

Sine Rule, Cosine Rule and Area of a Triangle

For AQA Level 2 Certificate in Further Mathematics (8365)

Name _____

Total marks: **31**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method. You may use a calculator.

1 Circle the value of $\sin 150^\circ$

[1 mark]

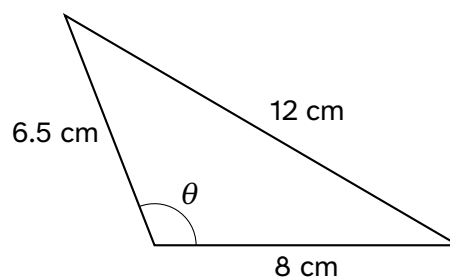
$$-\frac{\sqrt{3}}{2}$$

$$-\frac{1}{2}$$

$$\frac{1}{2}$$

$$\frac{\sqrt{3}}{2}$$

2 Here is a triangle.



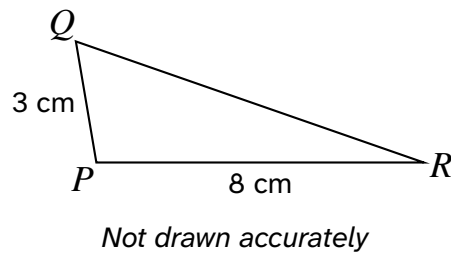
Not drawn accurately

Work out the size of angle θ .
Give your answer to 1 decimal place.

[3 marks]

$\theta =$ _____ degrees

- 3 Here is triangle PQR .



$$\cos QPR = -\frac{1}{6}$$

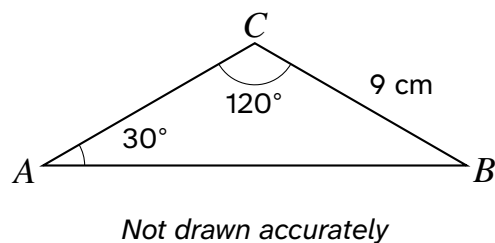
Work out the length QR .

You must show your working.

[3 marks]

Answer _____ cm

- 4 Here is triangle ABC .



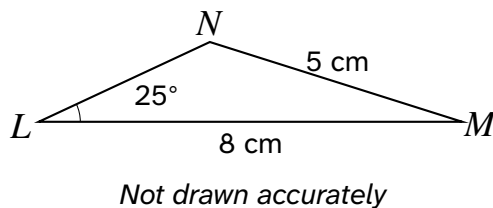
Work out the exact length of AB .

Give your answer in the form $a\sqrt{3}$, where a is an integer.

[3 marks]

Answer _____ cm

- 5 Here is triangle LMN .

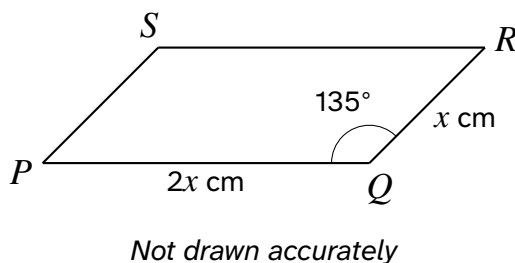


Angle LMN is obtuse.
Work out the area of triangle LMN .

[4 marks]

Answer _____ cm^2

- 6 $PQRS$ is a parallelogram.

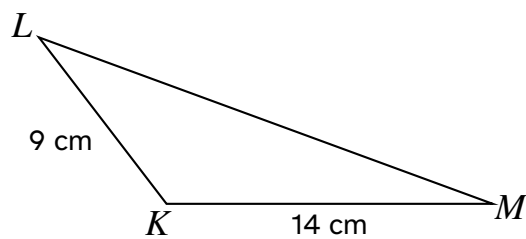


The area of the parallelogram is $36\sqrt{2} \text{ cm}^2$
Work out the value of x .
You must show your working.

[3 marks]

$x =$ _____

7 Here is triangle KLM .



Not drawn accurately

$KL = 9\text{ cm}$ and $KM = 14\text{ cm}$

The area of triangle KLM is 50 cm^2

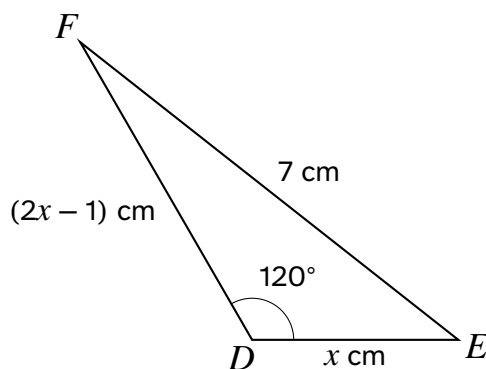
Angle LKM is obtuse.

Work out the length LM .

[4 marks]

Answer _____ cm

- 8 Here is triangle DEF .



Not drawn accurately

- (a) Show that $7x^2 - 5x - 48 = 0$

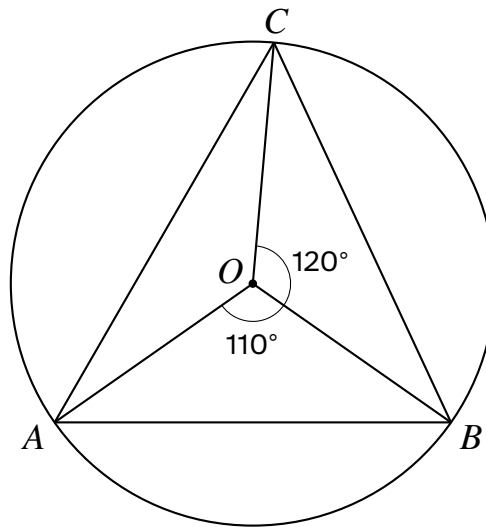
[3 marks]

- (b) Work out the area of triangle DEF .
Give your answer in the form $\frac{a\sqrt{3}}{b}$, where a and b are integers.

[3 marks]

Answer _____ cm^2

- 9 The diagram shows a triangle inside a circle.



Not drawn accurately

A , B and C are points on a circle, centre O , radius 8 cm.
Angle $AOB = 110^\circ$ and angle $BOC = 120^\circ$
Work out the area of triangle ABC .

[4 marks]

Answer _____ cm^2