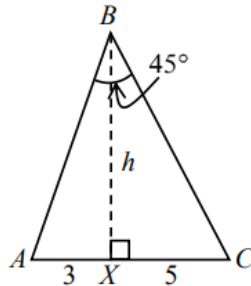# Weekly Challenge [Week 5]

The LENZ Project

Mathematics :

4 The diagram shows a triangle ABC in which angle $ABC = 45°$. Point X is the foot of the perpendicular from B to AC such that $AX = 3$ cm, $CX = 5$ cm and $BX = h$ cm.

(i) Show that $h^2 - 8h - 15 = 0$. [3]

(ii) Hence find the **exact** value of h. [2]

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Science :

3 (a) State what is meant by a *vector* quantity.

………………………………………………………………………………………………..…………

……………………………………………………………………………………………….......... [1]

(b) An aircraft is travelling in the wind. Fig. 3.1 shows the velocity of the aircraft is 85 m s^{-1} and the velocity of the wind is 30 m s^{-1}.

Fig. 3.1
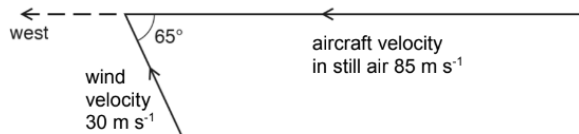
Using a scaled diagram, determine the direction and magnitude of the resultant velocity of the aircraft.