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National 5 Maths
Cosine Rule

SQA past paper and specimen paper questions and answers by topic

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In a race, boats sail round three buoys represented by A, B, and C in the diagram below.
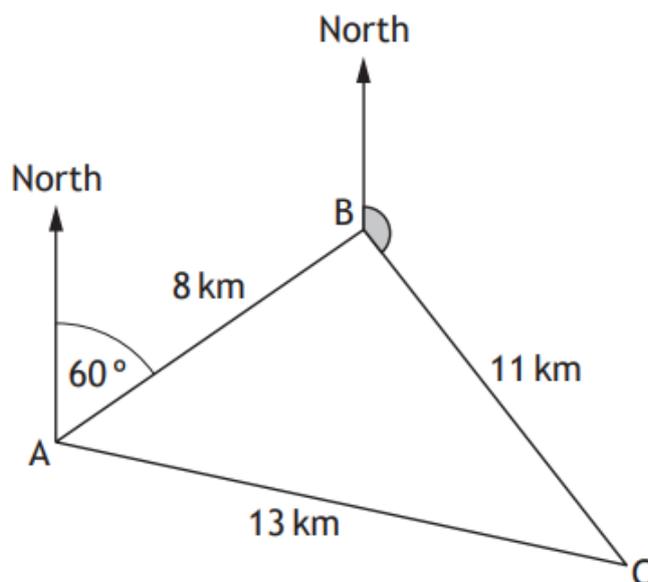
B is 8 kilometres from A on a bearing of 060°.

C is 11 kilometres from B.

A is 13 kilometres from C.

(a) Calculate the size of angle ABC.   **3**

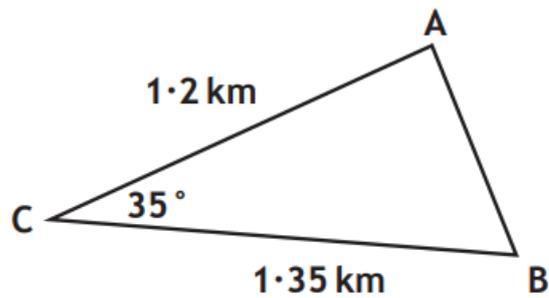(b) Hence find the size of the shaded angle.   **2**

Answers:

(a)   84.8°

(b)   155.2°

Triangle ABC is shown below.
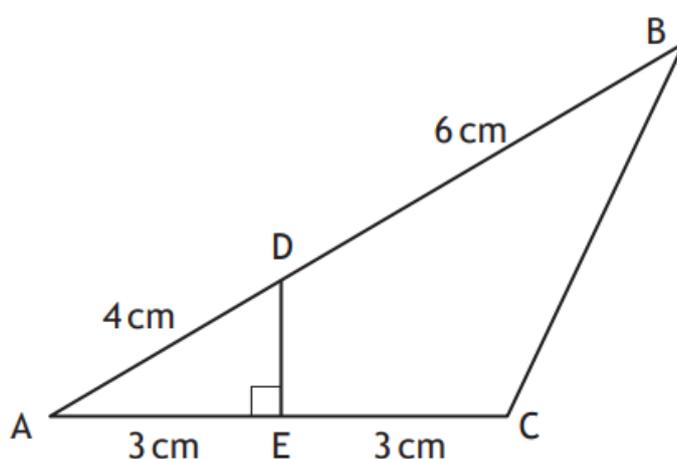

Calculate the length of AB. **3**

Answer:

0.78 km

In the diagram below:

- DE is perpendicular to AC.

- AD = 4 centimetres.

- DB = 6 centimetres.

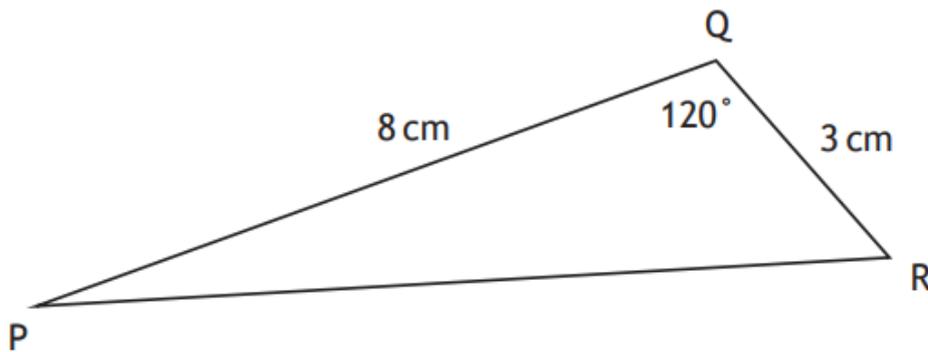- AE = EC = 3 centimetres.

Calculate the length of BC.

Give your answer correct to one decimal place.   **4**

Answer:

6.8 cm

In triangle PQR, PQ = 8 centimetres, QR = 3 centimetres and angle PQR = 120°.
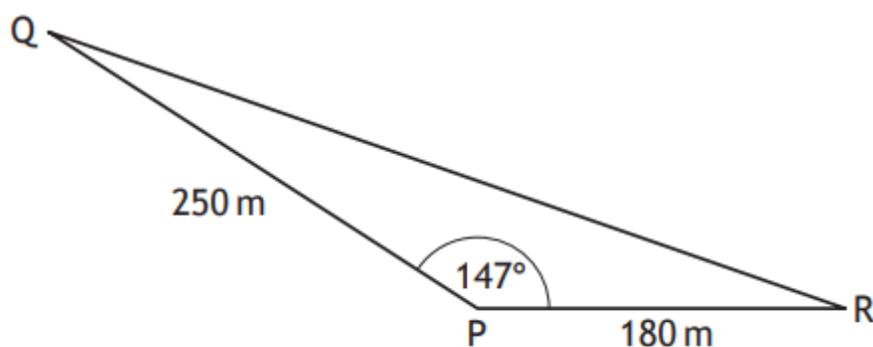

Calculate the length of PR. **3**

Answer:

9.8 cm

A piece of land is in the shape of a triangle as shown.

- PQ $=250$ metres
- PR $=180$ metres
- angle QPR $=147°$

The owner wishes to build a fence along the side QR.

Calculate the length of the fence. **3**

Answer:

412.8 metres
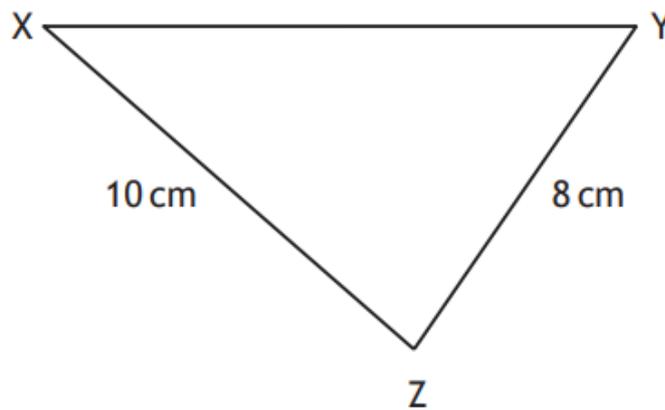
In triangle XYZ:

- XZ = 10 centimetres
- YZ = 8 centimetres
- $\cos Z = \dfrac{1}{8}$.
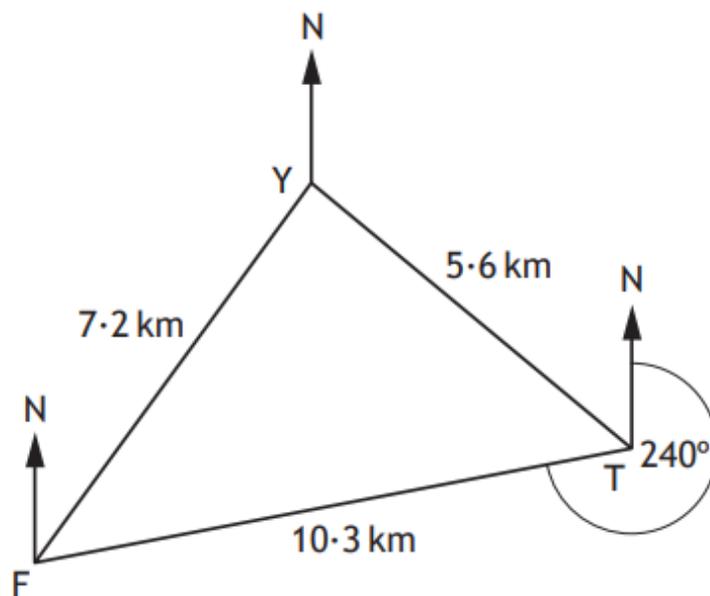

Calculate the length of XY.   **3**

Answer:

12 cm

A ferry and a trawler receive a request for help from a stranded yacht.

On the diagram the points F, T and Y show the positions of the ferry, the trawler and the yacht respectively.

- FY is 7·2 kilometres.
- TY is 5·6 kilometres.
- FT is 10·3 kilometres.
- F is on a bearing of 240° from T.
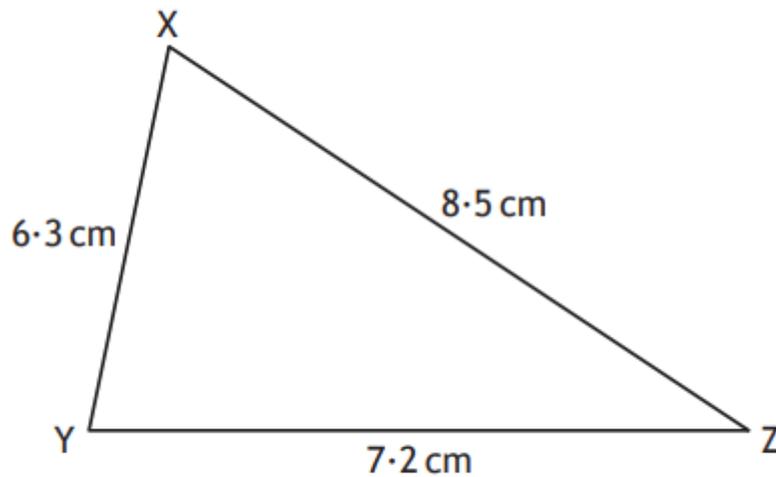
Calculate the bearing of the yacht from the trawler.   4

Answer:

282.1°

Triangle XYZ is shown below.

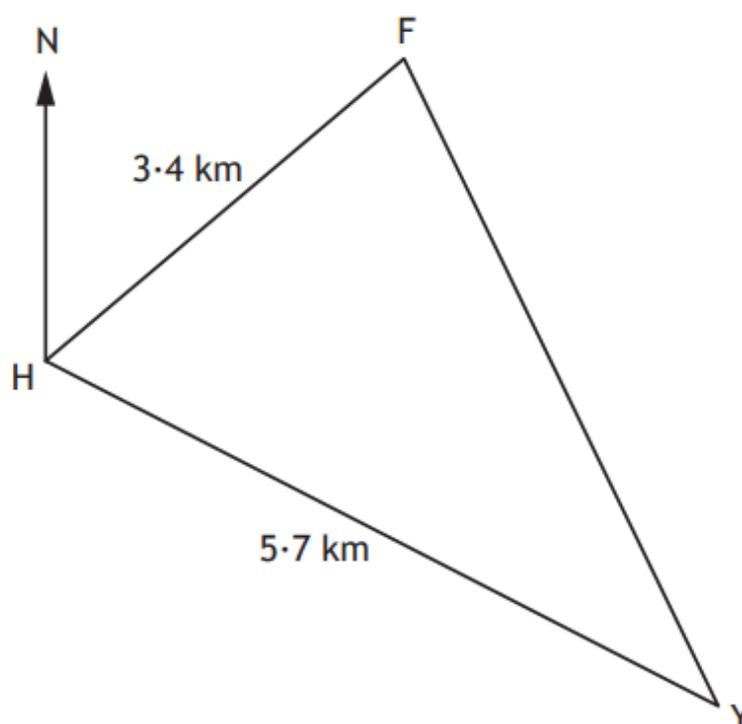Calculate the size of the smallest angle in triangle XYZ.   **3**

Answer:

46.4°

A fishing boat and a yacht left a harbour at the point H.

The fishing boat travelled 3·4 kilometres on a bearing of 047° to the point F.

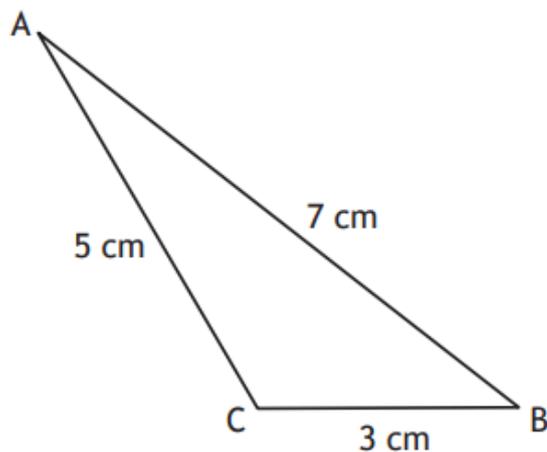The yacht travelled 5·7 kilometres on a bearing of 115° to the point Y.

Calculate the distance between the fishing boat at F and the yacht at Y.   **4**

Answer:

5.4 km

The diagram shows triangle ABC.

A

5 cm

7 cm

C

3 cm

B

- AB = 7 centimetres
- BC = 3 centimetres
- AC = 5 centimetres

Calculate the value of $\cos B$.

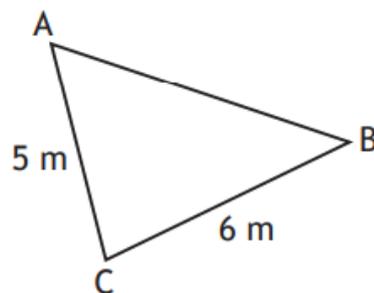Give your answer in its simplest form.   **2**

Answer:

$\dfrac{11}{14}$

In triangle ABC:

- $AC = 5$ metres

- $BC = 6$ metres

- $\cos C = \dfrac{1}{5}$.

Calculate the length of AB. **3**

Answer:

7 m