1 An object is launched at a speed of 30 m s^{-1} at an angle of 30° from a horizontal surface, as shown in Fig. 1.1.

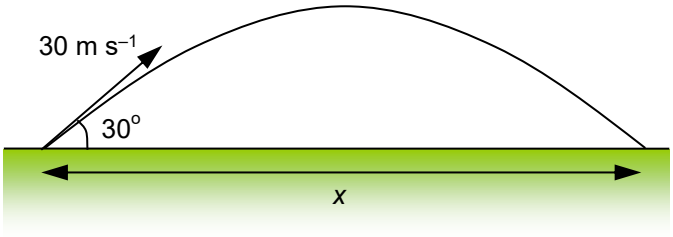

Fig. 1.1

Assume air resistance is negligible.

(a) **(i)** Determine the time taken for the object's entire journey.

time = ... s [2]

(ii) Hence, determine the range *x* of the launch.

x = ... m [1]

(b) On Fig. 1.2 below, sketch the graphs that show the variation with time of the vertical component of the velocity when

(i) air resistance is negligible and label it as **A**, [3]

(ii) air resistance is **not** negligible and label it as **B**. [2]

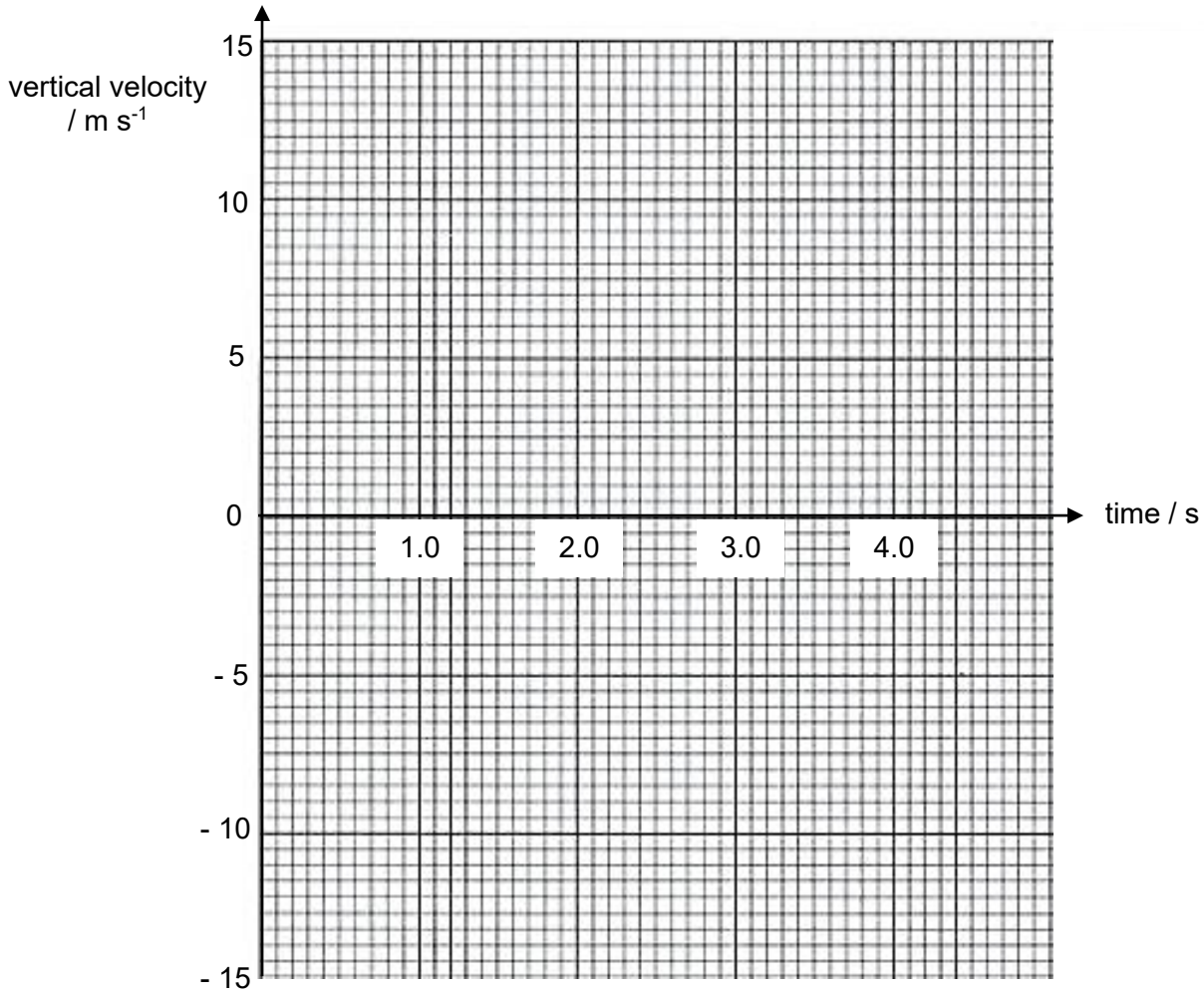

Fig. 1.2

[Total: 8]