1 A student strikes a tennis ball at point P. The tennis ball is initially at rest so that it leaves the racquet at a velocity of 64 m s^{-1} at an angle of 7.0° below the horizontal, as shown in Fig. 1.1.

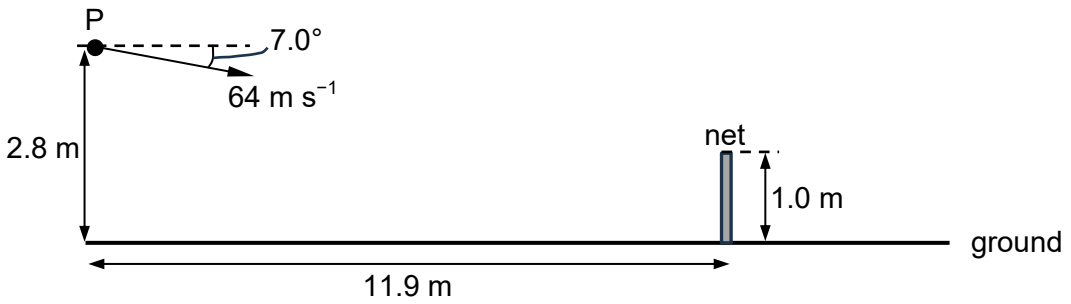

Fig. 1.1 (not to scale)

When struck, the tennis ball is a horizontal distance of 11.9 m from the net and 2.8 m above the horizontal ground.

Assume that air resistance is negligible.

(a) Calculate the time it takes the tennis ball to reach the net.

time = ……..... s [2]

(b) Show that the tennis ball passes over the net.

You should make calculations with clear working.

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……... [3]

(c) Determine the horizontal distance from the base of the net that the tennis ball will land on the ground.

horizontal distance = ……..... m [3]