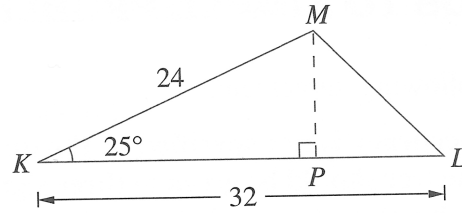
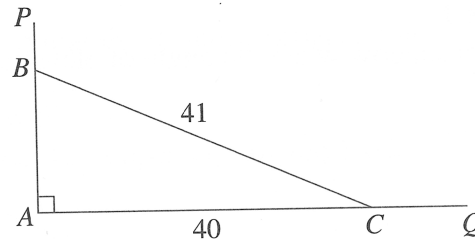


## Trigonometry (continued)

11. In triangle  $KLM$ ,  $KL$ ,  $KM$  and  $\hat{K}$  are given. By considering the right-angled triangle  $KPM$ , find  $MP$  and the area of the triangle  $KLM$ . Give each answer correct to the nearest whole number.

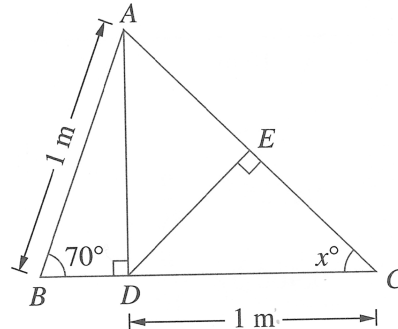


12.  $ABC$  is a triangle in which  $\hat{BAC} = 90^\circ$ ,  $AC = 40$  cm and  $BC = 41$  cm.  $AB$  is produced to  $P$  and  $AC$  is produced to  $Q$ .

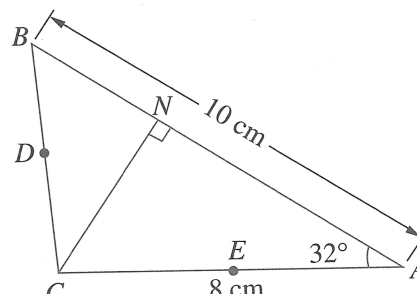


- (a) Showing your working clearly, explain why  $AB = 9$  cm.  
 (b) Calculate  
 (i)  $\tan \hat{BCA}$ ,  
 (ii)  $\hat{PBC}$ ,  
 (iii)  $\hat{BCQ}$ .

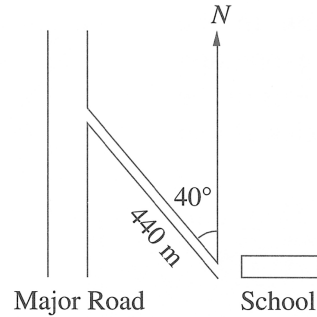
- \*13. In the figure,  $AD$  is perpendicular to  $BC$  and  $DE$  is perpendicular to  $AC$ . The angle  $ABD$  is  $70^\circ$  and  $AB = DC = 1$  m. Calculate the value of  $x$ . Hence, calculate the length of  $CE$ .



- \*14. (a) Calculate  $CN$ .  
 (b) Calculate the area of  $\triangle ABC$ .  
 (c) If  $D$  is the midpoint of  $BC$  and  $E$  is the midpoint of  $AC$ , state the area of quadrilateral  $ABDE$ .

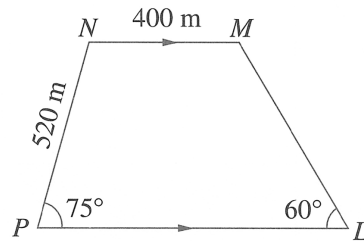


15. The road leading out of a school runs in a direction  $40^\circ$  to the west of North before joining a major road at a point 440 m away from the school as shown. If this major road runs in a north-south direction, find its shortest distance from the school. Give your answer correct to the nearest metre.

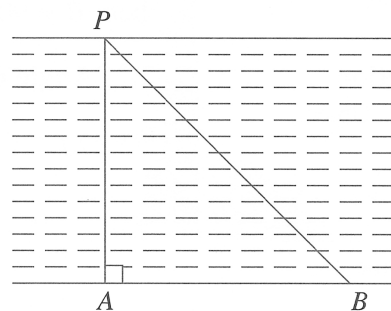


- \*16. A see-saw consists of a plank 4.8 m long which is supported by a pivot at its centre and rotates in a vertical plane about the pivot. If the height of the pivot pillar above the ground is 1.0 m, through what maximum angle can the see-saw beam rotate? Give your answer correct to the nearest degree.

- \*17. When a plot of land was marked off, the boundary pegs  $L$ ,  $M$ ,  $N$  and  $P$  were as shown in the figure, with  $PL$  parallel to  $NM$ . The measures of  $PN$ ,  $NM$ ,  $\hat{P}$  and  $\hat{L}$  are shown. Find the distance between the parallel sides  $PL$  and  $NM$ . Give your answer correct to the nearest metre.



- \*18. An observer is at  $A$  on the bank of a river and a coconut tree is at  $P$  directly across on the opposite bank. A distance  $AB$  of 40 m is measured along the bank so that  $\hat{BAP}$  is a right angle.  $\hat{ABP}$  is found to be  $42^\circ$ .



- (a) Find the width of the river.  
 (b) If the angle of elevation of the top of the coconut tree is  $22^\circ$  from  $A$ , find the height of the coconut tree.  
 (c) Find the angle of elevation of the top of the coconut tree from  $B$ .  
 (d) Find the distance from  $B$  to the top of the coconut tree.
19. From the top of a building, the angle of depression of a point on the ground 32 m away from the base of the building is  $58^\circ$ .
- (a) How tall is the building?  
 (b) What is the angle of elevation of a point (i) half-way, (ii) three-quarter-way up the building?