

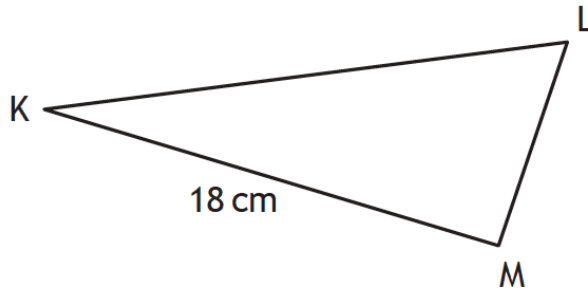
Marks are indicated in brackets after each question number

2014 Paper 1 Question 5, (3)

In triangle KLM

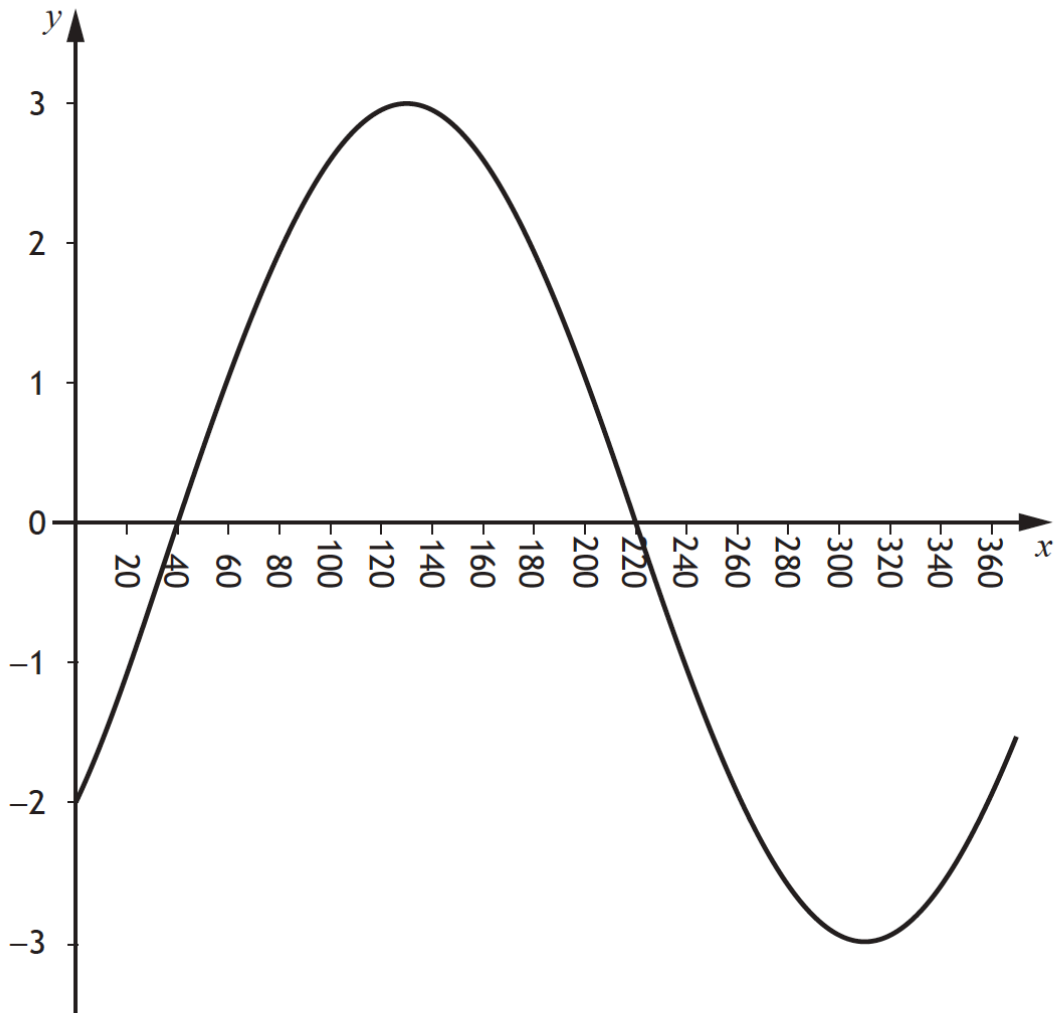
- $KM = 18$ centimetres
- $\sin K = 0.4$
- $\sin L = 0.9$

Calculate the length of LM.



2014 Paper 1 Question 10, (2)

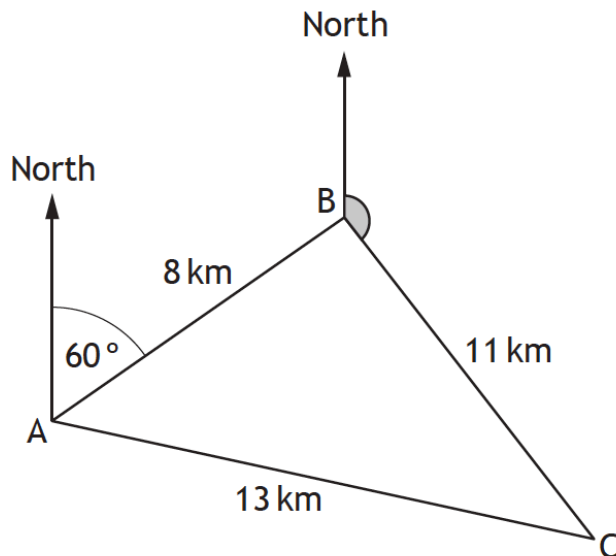
The graph of $y = a \sin(x + b)^\circ$, $0 \leq x \leq 360$, is shown below.



Write down the values of a and b .

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.

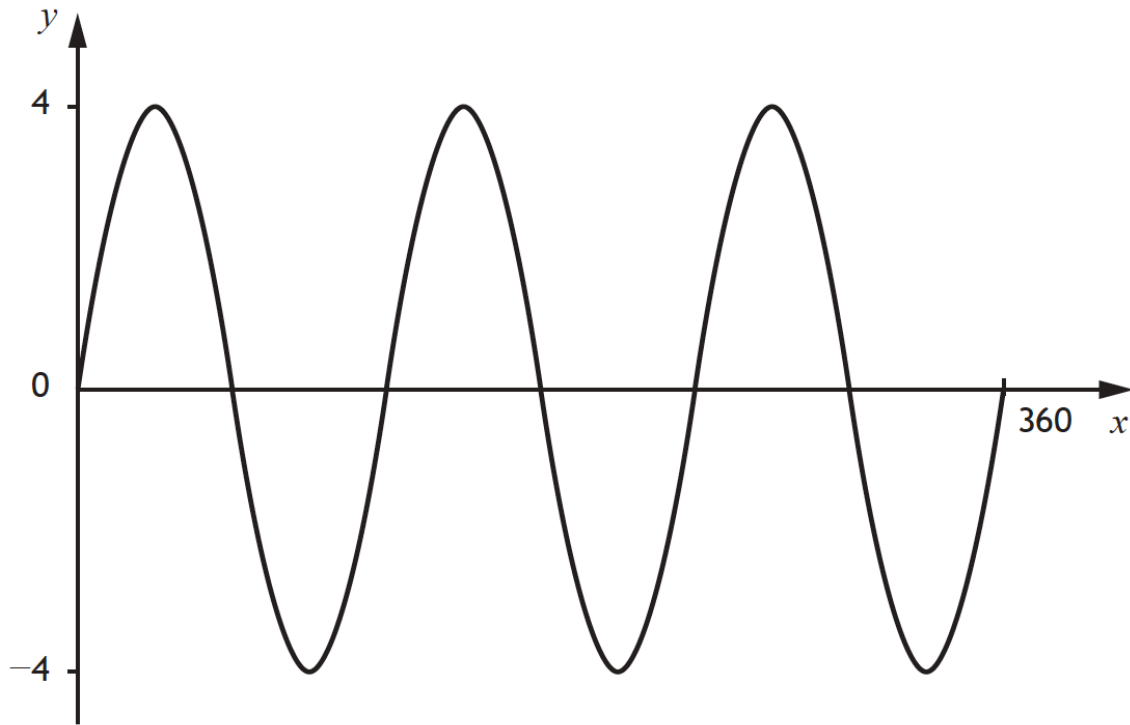
- (a) Calculate the size of angle ABC.
- (b) Hence find the size of the shaded angle.

2014 Paper 2 Question 12, (3)

Solve the equation $11\cos x^\circ - 2 = 3$, for $0 \leq x \leq 360$.

2015 Paper 1 Question 6, (2)

Part of the graph of $y = a \sin bx^\circ$ is shown in the diagram.



State the values of a and b .

2015 Paper 1 Question 9, (2)

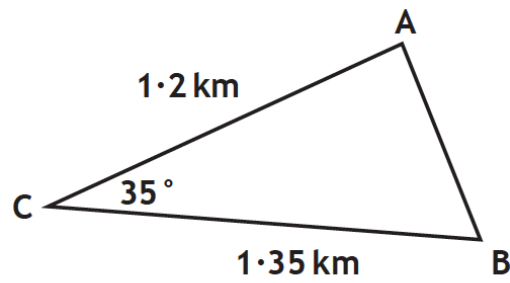
Write the following in order of size starting with the smallest.

$\cos 90^\circ$ $\cos 100^\circ$ $\cos 300^\circ$

Justify your answer.

2015 Paper 2 Question 3, (3)

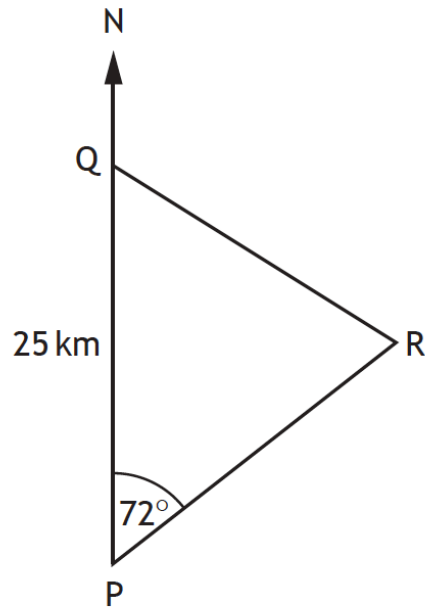
Triangle ABC is shown below.



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 1 Question 11, (2)

Simplify

$$\tan^2 x^\circ \cos^2 x^\circ .$$

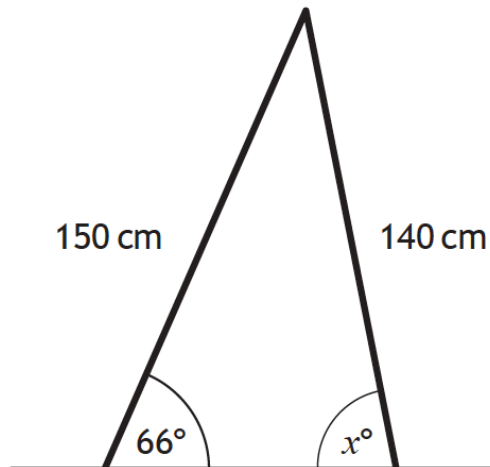
Show your working.

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.

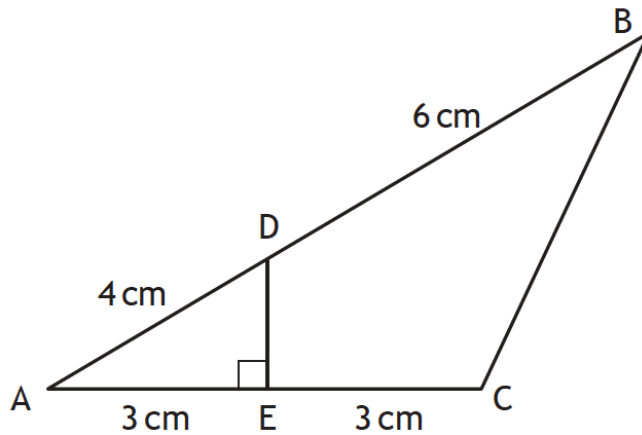
2016 Paper 2 Question 14, (3)

Solve the equation $2 \tan x^\circ + 5 = -4$, for $0 \leq x \leq 360$.

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.



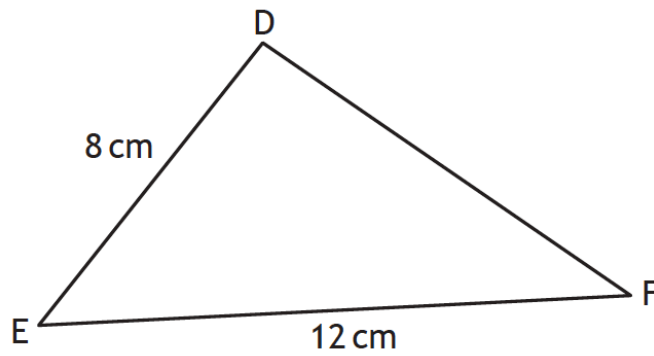
Calculate the length of BC.

Give your answer correct to one decimal place.

2017 Paper 1 Question 7, (2)

In triangle DEF:

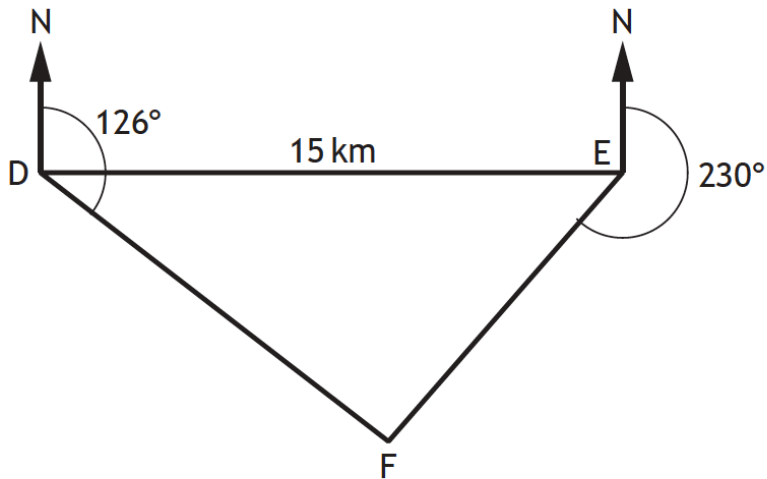
- $DE = 8$ centimetres
- $EF = 12$ centimetres
- $\sin E = \frac{2}{3}$



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° .

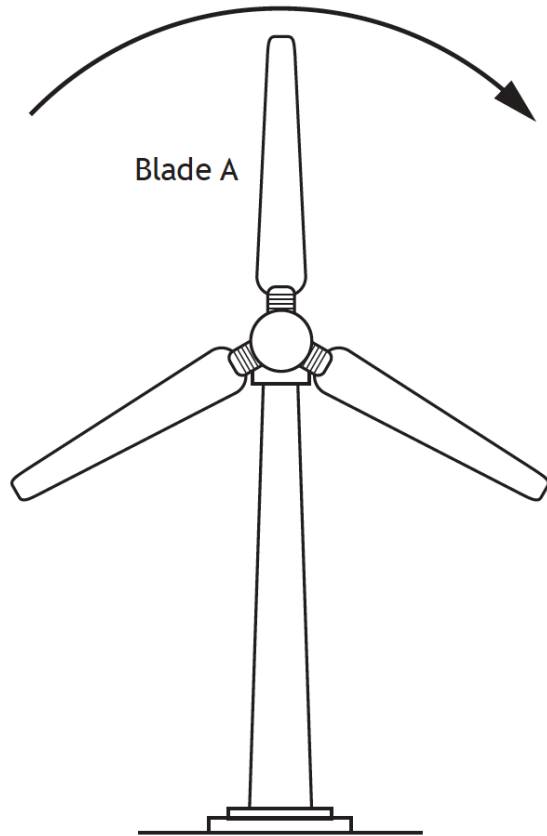
From Earlsford the bearing of Fairtown is 230° .

Calculate the distance between Dunbridge and Fairtown.

Do not use a scale drawing.

2017 Paper 2 Question 15, (1) (1) (4)

A wind turbine has three blades as shown below.



The height, h metres, of the tip of blade A above the ground in each rotation is given by

$$h = 40 + 23 \cos x^\circ, \quad 0 \leq x < 360$$

where x is the angle blade A has turned clockwise from its vertical position.

- Calculate the height of the tip of blade A after it has turned through an angle of 60° .
- Find the minimum height of the tip of blade A above the ground.
- Calculate the values of x for which the tip of blade A is 61 metres above the ground.