2 + 210 =$	
1	$=-5(\ \ )^2 + 210 =$	
2	$=-5(\ \ )^2 + 210 =$	
3	$=-5(\ \ )^2 + 210 =$	
4	$=-5(\ \ )^2 + 210 =$	
5	$=-5(\ \ )^2 + 210 =$	
6	$=-5(\ \ )^2 + 210 =$	

b) Graph the relation.



c) What is the **height of the cliff**? *Hint: Look for the y-intercept on the graph or in the equation.*

d) **How long** will it take the rock to reach the **bottom** of the cliff? *Hint: At what time does x = 0?*

e) How far from the bottom of the cliff is the rock when **half of the time** has passed?