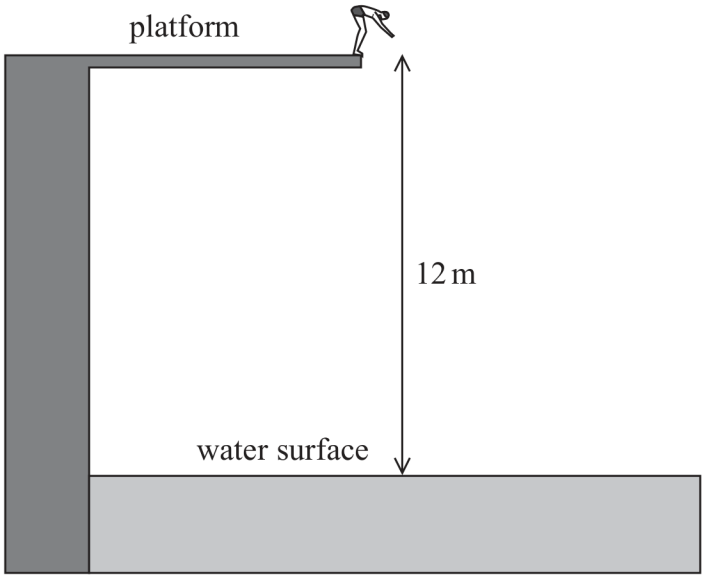
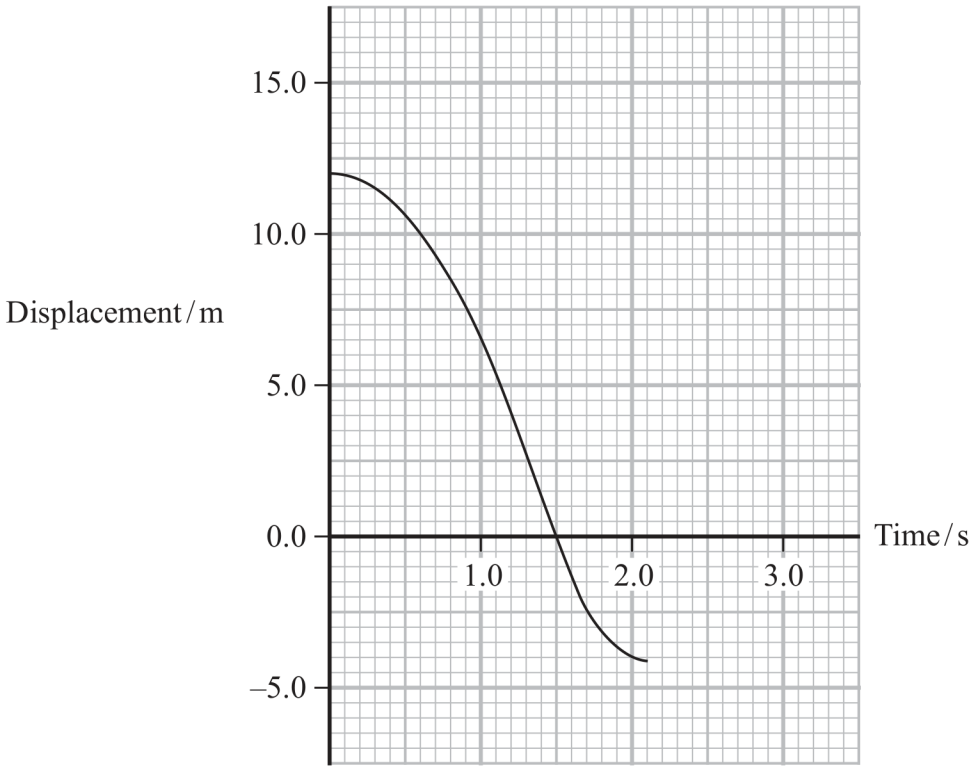
12 A man dives from a platform into a swimming pool. The platform is 12 m above the water surface as shown.



The graph shows the vertical displacement of the man from the water surface, after leaving the platform.



(a) (i) State how the graph shows that the man's initial vertical velocity is zero.

(1)

.....

.....

(ii) Determine the vertical velocity of the man as he enters the water.

(2)

.....

.....

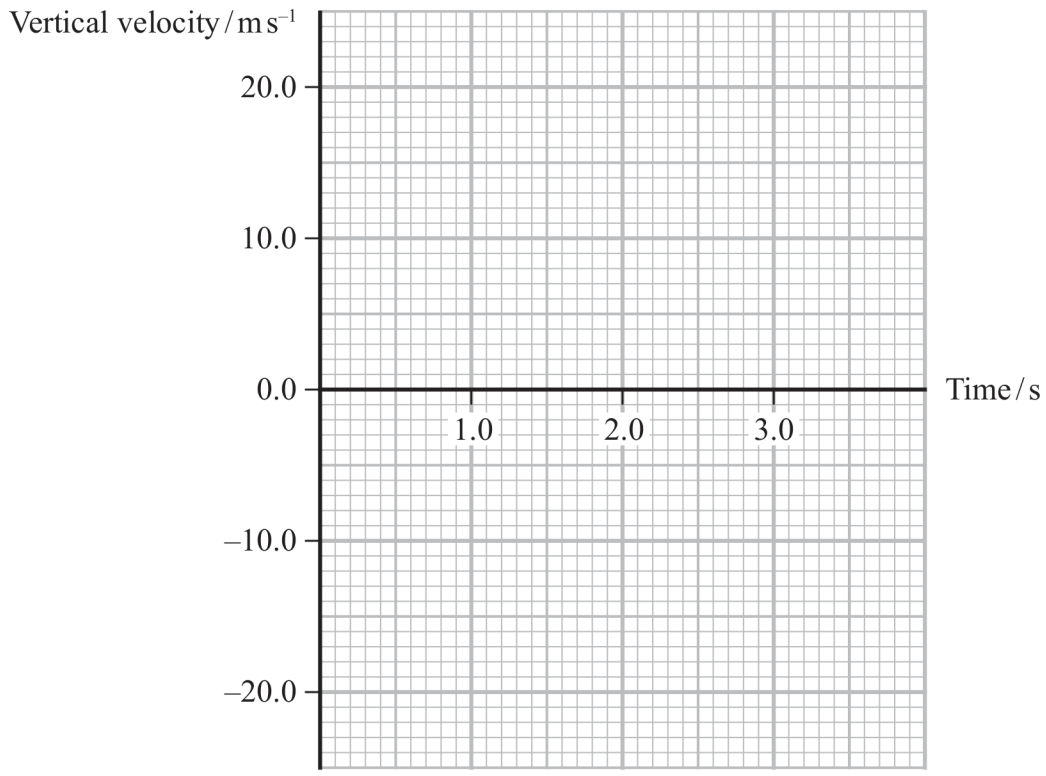
.....

Vertical velocity = ...

(b) Before entering the water, the man has a constant vertical acceleration.
After entering the water, the man has a constant vertical deceleration.

Draw the velocity-time graph for the man on the axes below.

(2)



(Total for Question 12 = 5 marks)