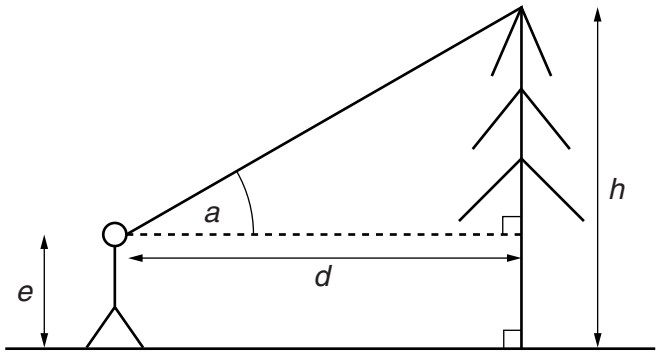
1 Pali wants to find the height, h m, of a tree.
He stands a distance, d m, from the tree.
Then he measures the angle, a, of the top of the tree from the horizontal.
His friend then measures the height, e m, of Pali's eye from the ground.



Not to scale

(a) Show that the height of the tree is given by this formula.

$h = e + d \tan a$ **[2]**

(b) When Pali stands 25 m from the tree, angle $a = 32°$.
The height of his eye above the ground is 1.7 m.

Use the formula $h = e + d \tan a$ to find the height of the tree.

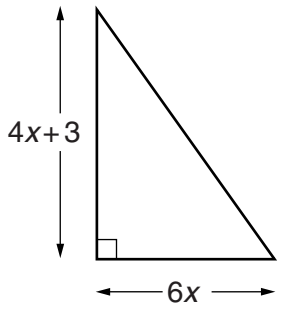
(b) _____ m **[2]**

(c) Rearrange this formula to make a the subject.

$h = e + d \tan a$

(c) _____ **[3]**

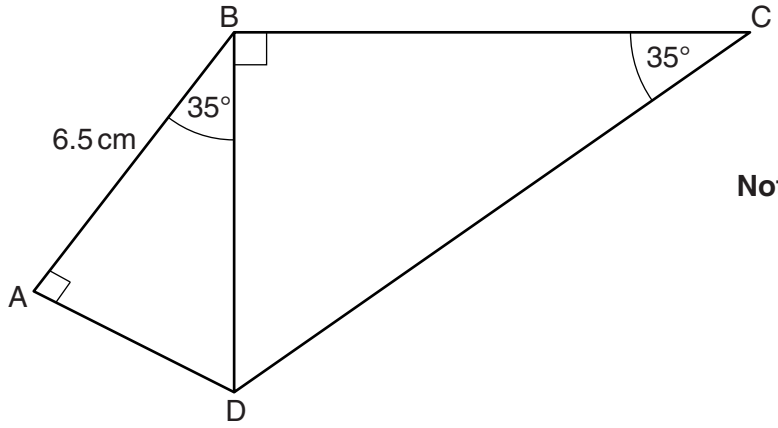
2 In this question, all lengths are in centimetres.



Work out the area of this triangle.
Give your answer in the form $ax^2 + bx$.

_____ cm^2 **[3]**

3 ABCD is a quadrilateral.
Angles BAD and DBC are both right angles.
Angles ABD and BCD are both 35°.
AB = 6.5 cm.

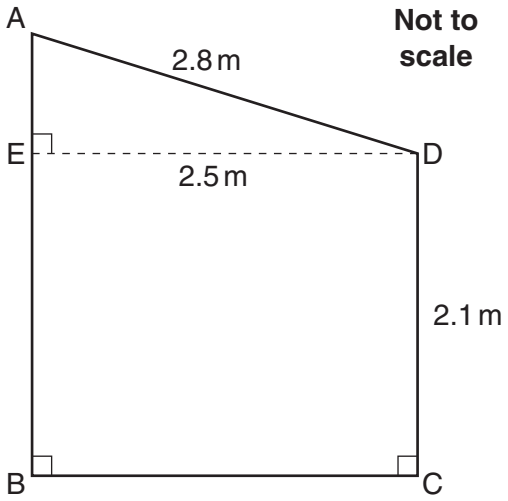


Not to scale

Calculate the length of CD.

_____ cm **[6]**

4 Sean is building a shed.
This diagram shows the end view of his shed.
The width ED of the shed is 2.5 m.
The height CD of the front of the shed is 2.1 m.



(a) Sean makes the roof AD 2.8 m long.

Calculate the height AB of the back of the shed.

(a) _____ m **[4]**

(b) For a good run-off of water from a roof, the angle of slope with the horizontal ED should be at least 15°.

Calculate whether the roof of Sean's shed has a good run-off.
Show how you decide. **[3]**