3 **(a)** Explain what is meant by *work done*.

.....

.....[1]

(b) A boy on a board B slides down a slope, as shown in Fig. 3.1.

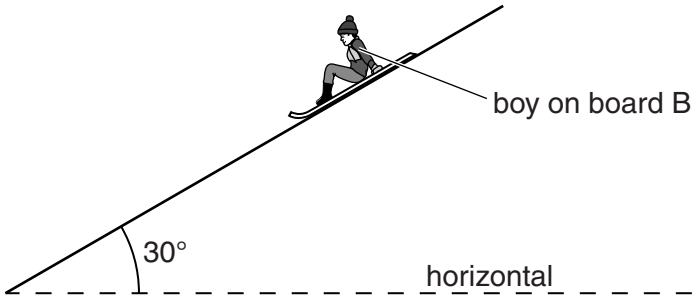

Fig. 3.1

The angle of the slope to the horizontal is 30°. The total resistive force F acting on B is constant.

(i) State a word equation that links the work done by the force F on B to the changes in potential and kinetic energy.

.....

.....[1]

(ii) The boy on the board B moves with velocity v down the slope. The variation with time t of v is shown in Fig. 3.2.

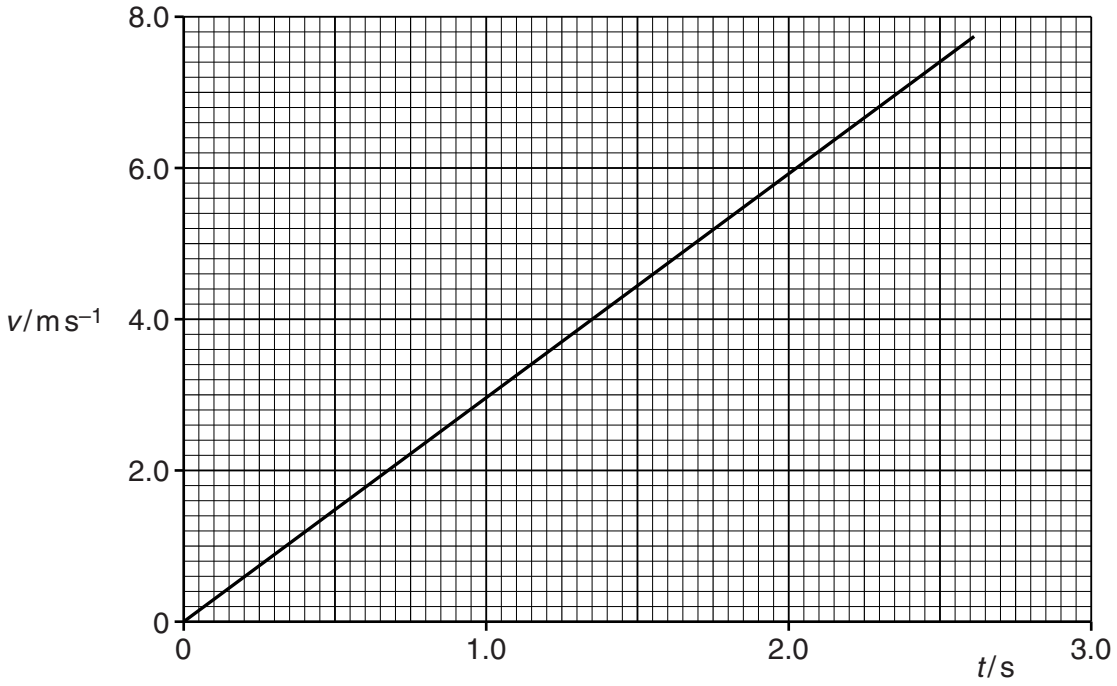

Fig. 3.2

The total mass of B is 75 kg.
For B, from $t = 0$ to $t = 2.5$ s,

1. show that the distance moved down the slope is 9.3 m,

[2]

2. calculate the gain in kinetic energy,

gain in kinetic energy = ... J [3]

3. calculate the loss in potential energy,

loss in potential energy = ... J [3]

4. calculate the resistive force F.

F = ... N [3]