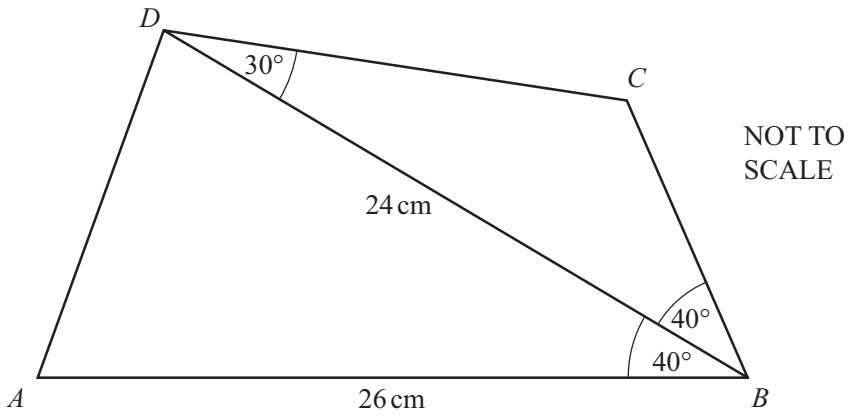
1.



ABCD is a quadrilateral and *BD* is a diagonal.
AB = 26 cm, *BD* = 24 cm, angle *ABD* = 40°, angle *CBD* = 40° and angle *CDB* = 30°.

(a) Calculate the area of triangle *ABD*.

Answer(a) cm^2 [2]

(b) Calculate the length of *AD*.

Answer(b) cm [4]

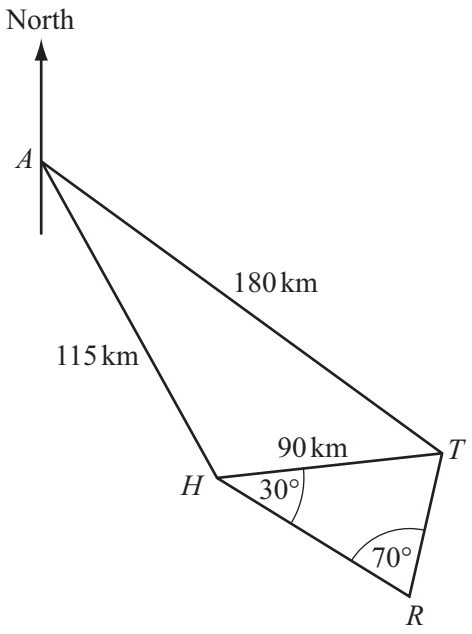
(c) Calculate the length of *BC*.

Answer(c) cm [4]

(d) Calculate the shortest distance from the point *C* to the line *BD*.

Answer(d) cm [2]

2.



NOT TO SCALE

The diagram shows some straight line distances between Auckland (*A*), Hamilton (*H*), Tauranga (*T*) and Rotorua (*R*).
AT = 180 km, *AH* = 115 km and *HT* = 90 km.

(a) Calculate angle *HAT*.
Show that this rounds to 25.0°, correct to 3 significant figures. [4]

(b) The bearing of *H* from *A* is 150°.

Find the bearing of

(i) *T* from *A*,

Answer(b)(i) [1]

(ii) *A* from *T*.

Answer(b)(ii) [1]

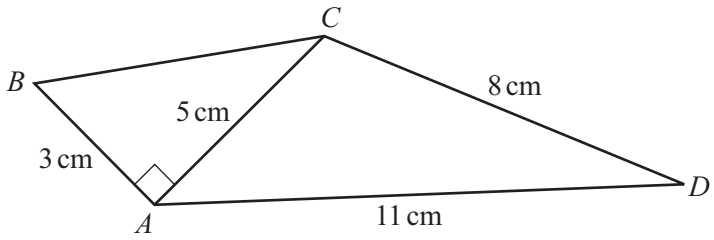
(c) Calculate how far *T* is east of *A*.

Answer(c) km [3]

(d) Angle *THR* = 30° and angle *HRT* = 70°. [3]

Calculate the distance *TR*.

3.



NOT TO SCALE

In the quadrilateral $ABCD$, $AB = 3$ cm, $AD = 11$ cm and $DC = 8$ cm.
The diagonal $AC = 5$ cm and angle $BAC = 90°$.

Calculate

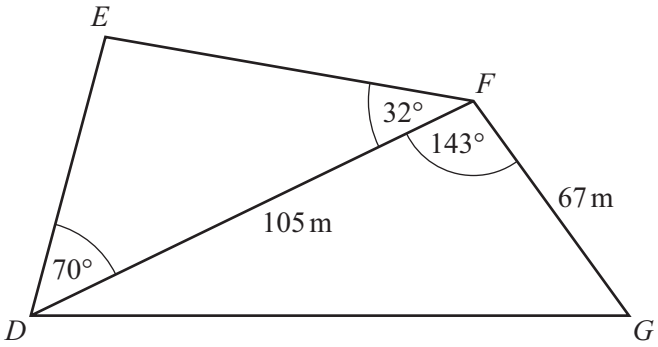
(a) the length of BC, *Answer(a)* $BC =$ cm [2]

(b) angle ACD, *Answer(b)* Angle $ACD =$ [4]

(c) the area of the quadrilateral $ABCD$.

Answer(c) . cm^2 [3]

4.



NOT TO SCALE

The diagram shows a field $DEFG$, in the shape of a quadrilateral, with a footpath along the diagonal DF.
$DF = 105$ m and $FG = 67$ m.
Angle $EDF = 70°$, angle $EFD = 32°$ and angle $DFG = 143°$.

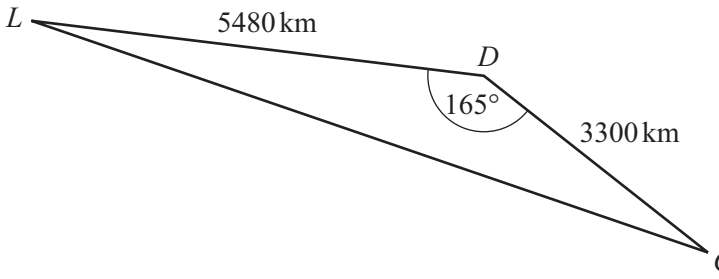
(i) Calculate DG.

Answer(b)(i) $DG =$ m [4]

(ii) Calculate EF.

Answer(b)(ii) $EF =$ m [4]

5.



NOT TO SCALE

The diagram shows the positions of London (L), Dubai (D) and Colombo (C).

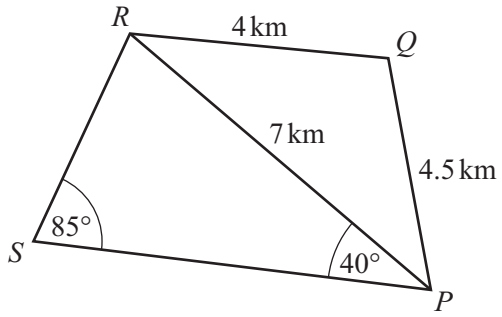
(a) (i) Show that LC is 8710 km correct to the nearest kilometre.

Answer(a)(i) [4]

(ii) Calculate the angle CLD.

Answer(a)(ii) Angle CLD = [3]

6.



NOT TO SCALE

The diagram shows five straight roads.
PQ = 4.5 km, QR = 4 km and PR = 7 km.
Angle RPS = 40° and angle PSR = 85°.

(a) Calculate angle PQR and show that it rounds to 110.7°.

Answer(a) [4]

(b) Calculate the length of the road RS and show that it rounds to 4.52 km.

Answer(b) [3]

(c) Calculate the area of the quadrilateral $PQRS$.
[Use the value of 110.7° for angle PQR and the value of 4.52 km for RS.]

Answer(c) km^2 [5]