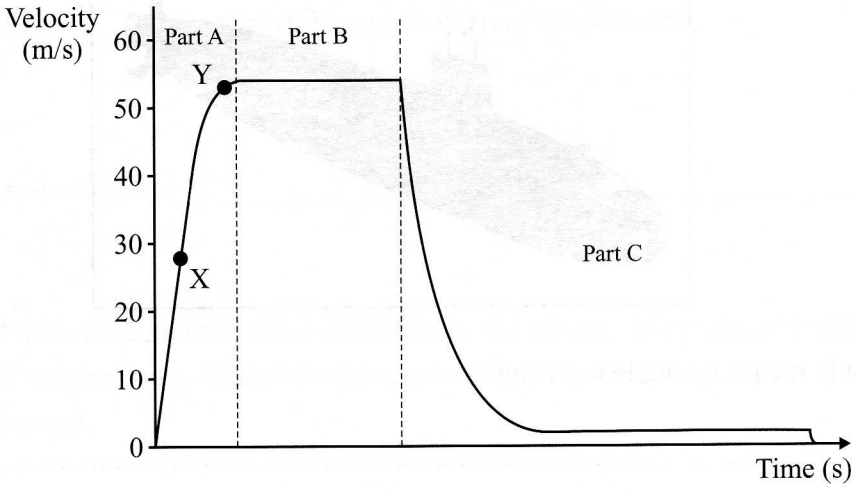
3 Patrick is a free-fall skydiver. He jumps from an aeroplane and his motion is recorded. After his jump he looks at this velocity-time graph of his fall.



a) i) Is Patrick's acceleration greater at point X or point Y?
Explain how you can tell this from the graph.

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.....

ii) Is the resultant force acting on Patrick greater at point X or point Y?
Explain why the resultant force changes magnitude in this way.

.....

.....

b) Part B of the graph is flat, showing that Patrick's velocity stayed constant for a tir
Explain why his velocity stayed constant during this time.

.....

.....

c) Patrick's mass is 83 kg. Calculate his weight using the information given below.

force = mass × acceleration acceleration due to gravity = 10 m/s

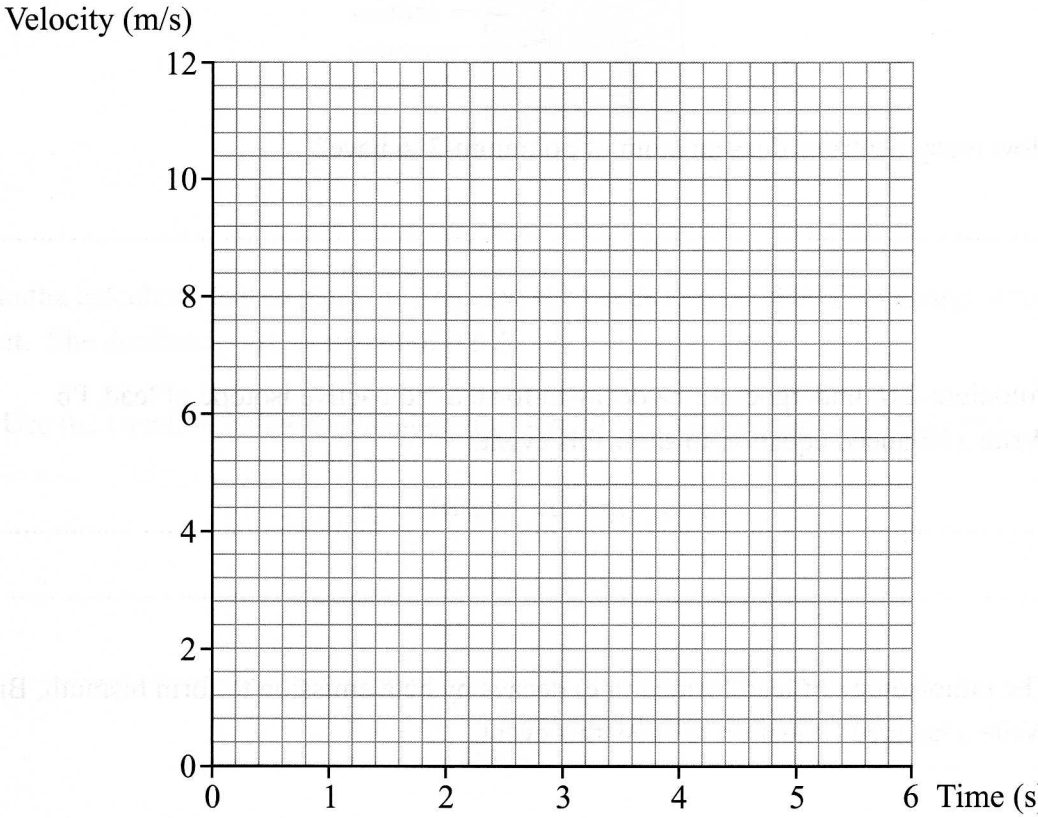
.....

Weight = ...

7 Suzi studies the motion of her dad's car as it moves away from a set of traffic lights. Using the speedometer and her watch she collects the following data:

Velocity (m/s)	0	3	6	9	12	12	12
Time (s)	0	1	2	3	4	5	6

a) Draw a velocity-time graph for this data on the axes below.



b) Using the graph, calculate the car's acceleration over the first 4 s.
Show clearly how you used the graph to calculate the acceleration.

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acceleration = ...