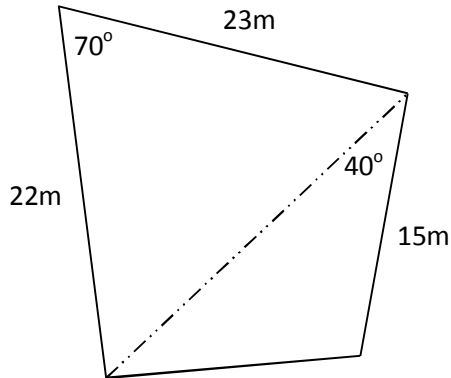


Trigonometry (Exam Type Questions)

1. The sketch below shows a plot of land purchased to build a house on.

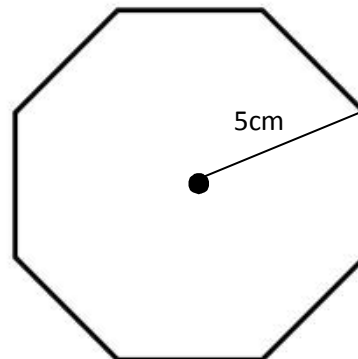


At present the land is valued
£280 per square metre.

Calculate the value of the plot shown to the nearest £10.

2. The distance from the centre of a regular octagon to one of its vertexes is 5 cm.

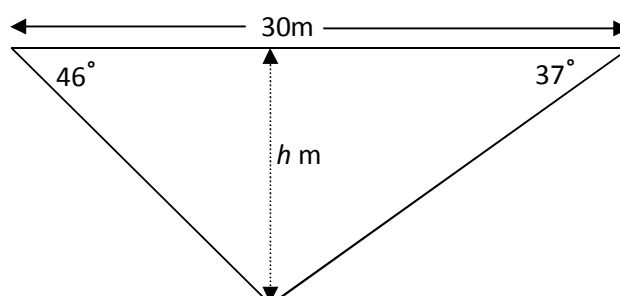
Calculate the area of the octagon.



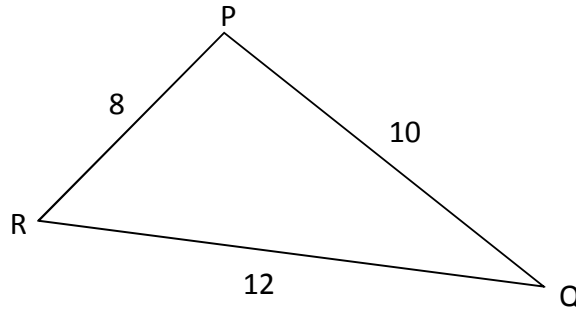
3. Two security cameras are positioned on a beam in a warehouse 30 metres apart.

One camera has an angle of depression of 37° and the other camera has an angle of depression of 46° .

Calculate the height, h metres, of the beam above the ground.



4. Triangle PQR has sides with lengths, in centimetres, as shown.

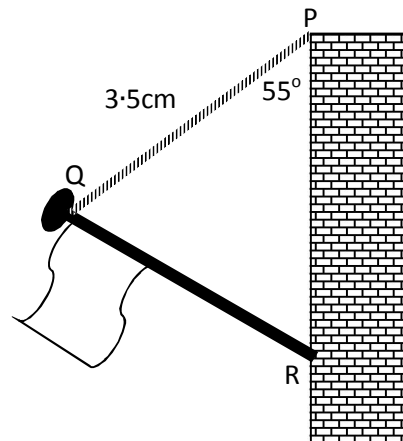


Show clearly that $\cos PQR = 0.75$.

5. A flagpole is attached to a wall and is supported by a wire PQ as shown in the diagram.

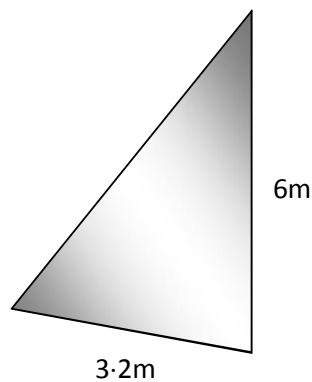
The wire is 3.5 metres long and makes an angle of 55° with the vertical wall.

Given that the point P is 4.5 metres above R in the diagram, calculate the length of the flagpole.



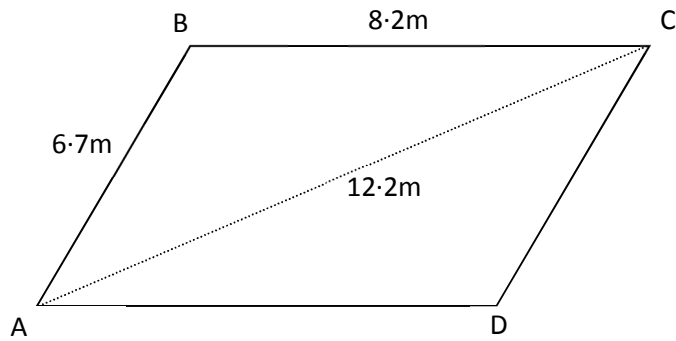
6. A triangular sail designed for a racing yacht is shown below.

Two of its edges measure 6 metres and 3.2 metres.



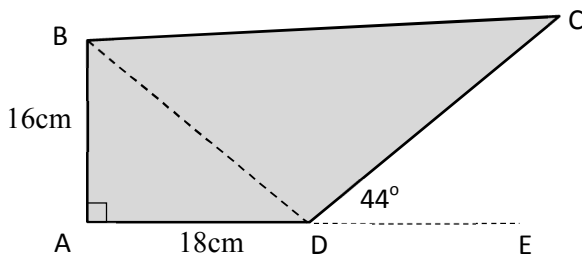
Given that the sail has a **perimeter** of 15.5 metres, calculate the **area** of the sail.

7. A sketch of Lee's garden is shown below.



- (a) Calculate the size of angle ABC.
- (b) Hence, or otherwise, calculate the area of the garden.

8. The diagram below shows a steel plate ABCD.



$$AB = 16 \text{ cm}, AD = 18 \text{ cm}$$

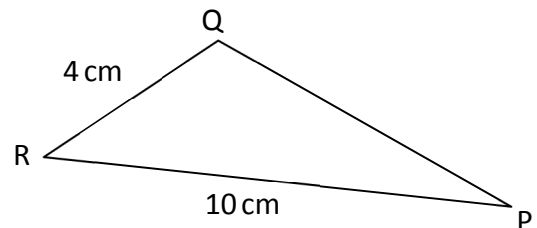
$$\angle DAB = 90^\circ$$

- (a) Calculate the length of BD correct to 1 decimal place.
- (b) Find the size of angle BDC correct to the nearest degree.
- (c) Hence calculate the length of BC given that DC = 25 cm.

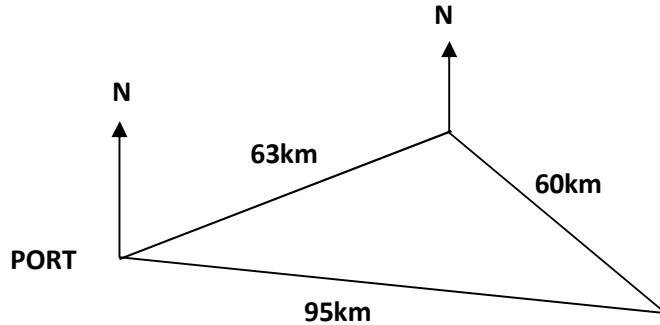
9. In triangle PQR, PR = 10 cm QR = 4 cm.

The perimeter of the triangle is 22 cm.

Find the size of angle PQR.



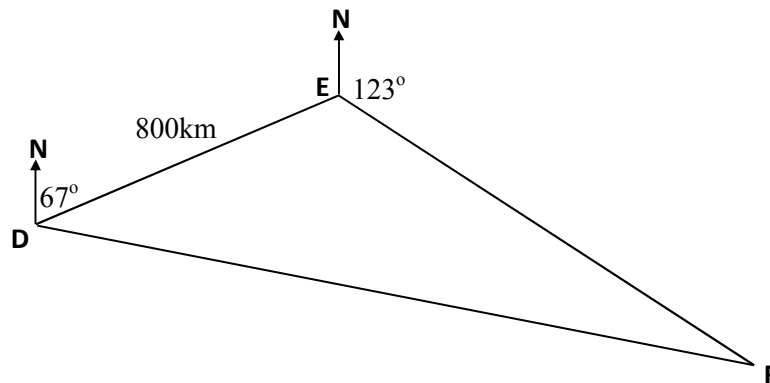
10. A ship leaves a port on a bearing of 073° and sails 63km. The ship then changes course and sails a further 60km on a bearing of 110° where it anchors. When it anchors it is 95km from the port. Calculate the bearing of the ship from the port at this point.



11. A ship's captain is plotting a course for the next voyage.

He knows that he has to sail from Port D to port E on a bearing of 067° for a distance of 800km and from there to Port F on a bearing of 123° .

His course is shown in the diagram below.



- (a) Make a copy of the diagram and calculate the size of angle DEF.
- (b) New instructions come through which inform the captain that he has to sail directly from Port D to Port F, a distance of 1750km.

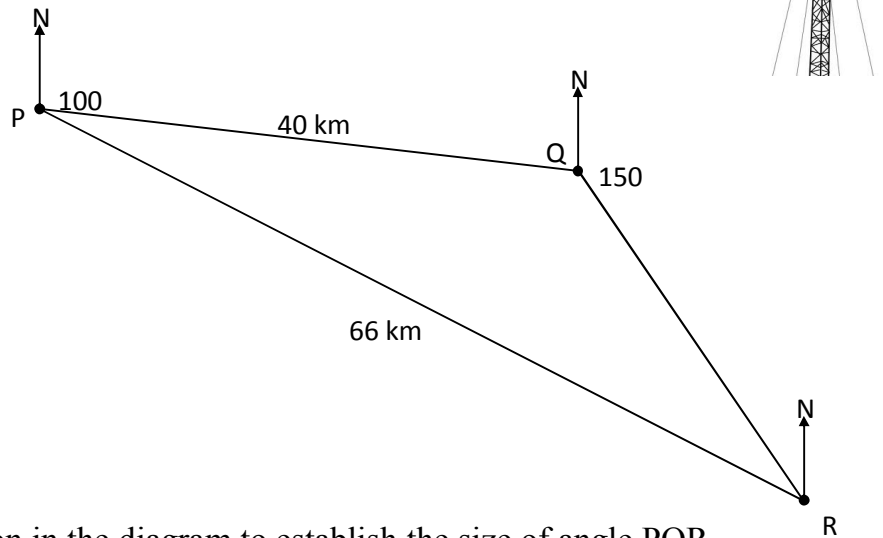
Calculate the bearing on which the ship should sail in order to carry out these instructions. Give the bearing to the nearest degree.

12. The diagram below, which is not drawn to scale, represents the positions of three mobile phone masts.

Mast Q is on a bearing of 100° from mast P and is 40km away.

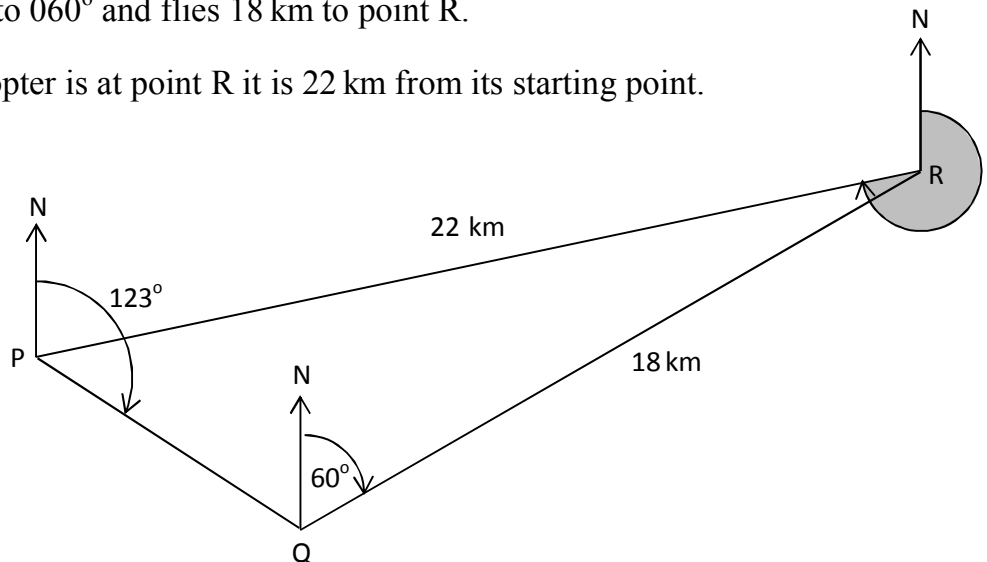
The bearing of mast R from mast Q is 150° .

Masts P and R are 66km apart.



- (a) Use the information in the diagram to establish the size of angle PQR.
- (b) Hence find the bearing of mast P **from** mast R.
13. A helicopter sets out from its base P and flies on a bearing of 123° to point Q where it changes course to 060° and flies 18 km to point R.

When the helicopter is at point R it is 22 km from its starting point.



- (a) Find the size of angle PQR.
- (b) Calculate the bearing on which the helicopter must fly to return directly to its base i.e. the shaded angle in the diagram.