

- 2 A stone is thrown with a horizontal velocity of 20 m s^{-1} from the top of a cliff 30 m high. The path of the stone is shown in Fig. 2.1.

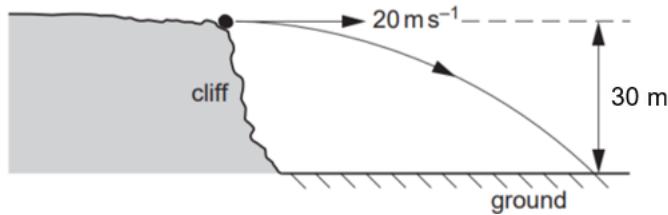


Fig. 2.1

Assume that air resistance is negligible.

- (a) Describe the difference between the displacement of the stone and the distance that it travels.

.....
.....
.....
..... [2]

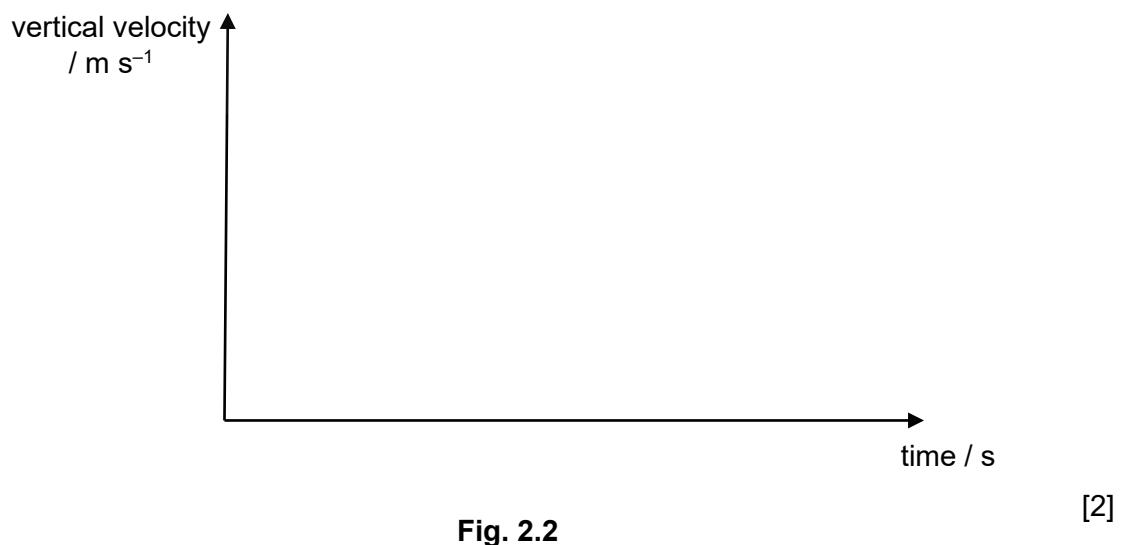
- (b) For this stone, determine the time to fall 30 m,

$$\text{time} = \dots \text{ s} \quad [2]$$

- (c) For this stone, determine the magnitude and direction of the resultant velocity after falling 30 m.

magnitude of resultant velocity = m s^{-1} [2]
direction = [1]

- (d) Sketch a labelled graph in Fig. 2.2 of vertical velocity of the stone and its variation with time for the motion where it is thrown to the point just before it reaches the ground.



[Total: 9]

