National 5 Mathematics

Using Trigonometry - Questions

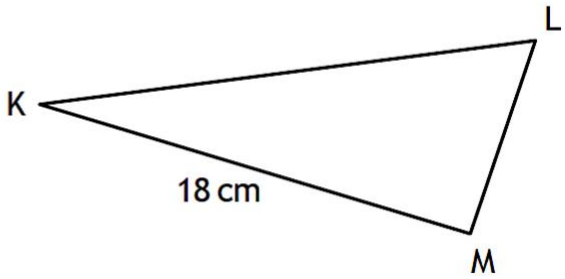
Marks are indicated in brackets after each question number

2014 Paper 1 Question 5, (3)

In triangle KLM

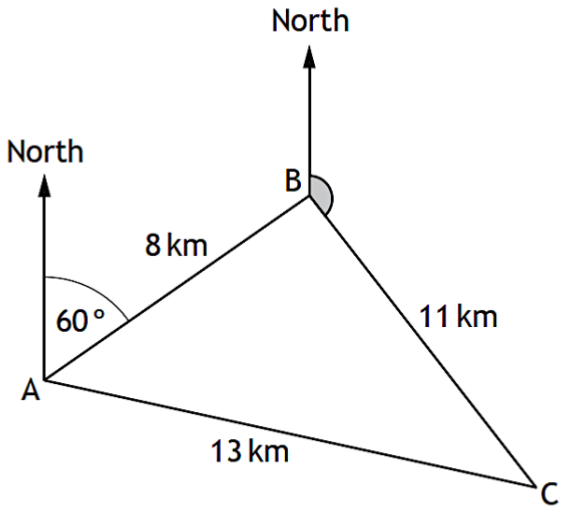
- KM = 18 centimetres
- sin K = 0·4
- sin L = 0·9

Calculate the length of LM.



2014 Paper 2 Question 10, (3) (2)

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.

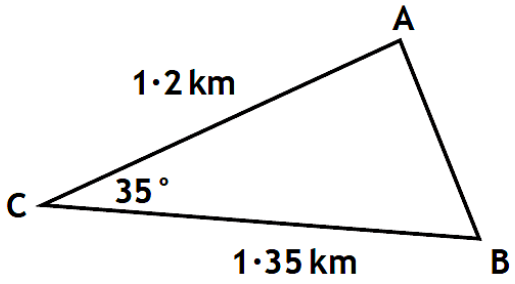
A is 13 kilometres from C.

(a) Calculate the size of angle ABC.

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

2015 Paper 2 Question 3, (3)

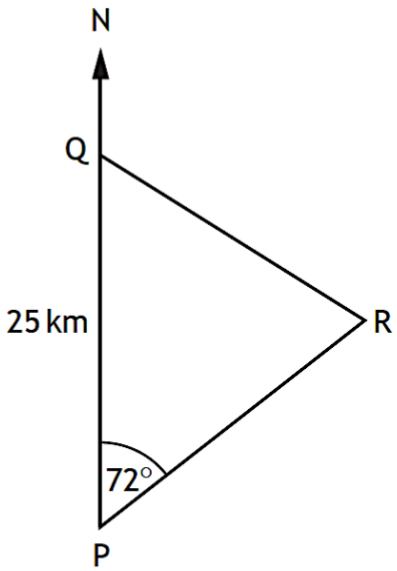
Triangle ABC is shown below.



Calculate the length of AB.

2015 Paper 2 Question 13, (4)

In the diagram below P, Q and R represent the positions of Portlee, Queenstown and Rushton respectively.



Portlee is 25 kilometres due South of Queenstown.
From Portlee, the bearing of Rushton is 072°.
From Queenstown, the bearing of Rushton is 128°.

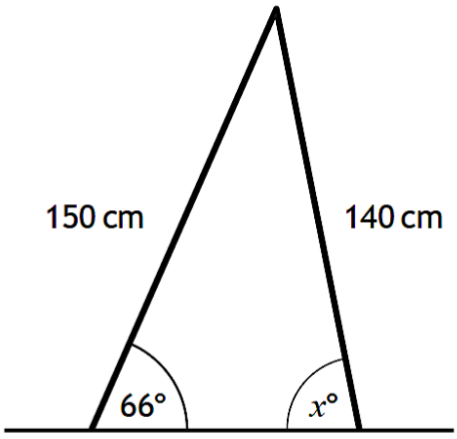
Calculate the distance between Portlee and Rushton.

Do not use a scale drawing.

2016 Paper 2 Question 8, (3)

A set of stepladders has legs 150 centimetres and 140 centimetres long.

When the stepladder is fully open, the angle between the longer leg and the ground is 66°.

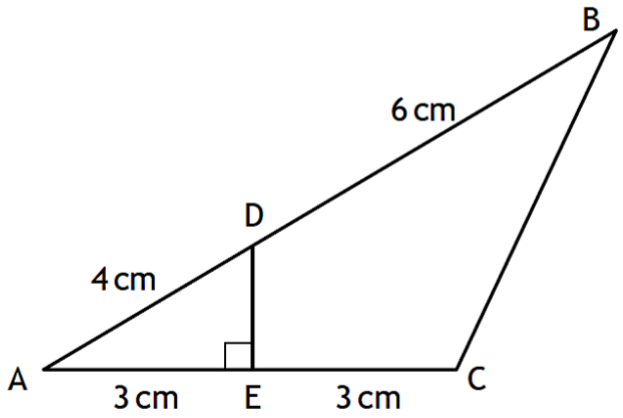


Calculate $x°$, the size of the angle between the shorter leg and the ground.

2016 Paper 2 Question 16, (4)

In the diagram below:

- DE is perpendicular to AC.
- AD = 4 centimetres.
- DB = 6 centimetres.
- AE = EC = 3 centimetres.



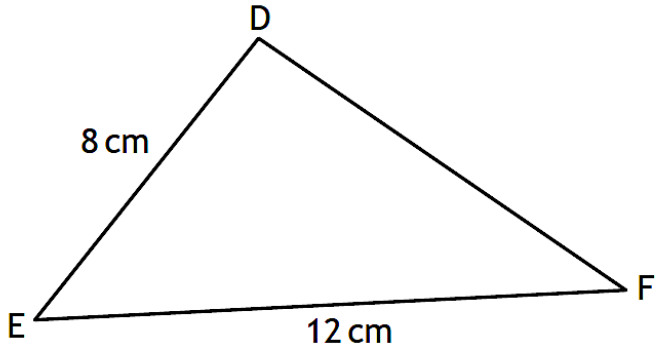
Calculate the length of BC.

Give your answer correct to one decimal place.

2017 Paper 1 Question 7, (2)

In triangle DEF:

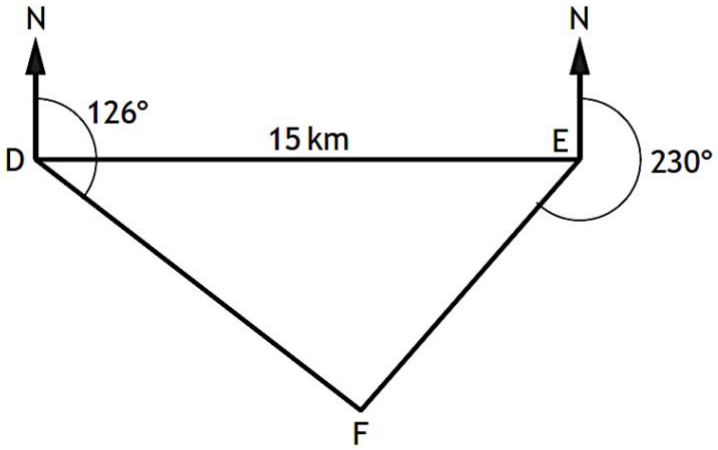
- DE = 8 centimetres
- EF = 12 centimetres
- $\sin E = \frac{2}{3}$



Calculate the area of triangle DEF.

2017 Paper 2 Question 10, (4)

In the diagram below D, E and F represent the positions of Dunbridge, Earlsford and Fairtown respectively.



Dunbridge is 15 kilometres west of Earlsford.

From Dunbridge, the bearing of Fairtown is 126°.

From Earlsford the bearing of Fairtown is 230°.

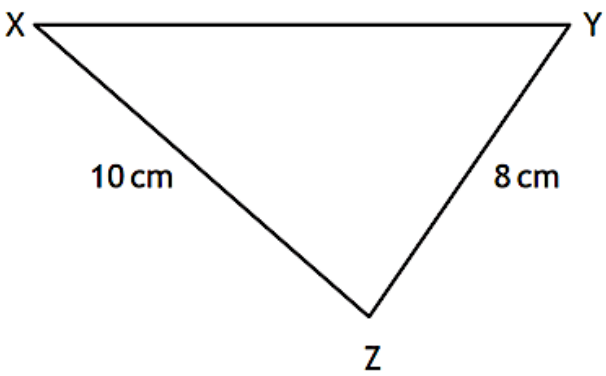
Calculate the distance between Dunbridge and Fairtown.

Do not use a scale drawing.

2018 Paper 1 Question 10, (3)

In triangle XYZ:

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

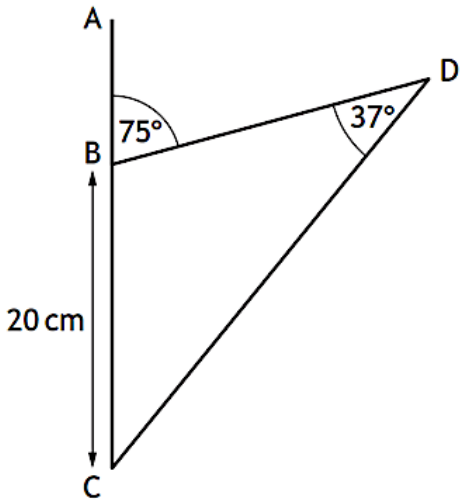


Calculate the length of XY.

2018 Paper 2 Question 9, (3)

In this diagram:

- angle ABD = 75°
- angle BDC = 37°
- BC = 20 centimetres.

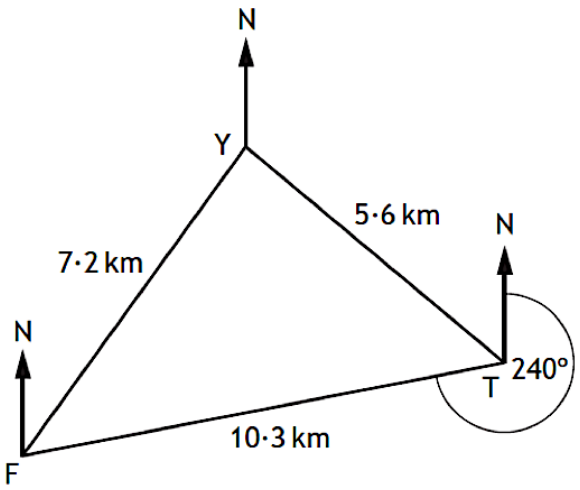


Calculate the length of DC.

2018 Paper 2 Question 13, (4)

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.

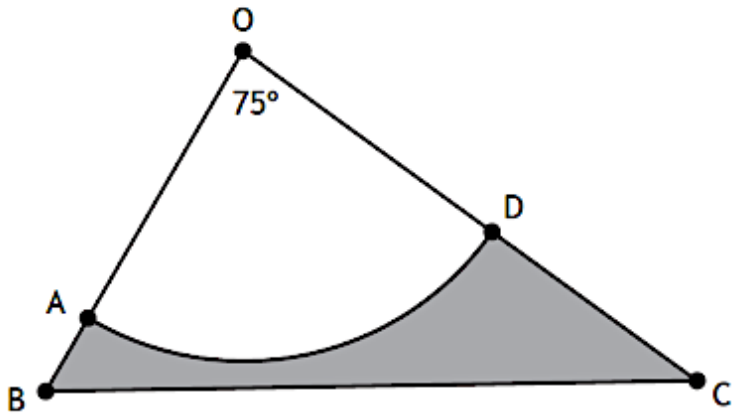


- FY is 7·2 kilometres.
- TY is 5·6 kilometres.
- FT is 10·3 kilometres.
- F is on a bearing of 240° from T.

Calculate the bearing of the yacht from the trawler.

2018 Paper 2 Question 17, (5)

In the diagram below AOD is a sector of a circle, with centre O, and BOC is a triangle.



In sector AOD:

- radius = 30 centimetres
- angle AOD = 75°.

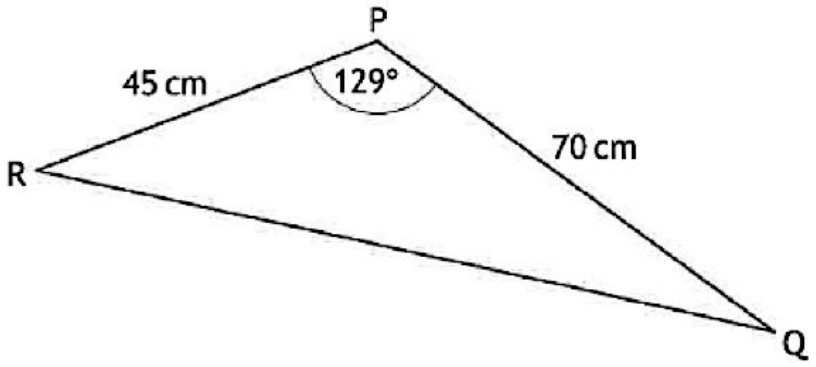
In triangle OBC:

- OB = 38 centimetres
- OC = 55 centimetres.

Calculate the area of the shaded region, ABCD.

2019 Paper 2 Question 3, (2)

The diagram shows triangle PQR.

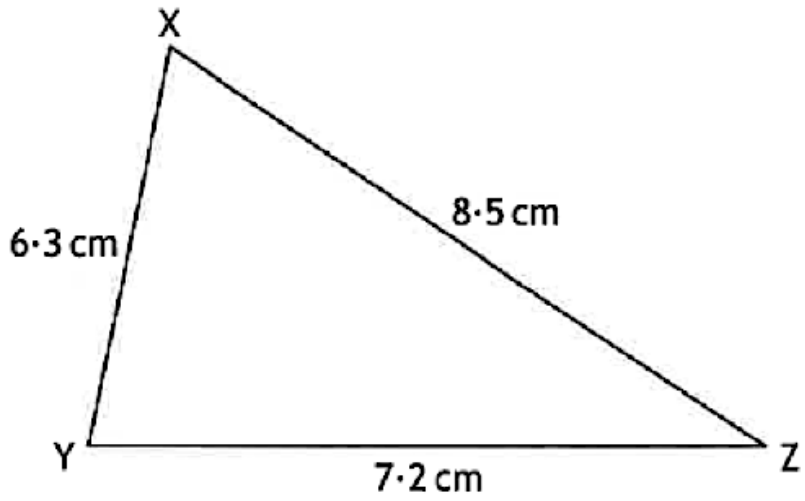


- PR = 45 centimetres
- PQ = 70 centimetres
- Angle QPR = 129°

Calculate the area of triangle PQR.

2019 Paper 2 Question 7, (3)

Triangle XYZ is shown below.

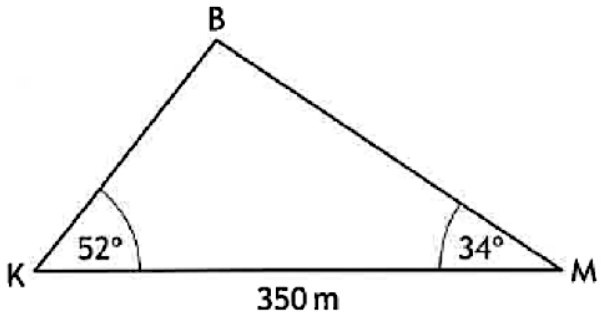


Calculate the size of the smallest angle in triangle XYZ.

2019 Paper 2 Question 19, (5)

Katy and Mona are looking up at a hot-air balloon.

In the diagram below, K, M and B represent the positions of Katy, Mona and the balloon respectively.

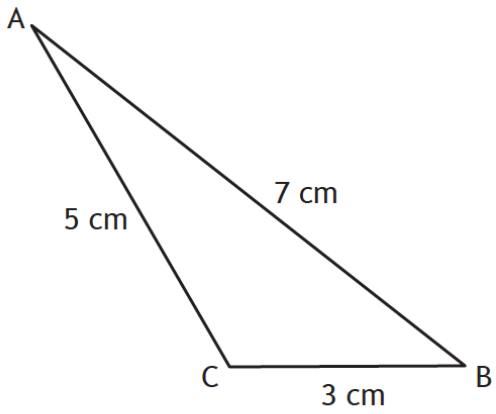


- The angle of elevation of the balloon from Katy is 52°
- The angle of elevation of the balloon from Mona is 34°
- Katy and Mona are 350 metres apart on level ground

Calculate the height of the hot-air balloon above the ground.

2022 Paper 1 Question 9, (2)

The diagram shows triangle ABC.



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

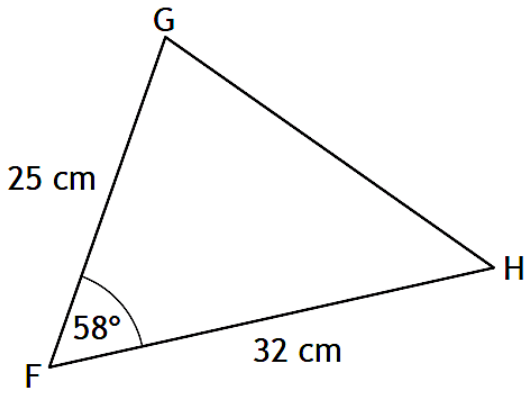
Calculate the value of $\cos B$.

Give your answer in its simplest form.

2022 Paper 2 Question 6, (2)

The diagram shows triangle FGH.

- FG = 25 centimetres
- FH = 32 centimetres
- Angle GFH = 58°

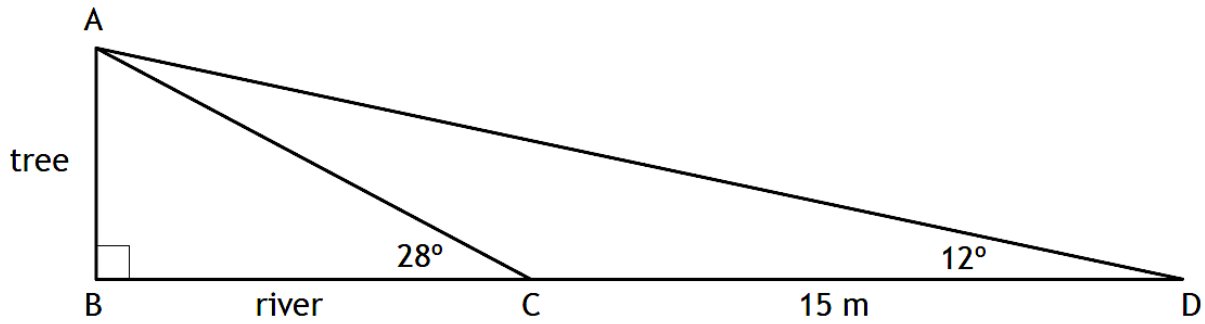


Calculate the area of triangle FGH.

2022 Paper 2 Question 14, (5)

The width of a river is represented by BC in the diagram below.

AB represents a tree on the river bank.



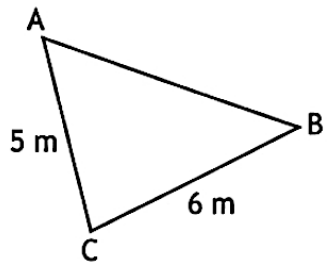
- From C, the angle of elevation to A is 28°.
- From D, the angle of elevation to A is 12°.
- The distance from C to D is 15 metres.
- BCD is a straight line.

Calculate BC, the width of the river.

2023 Paper 1 Question 6, (3)

In triangle ABC:

- AC = 5 metres
- BC = 6 metres
- $\cos C = \frac{1}{5}$.

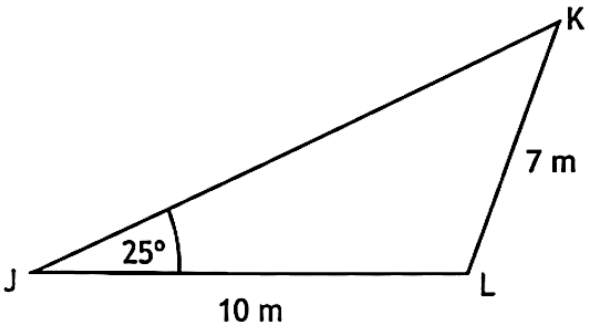


Calculate the length of AB.

2023 Paper 2 Question 4, (3)

The diagram shows triangle JKL.

- Angle KJL = 25°
- JL = 10 metres
- KL = 7 metres

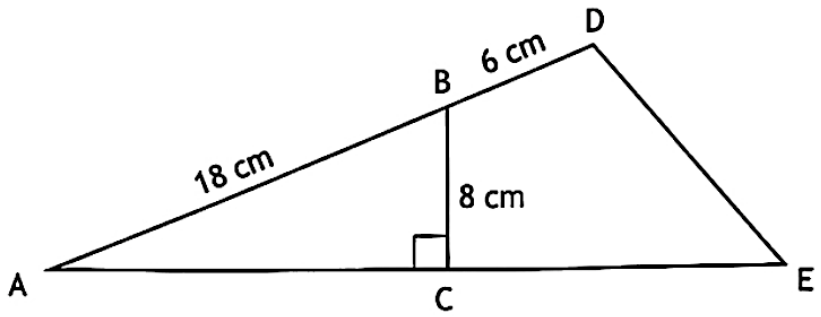


Calculate the size of angle JKL.

2023 Paper 2 Question 15, (4)

In the diagram:

- AC is perpendicular to BC
- AB = 18 centimetres
- BD = 6 centimetres
- BC = 8 centimetres.



The area of triangle ADE is 160 square centimetres.

Calculate the length of AE.