7 A skydiver jumps from an aircraft.

(a) The mass of the skydiver is 70 kg.

(i) State the equation linking weight, mass and *g*.

(1)

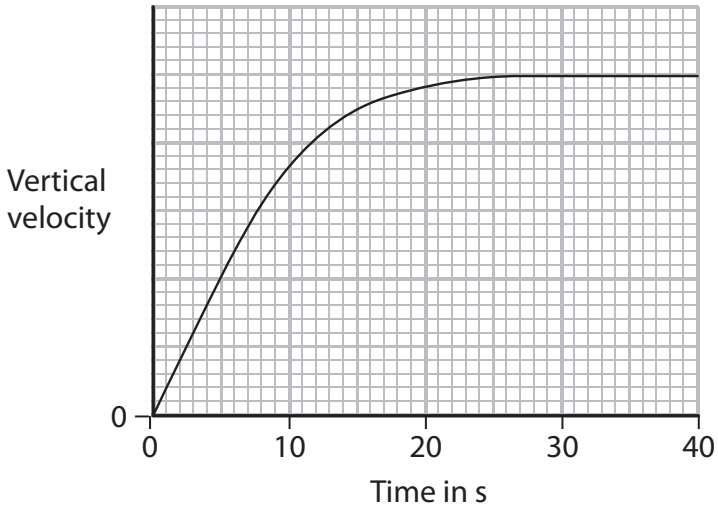
(ii) Calculate the weight of the skydiver and state the unit.

(2)

weight = ... unit .....

(b) The graph shows the vertical velocity of the skydiver during the first 40 s of the fall.

His parachute is not open during this time.



Explain the shape of the graph.

(4)

(c) The diagram shows the skydiver falling at a constant velocity.

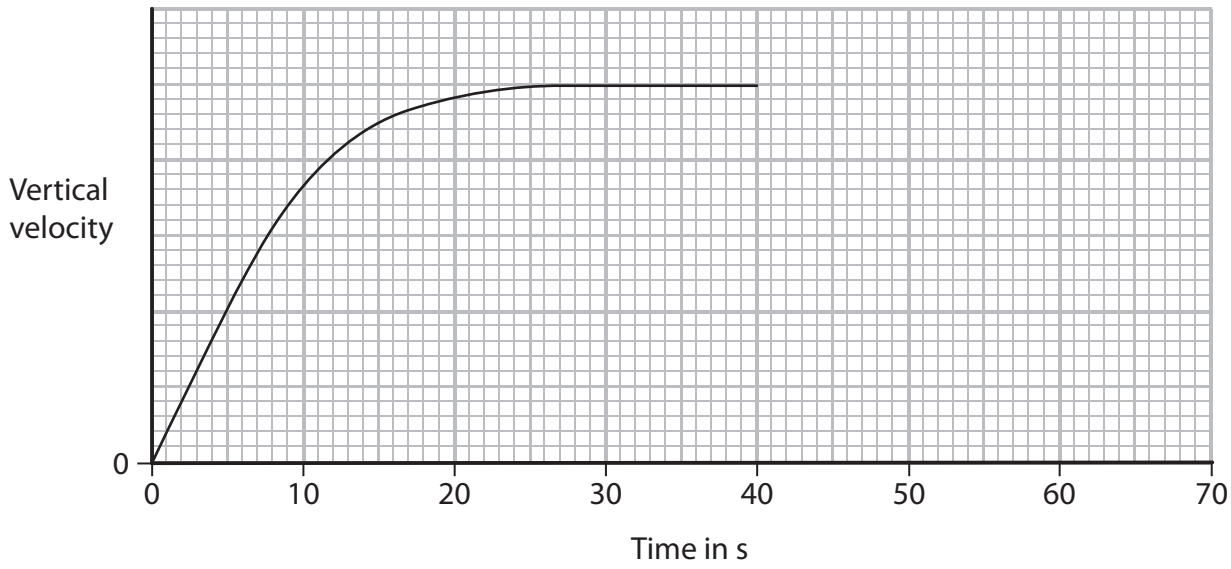
Add **two** labelled arrows to the diagram to represent the forces acting on the skydiver.

(3)

(d) The skydiver opens his parachute after 40 s.

Continue the line on the graph to show how the skydiver's vertical velocity changes and reaches terminal velocity.

(2)



(Total for Question 7 = 12 marks)