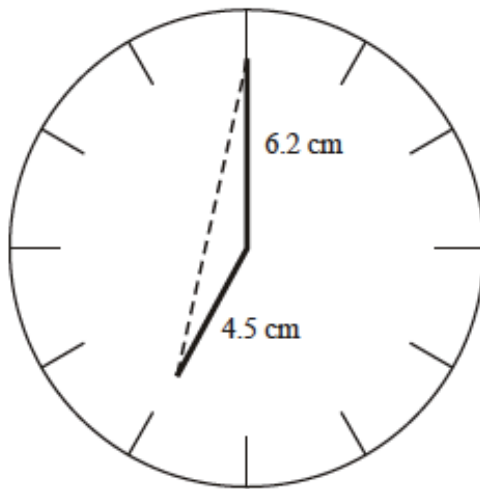


## Topic 20 Further trigonometry (Post-TT) [34]

1.

The hour hand of a clock is 4.5 cm long.  
The minute hand is 6.2 cm long.



Not drawn accurately

Calculate the distance between the tips of the hands at 7 o'clock.

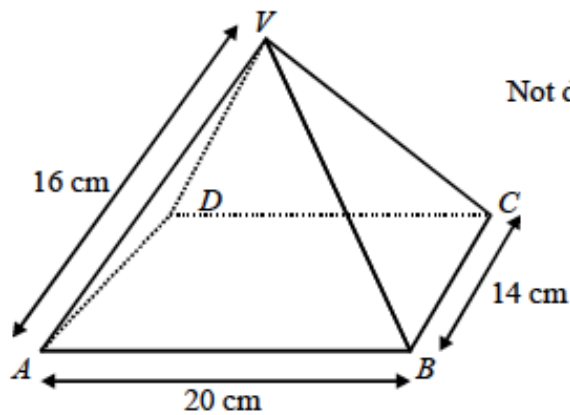
(Total 4 marks)

2.

$VABCD$  is a right pyramid on a rectangular base.

$VA = VB = VC = VD = 16$  cm.

$AB = 20$  cm and  $BC = 14$  cm.



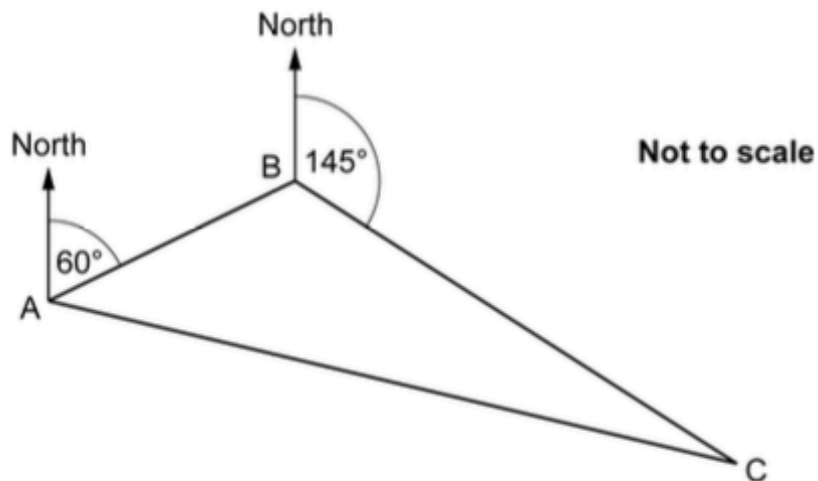
Not drawn accurately

Calculate the angle between the edge  $VC$  and the base  $ABCD$ .

(Total 5 marks)

3.

The sketch shows Jim's walking route.



B is 2.8 km from A on a bearing of  $060^\circ$ .  
C is 6.2 km from B on a bearing of  $145^\circ$ .

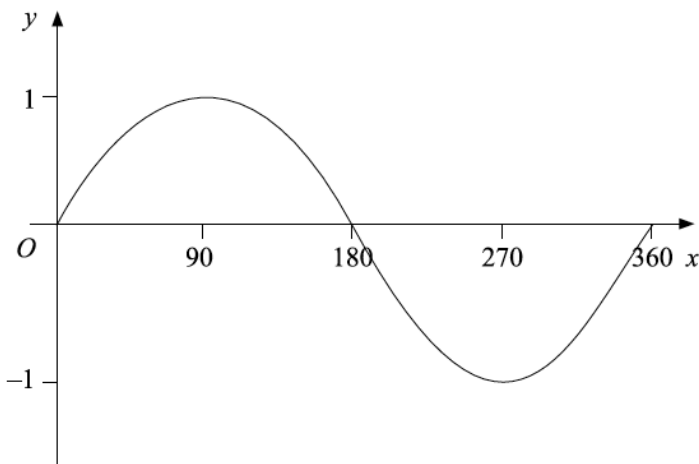
Jim walks at a speed of 5 km/h.

- (a) Calculate the time Jim takes to walk from A to B to C and straight back to A.  
Give your answer in hours and minutes.
- (b) State one assumption you made in part (a).  
Explain how this affected your answer.

(Total 8 marks)

4. **Non-calculator**

Here is a sketch of the curve  $y = \sin x^\circ$  for  $0 \leq x \leq 360$



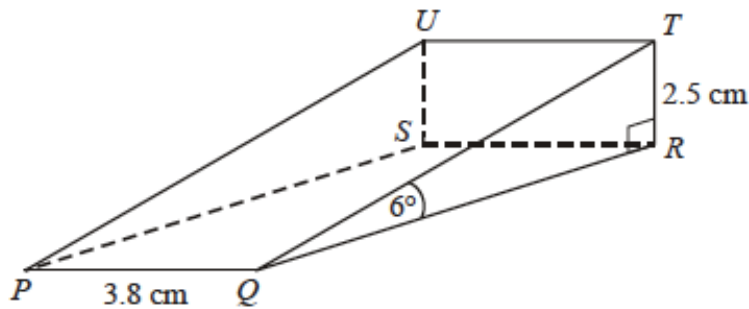
Given that  $\sin 30^\circ = \frac{1}{2}$ , write down the value of:

- i)  $\sin 150^\circ$   
ii)  $\sin 330^\circ$

(Total 2 marks)

5.

The diagram shows a door-wedge with a rectangular horizontal base  $PQRS$ .  
 The sloping face  $PQTU$  is also rectangular.  
 $PQ = 3.8$  cm and angle  $TQR = 6^\circ$   
 The height  $TR$  is 2.5 cm.



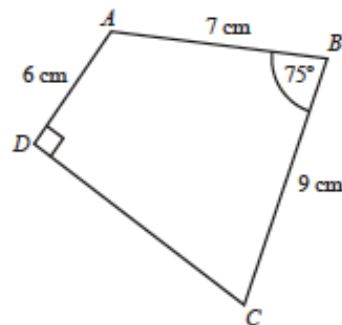
Not drawn accurately

Calculate the length of the diagonal  $PT$ .

(Total 5 marks)

6.

$ABCD$  is a quadrilateral.  
 $AB = 7$  cm,  $AD = 6$  cm and  $BC = 9$  cm.  
 Angle  $ABC = 75^\circ$  and angle  $ADC = 90^\circ$



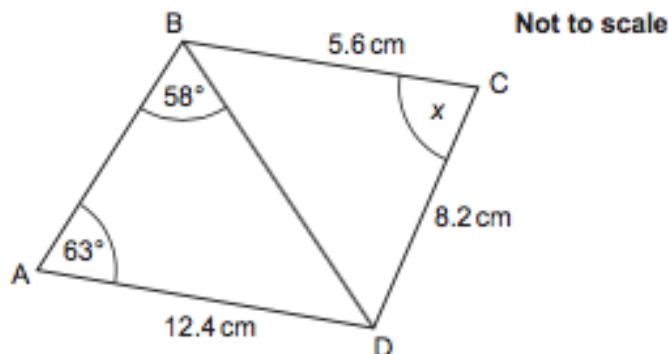
Not drawn accurately

Calculate the perimeter of  $ABCD$ .

(Total 5 marks)

7.

$ABD$  and  $CBD$  are triangles.



$BC = 5.6$  cm,  $CD = 8.2$  cm and  $AD = 12.4$  cm.  
 Angle  $DAB = 63^\circ$  and angle  $DBA = 58^\circ$ .

Calculate the angle marked  $x$ .

(Total 5 marks)