11. The diagram shows the side view of a dormer window on the roof of a house. The lengths AB and BC are 138 cm and 177 cm respectively. Calculate the angle which the roof makes with the horizontal, marked as x on the diagram.

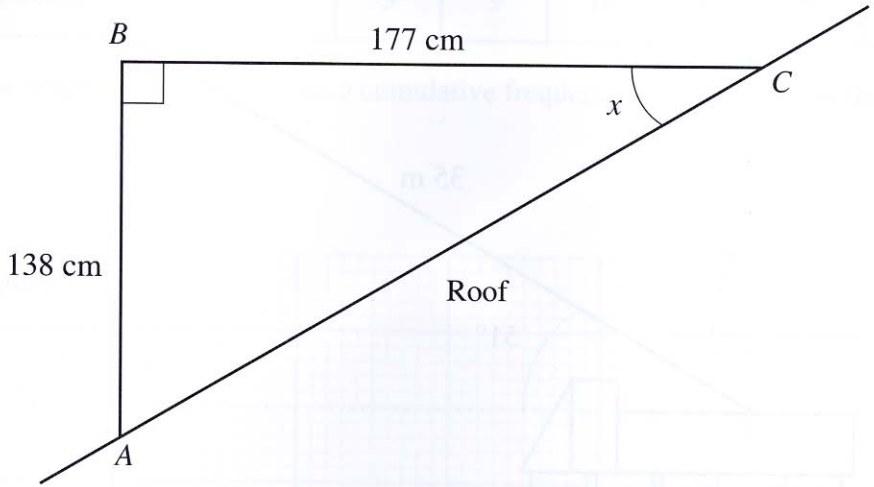

Diagram not drawn to scale.

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[3]

12. A fire engine extends its ladder to 35 metres at an angle of 51° to the horizontal in order to reach the top of a building.
Calculate the height of the top of the building above the level of the foot of the ladder.

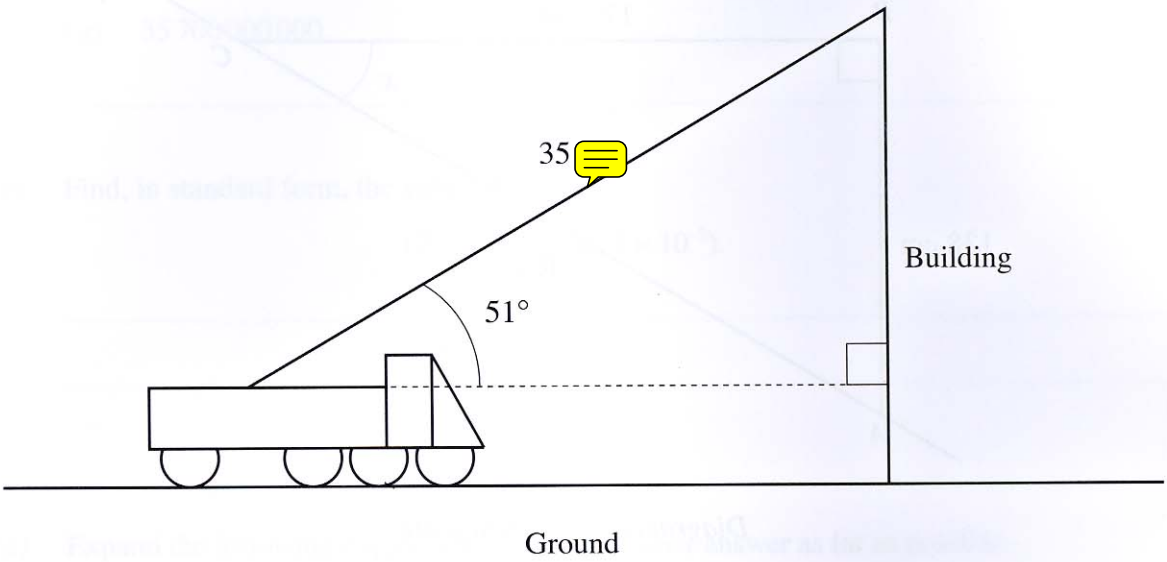

Diagram not drawn to scale.

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[3]

11. A building stands on the horizontal ground *ABCD*. The points *A* and *B* are respectively 54 metres and 36 metres from the foot of the vertical face, *EC*, of the building. The angle of elevation of the top of the building from the point *A* is 43°.

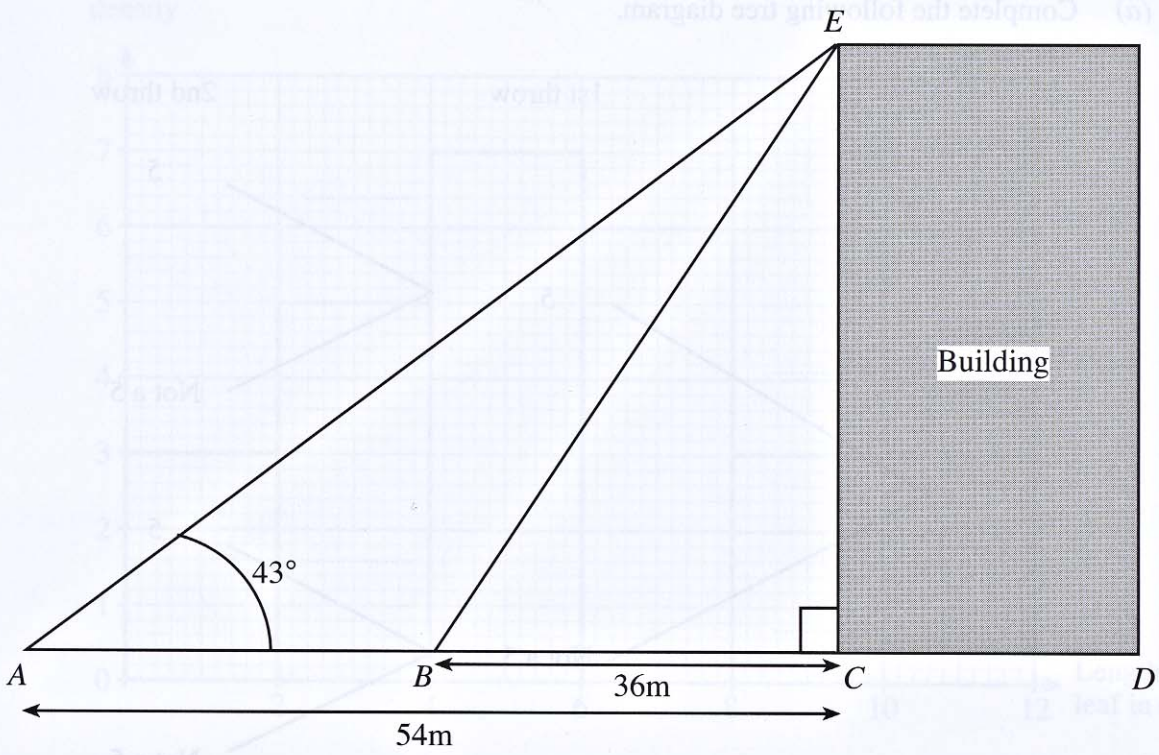

Diagram not drawn to scale.

(a) Calculate the height of the building.

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[3]

(b) Calculate the angle of elevation of the top of the building from the point *B*.

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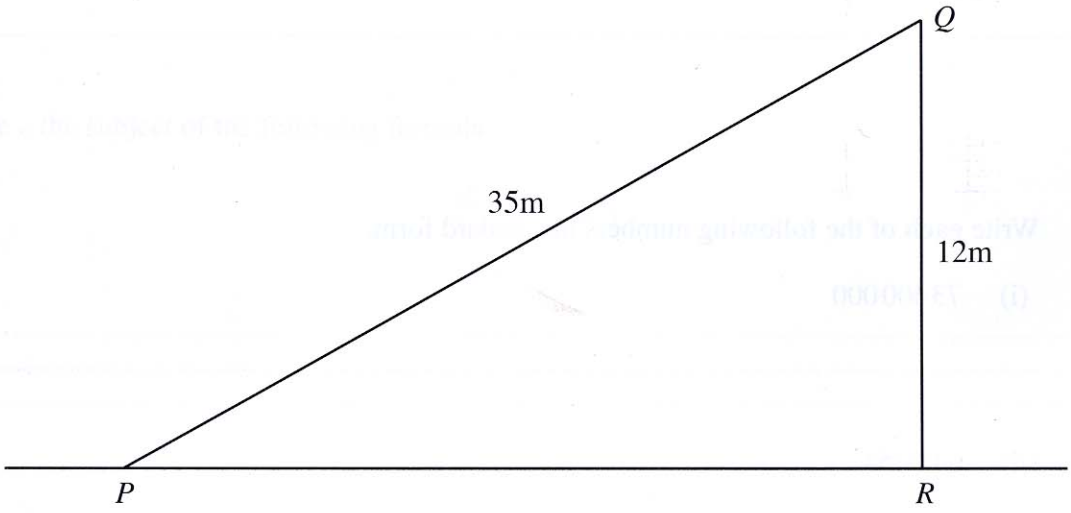
[3]

9. *(a)* The angle of elevation of the top of a building from a point 75 m horizontally from the foot of the building is 48°. Calculate the height of the building, giving your answer to an appropriate degree of accuracy.

[3]

(b) Triangle PQR is right-angled at R. The length of PQ is 35 m and the length of QR is 12 m. Calculate the size of $\hat{QPR}$.



[3]

10. A vertical flagpole, BDC, stands on horizontal ground ABE. It is supported by two ropes AC and DE. The length of AC is 13·5 m, and the distance CD is 4·7 m. The rope AC makes an angle of 62° with the ground and the rope DE is fixed to the ground at E such that BE is 8·4 m.

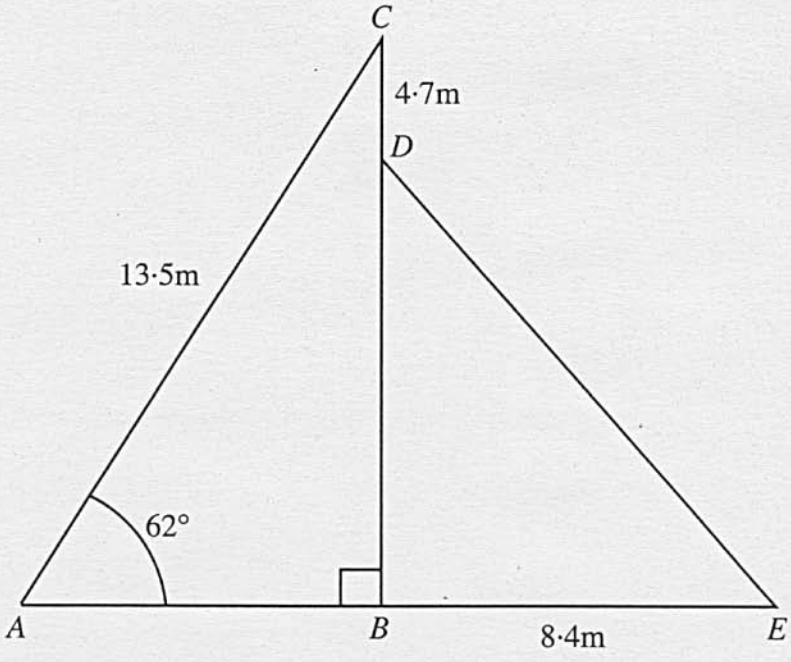


Diagram not drawn to scale.

Calculate the size of $\hat{BDE}$.

[6]

11. In the diagram below, $A\hat{B}C = 90°$, $B\hat{E}D = 90°$, $AB = 17{\cdot}8$ m, $CD = 23{\cdot}6$ m, $BE = 21{\cdot}4$ m and $B\hat{A}C = 37°$.

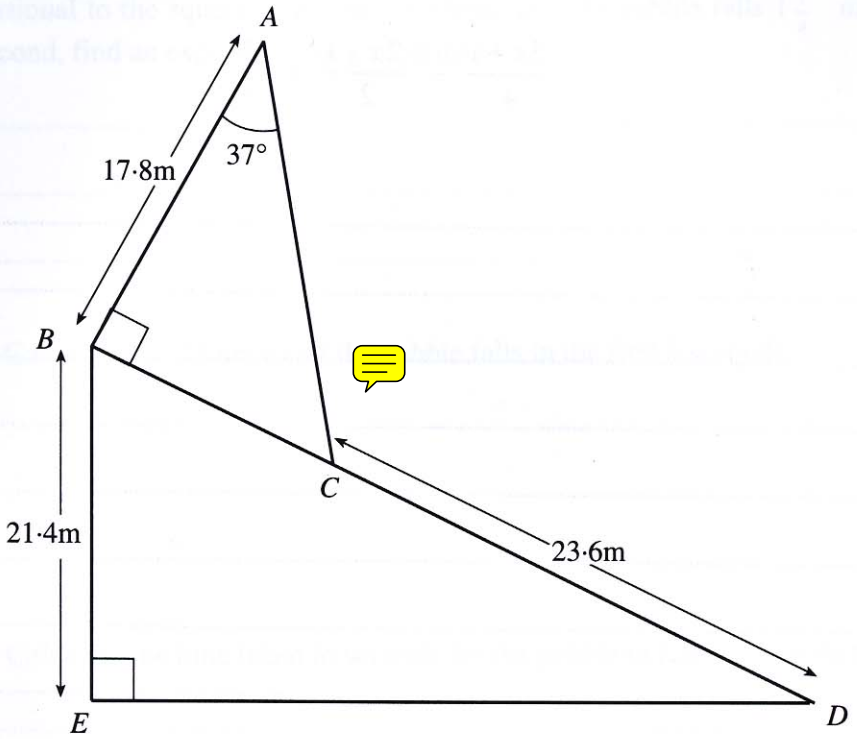


Diagram not drawn to scale.

Calculate the size of $B\hat{D}E$.

[5]

18.

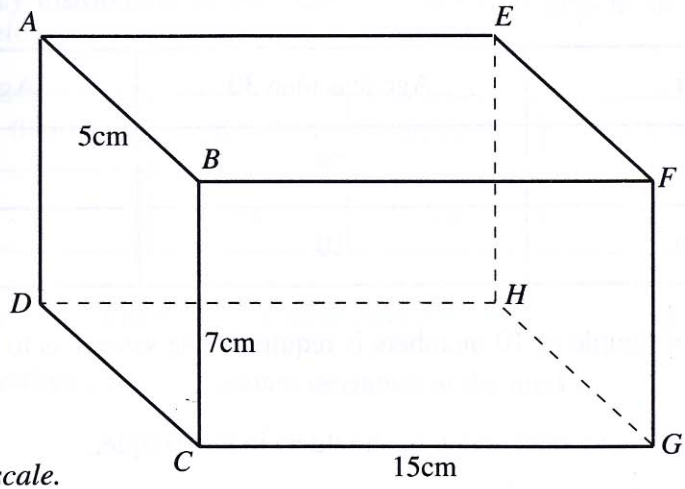


Diagram not drawn to scale.

The diagram shows a cuboid.

$AB = 5$ cm, $BC = 7$ cm and $CG = 15$ cm.

Calculate $A\hat{G}D$, giving your answer to an appropriate degree of accuracy.

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[4]