

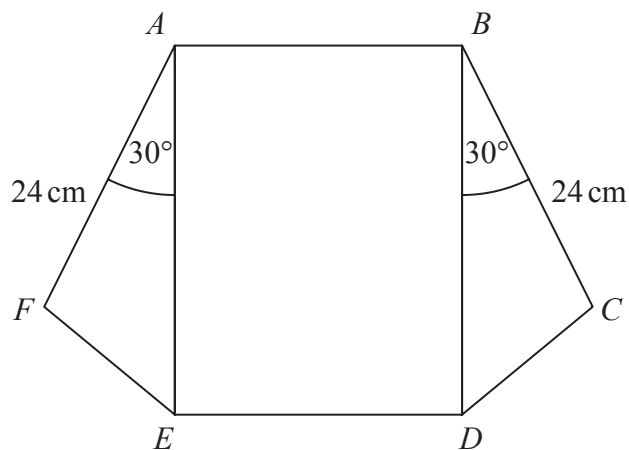
1 The table shows some values of x and y that satisfy the equation $y = a \cos x^\circ + b$

x	0	30	60	90	120	150	180
y	3	$1 + \sqrt{3}$	2	1	0	$1 - \sqrt{3}$	-1

Find the value of y when $x = 45$

(Total for Question 1 is 4 marks)

- 2 The diagram shows a rectangle, $ABDE$, and two congruent triangles, AFE and BCD .



area of rectangle $ABDE$ = area of triangle AFE + area of triangle BCD

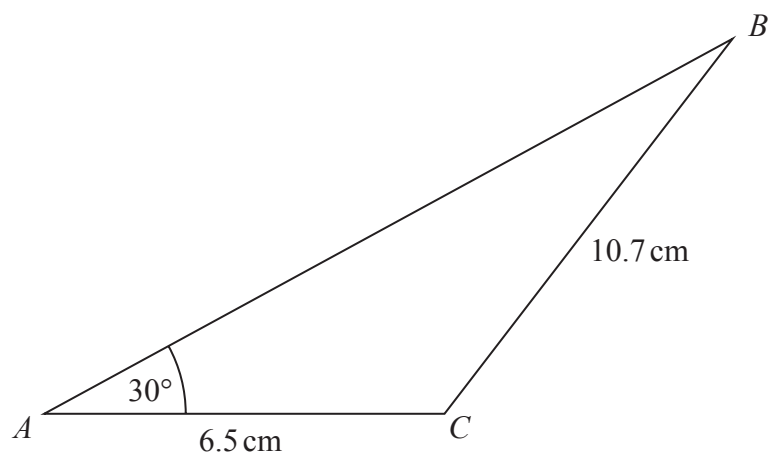
$$AB : AE = 1 : 3$$

Work out the length of AE .

..... cm

(Total for Question 2 is 4 marks)

3 Here is a triangle ABC .

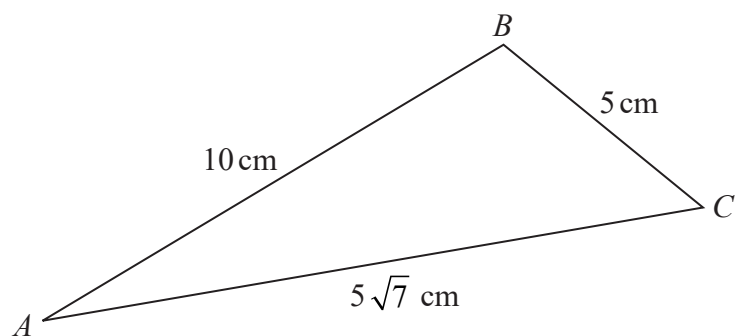


Work out the value of $\sin ABC$

Give your answer in the form $\frac{m}{n}$ where m and n are integers.

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(Total for Question 3 is 4 marks)

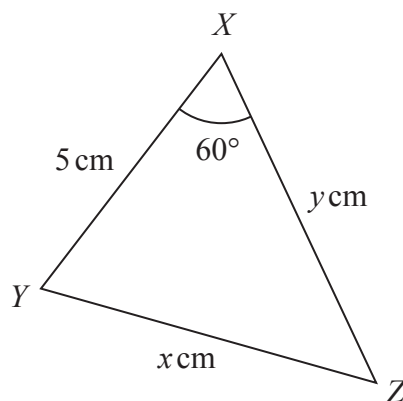
4 Here is triangle ABC .



Find the size of angle ABC .
You must show all your working.

.....
(Total for Question 4 is 4 marks)

5 Here is a triangle XYZ .



The perimeter of the triangle is $k\text{ cm}$.

Given that $x = y - 1$

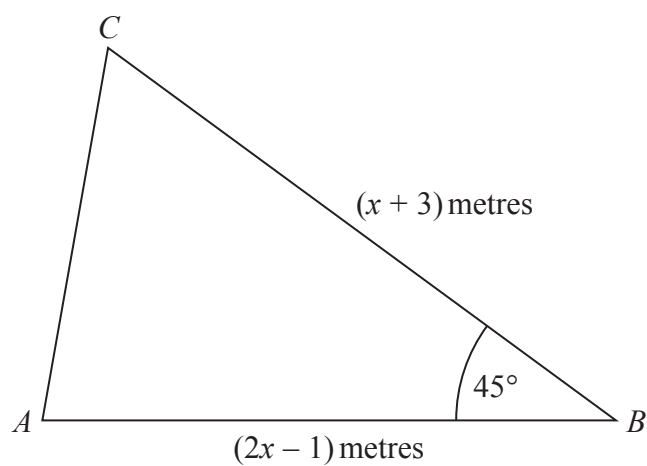
find the value of k .

Show your working clearly.

$k =$

(Total for Question 5 is 5 marks)

6

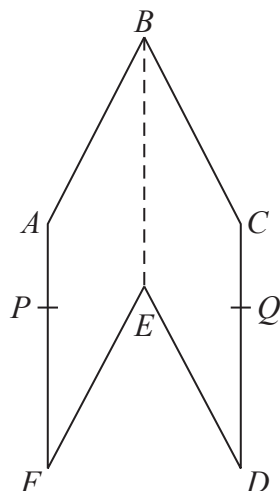


The area of triangle ABC is $18\sqrt{2} \text{ m}^2$.

Calculate the value of x .

(Total for Question 6 is 5 marks)

7 The diagram shows a hexagon $ABCDEF$.



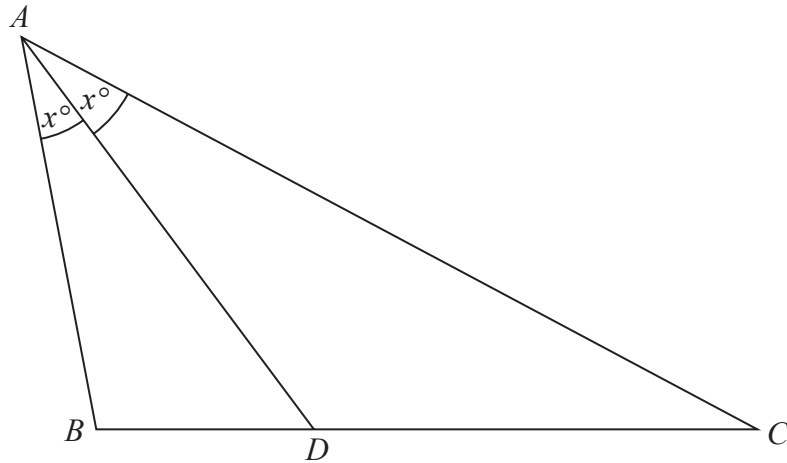
$ABEF$ and $CBED$ are congruent parallelograms where $AB = BC = x$ cm.
 P is the point on AF and Q is the point on CD such that $BP = BQ = 10$ cm.

Given that angle $ABC = 30^\circ$,

prove that $\cos PBQ = 1 - \frac{(2 - \sqrt{3})}{200}x^2$

(Total for Question 7 is 5 marks)

8 ABC is a triangle.



D is the point on BC such that $\text{angle } BAD = \text{angle } DAC = x^\circ$

Prove that $\frac{AB}{BD} = \frac{AC}{DC}$

(Total for Question 8 is 4 marks)