

The Sine Rule

For AQA GCSE Mathematics (8300) • Higher tier

Name _____

Total marks: **29**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method. You may use a calculator. Diagrams are not drawn accurately.

- 1** Which of these is the sine rule for triangle ABC with sides a , b and c ?
Circle your answer.

[1 mark]

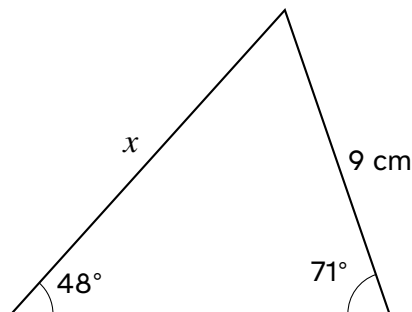
$$\frac{a}{\sin A} = \frac{b}{\sin B}$$

$$\frac{a}{\sin B} = \frac{b}{\sin A}$$

$$\frac{\sin A}{a} = \frac{b}{\sin B}$$

$$\frac{\sin a}{A} = \frac{\sin b}{B}$$

- 2** Here is a triangle.



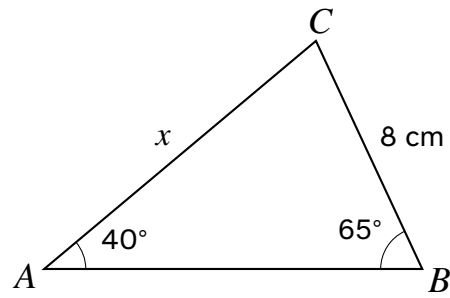
Not drawn accurately

Use the sine rule to work out x .

[2 marks]

$x =$ _____ cm

3 Here is triangle ABC .



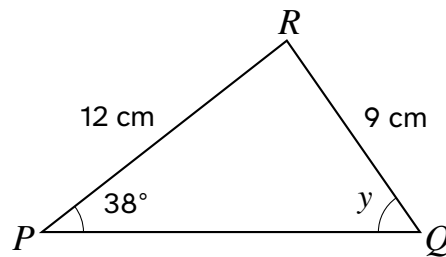
Not drawn accurately

Work out the length x .
Give your answer to 3 significant figures.

[3 marks]

Answer _____ cm

- 4 Here is triangle PQR .



Not drawn accurately

Angle y is acute.
Work out the size of angle y .
Give your answer to 1 decimal place.

[3 marks]

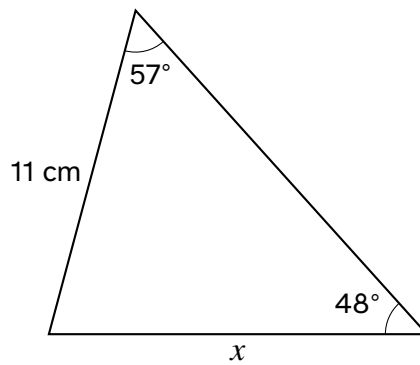
Answer _____ degrees

- 5 In triangle XYZ , $XY = 15$ cm, angle $X = 48^\circ$ and angle $Y = 77^\circ$
Work out the length of YZ .

[4 marks]

Answer _____ cm

6 Here is a triangle.



Not drawn accurately

Tomasz uses the sine rule to work out x .
Here is his working.

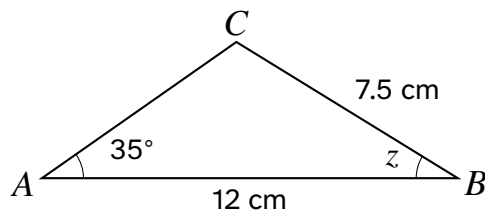
$$\frac{x}{\sin 57^\circ} = \frac{11}{\sin 48^\circ}$$
$$x = \frac{11 \sin 48^\circ}{\sin 57^\circ} = 9.75 \text{ cm}$$

His first line is correct.

What mistake has he made in his second line?

[1 mark]

7 Here is triangle ABC .



Not drawn accurately

Angle ACB is obtuse.

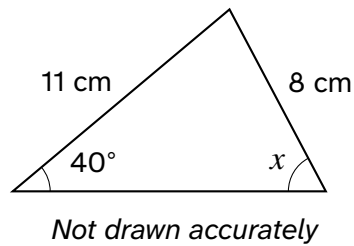
Work out the size of angle z .

Give your answer to 1 decimal place.

[3 marks]

Answer _____ degrees

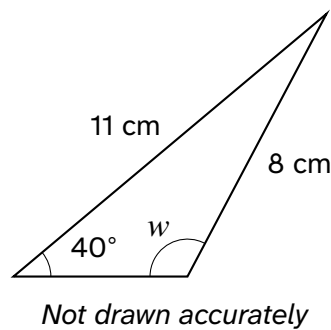
- 8 (a) Here is triangle A .



Use the sine rule to show that $x = 62^\circ$ to the nearest degree.

[3 marks]

- (b) Here is triangle B .



Anna thinks that w must be 62° to the nearest degree.

She says,

"This is because triangle B has two sides and one angle the same as triangle A ."

Without further calculation, is she correct?

Tick a box.

Give a reason for your answer.

[1 mark]

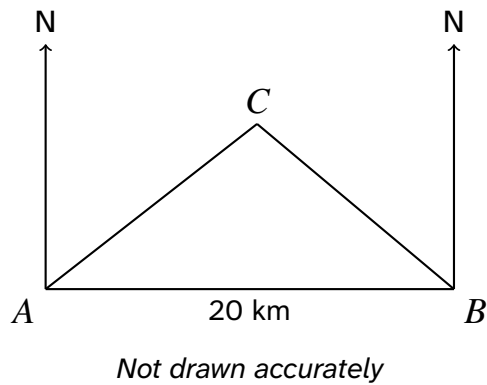
☐

Yes

☐

No

- 9 The diagram shows the positions of A , B and C .



Two coastguard stations, A and B , are 20 km apart.

B is due East of A .

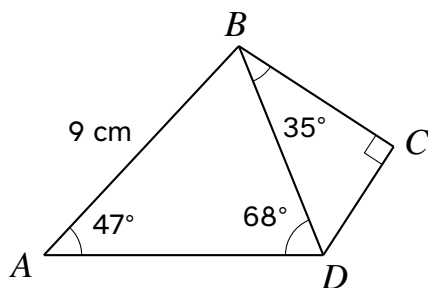
A boat, C , is on a bearing of 052° from A and on a bearing of 310° from B .

Work out the distance of the boat from B .

[4 marks]

Answer _____ km

10 Here is a diagram.



Not drawn accurately

The diagram shows triangle ABD and a right-angled triangle BCD .

$AB = 9\text{ cm}$, angle $BAD = 47^\circ$ and angle $ADB = 68^\circ$

Angle $BCD = 90^\circ$ and angle $DBC = 35^\circ$

Work out the length of BC .

Give your answer to 3 significant figures.

[4 marks]

Answer _____ cm