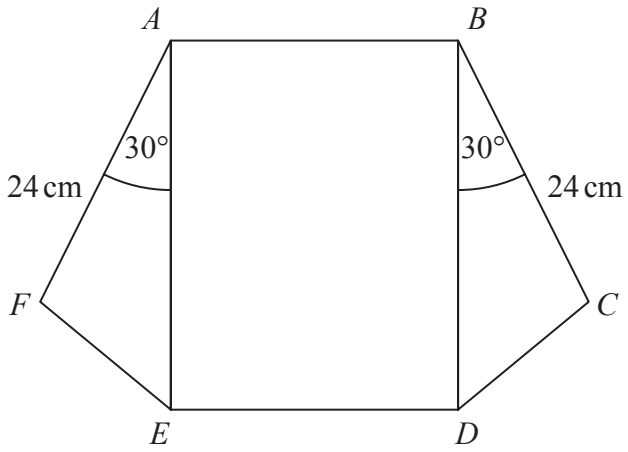
1 The diagram shows a rectangle, *ABDE*, and two congruent triangles, *AFE* and *BCD*.



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

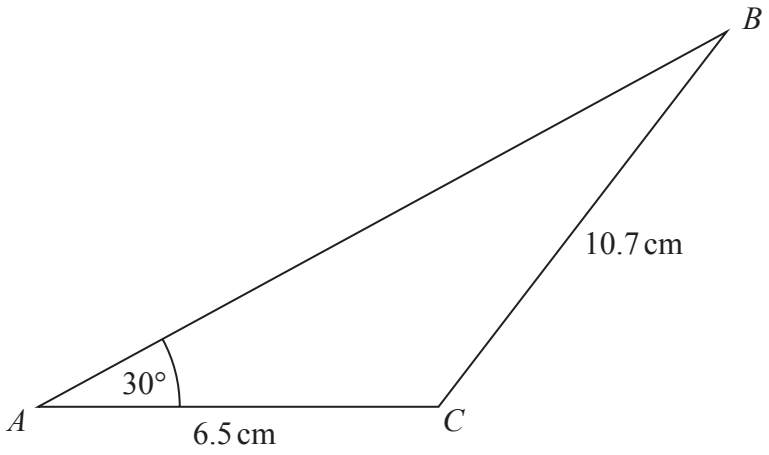
$$AB : AE = 1 : 3$$

Work out the length of *AE*.

..... cm

(Total for Question 1 is 4 marks)

2 Here is a triangle ABC.



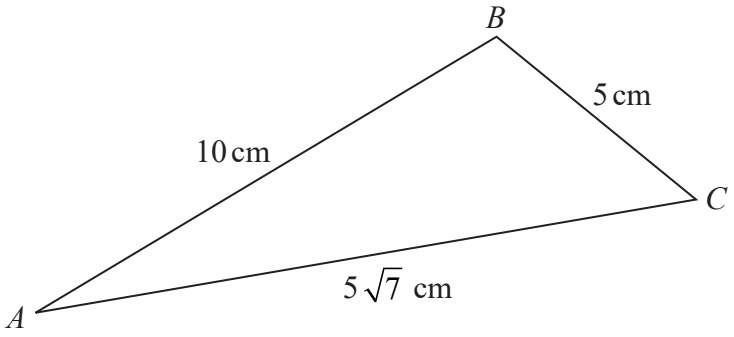
Work out the value of $\sin ABC$

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

.....

(Total for Question 2 is 4 marks)

3 Here is triangle *ABC*.

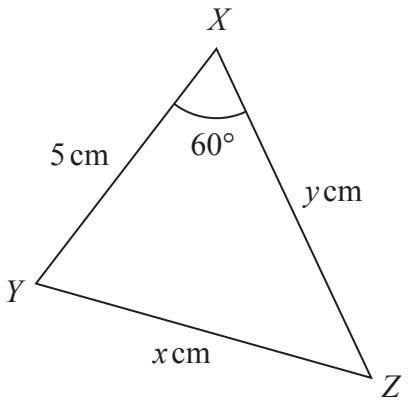


Find the size of angle *ABC*.
You must show all your working.

.....°

(Total for Question 3 is 4 marks)

4 Here is a triangle *XYZ*.



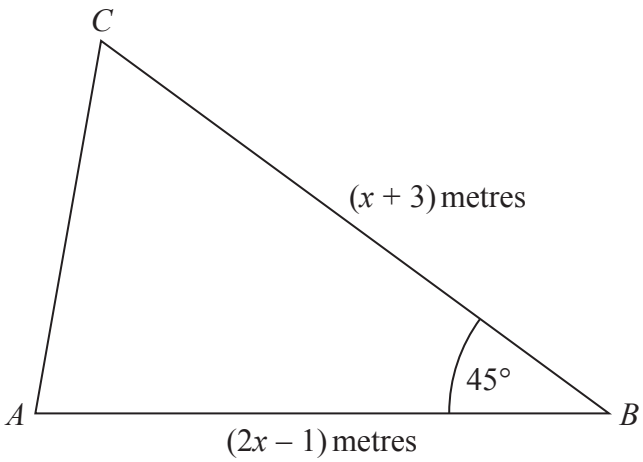
The perimeter of the triangle is k cm.

Given that $x = y - 1$
find the value of k.
Show your working clearly.

$k =$

(Total for Question 4 is 5 marks)

5



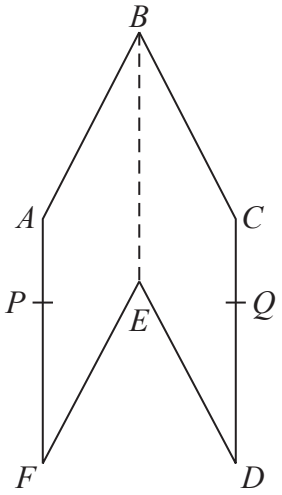
The area of triangle ABC is $6\sqrt{2}$ m^2.

Calculate the value of x.
Give your answer correct to 3 significant figures.

.....

(Total for Question 5 is 5 marks)

6 The diagram shows a hexagon $ABCDEF$.



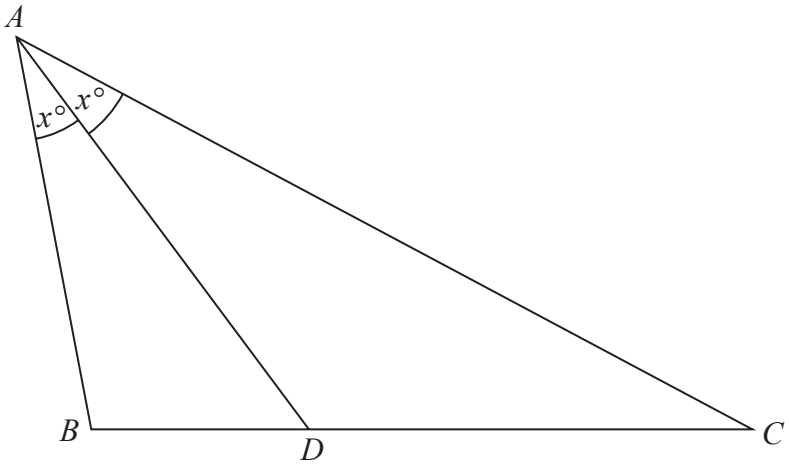
$ABEF$ and $CBED$ are congruent parallelograms where $AB = BC = x$ cm.
P is the point on AF and Q is the point on CD such that $BP = BQ = 10$ cm.

Given that angle $ABC = 30°$,

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

(Total for Question 6 is 5 marks)

7 ABC is a triangle.



D is the point on BC such that angle BAD = angle $DAC = x°$

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

(Total for Question 7 is 4 marks)