Scale Drawing
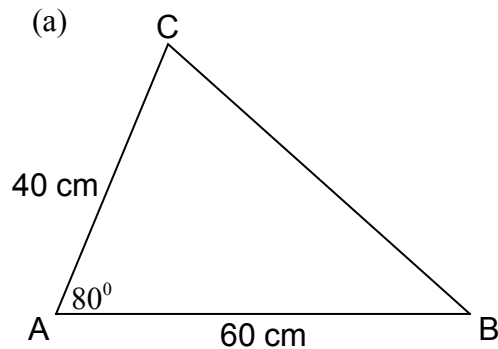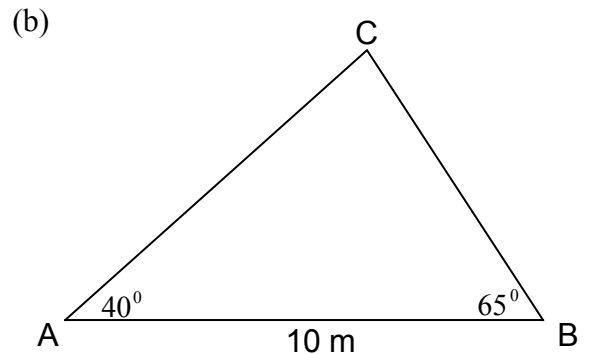
1. (i) Make accurate drawings of each shape below, using the scale indicated.
   (ii) Use your drawings to find the distance BC.
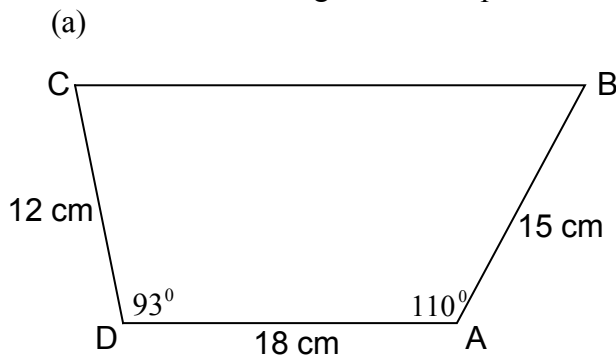
(a)

C
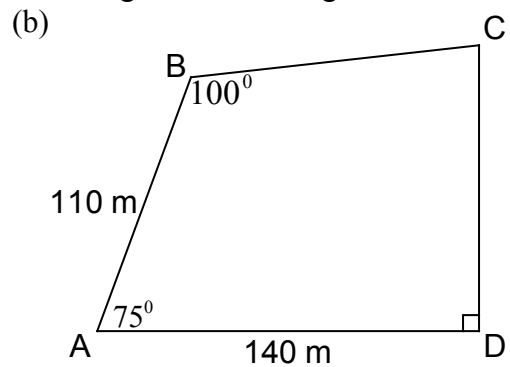
40 cm

80^0

A 60 cm B

Scale   1 : 10

(b)

C

40^0 65^0

A 10 m B

Scale   1 cm : 2 m

2. Make a scale drawing of each shape and use your drawing to find the length of BC.

(a)

C B

12 cm   15 cm

93^0 110^0

D 18 cm A

Scale   1 : 3

(b)

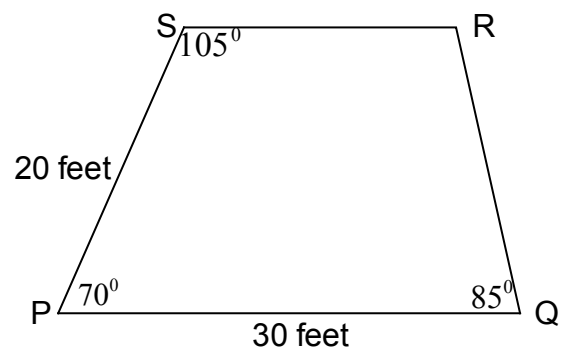B 100^0 C

110 m

75^0

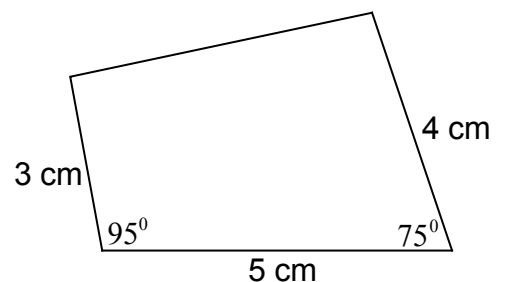A 140 m D

Scale   1 cm : 20 m

3. The diagram opposite shows the floor of a theatre
   stage, PQRS.

   (a) Make an accurate drawing of this stage.
       (use a scale of 1 cm : 5 feet)

   (b) A mark has to be made on the stage where the
       diagonals PR and QS cross.
       How far is this mark from the point P?

S 105^0 R

20 feet

70^0 85^0
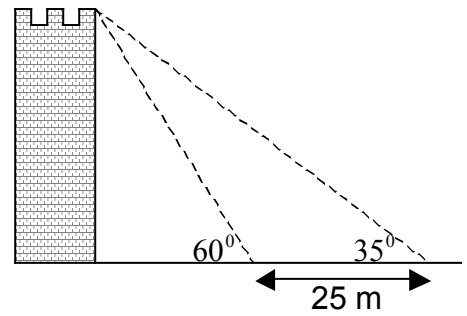
P 30 feet Q

4. A piece of glass from a stained glass window
   is shown opposite.
   A larger piece of glass, the same shape is to be
   made using a scale of 2:1.

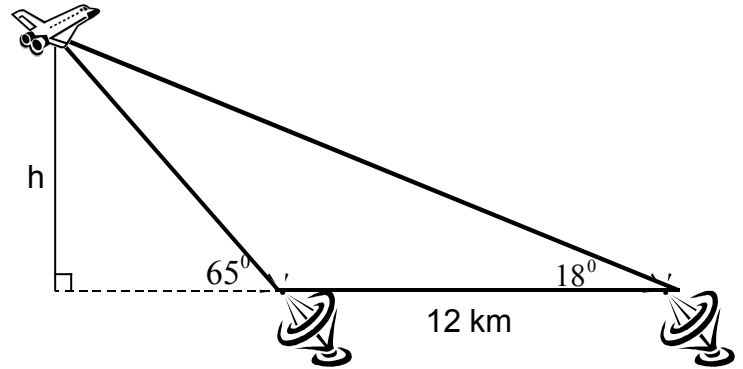   Make an accurate drawing of this larger piece
   of glass.

4 cm

3 cm

95^0 75^0

5 cm

5. The diagram opposite shows a tower.
   From two points 25 metres apart, the
   angles of elevation to the top of the
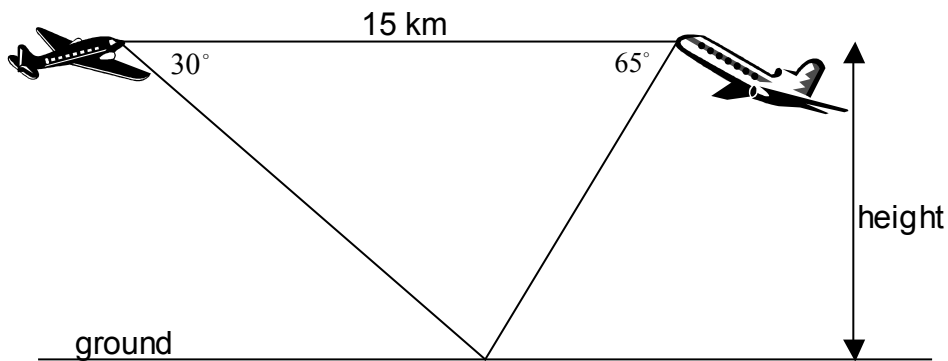   tower are 35^0 and 60^0.

   (a) Make a scale drawing of the diagram.

   (b) Use your drawing to find the height of
       the tower.

6. Two tracking stations,
   12 km apart, are tracking
   a space shuttle, as shown.
   The angle of elevation
   from one station to the
   shuttle is 65^0 and from the
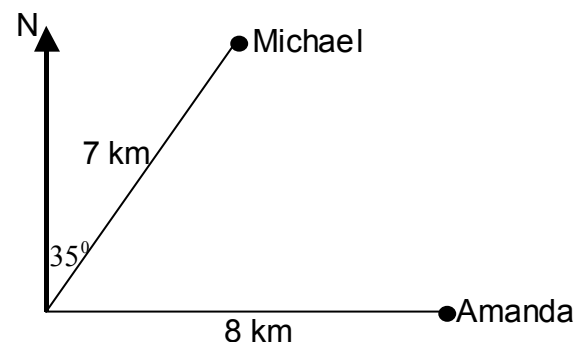   other the angle of elevation
   is 18^0.

   (a) Make a scale drawing of the diagram.

   (b) Use your drawing to find the height, h.

7. Two aeroplanes, 15 kilometres apart, are the same height above the ground, as shown.
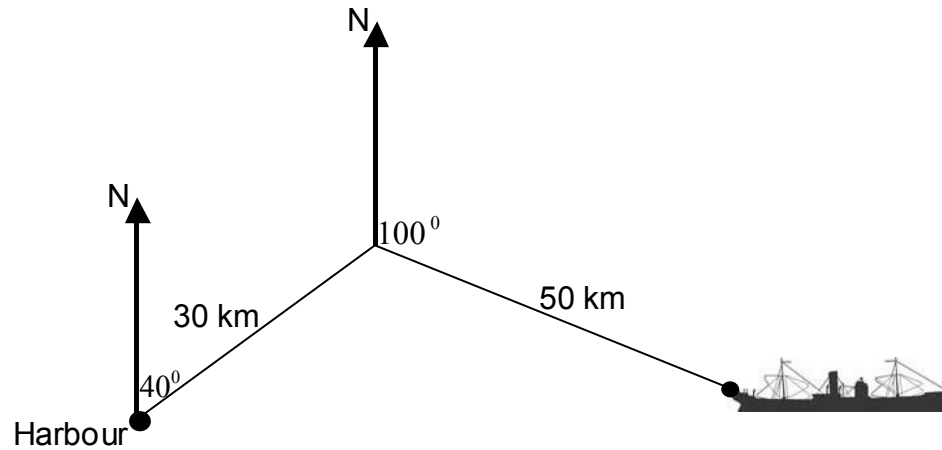   The angle of depression from one aeroplane to the ground is 30° and from the other is 65°.

   (a) Make an accurate sketch using a scale of 1 cm : 3 km.

   (b) Use your sketch to find the height the aeroplanes are above the ground.

8. Amanda and Michael leave the same campsite
   and set off in different directions.
   Michael walks 7 kilometres on a bearing of 035^0
   and Amanda walks 8 kilometres due east.

   (a) Using a scale of 1 cm: 1 km make a scale
       drawing of their journey.

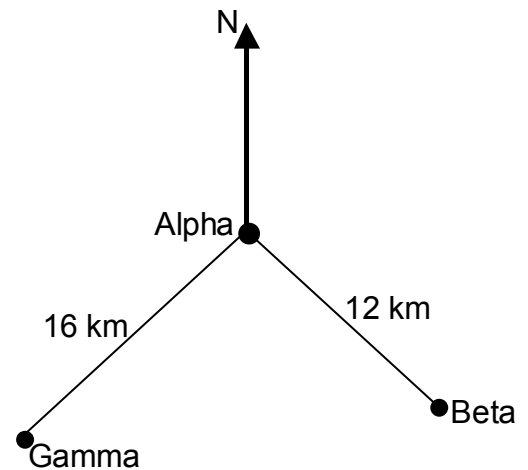   (b) Use your drawing to find how far apart Amanda
       and Michael are?

9. The sketch below shows the journey of a ship from a harbour.

The ship leaves the harbour and sails 30 km on a bearing of 040^0 and then sails 50 km on a bearing of 100^0.
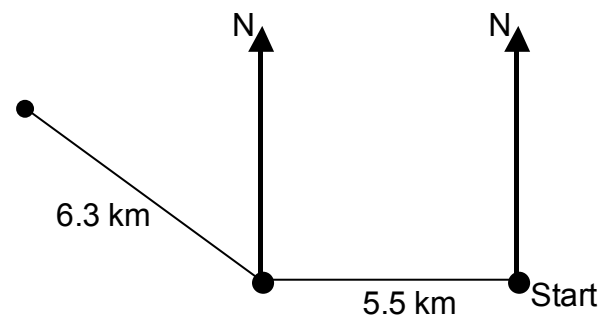
(a) Using a scale of 1 cm: 5 km, make a scale drawing of the ship's course.

(b) Use your drawing to find the actual distance of the ship from the harbour.

10. Three oil platforms, Alpha, Beta and Gamma are situated in the North Sea.
Beta is 12 km from Alpha and is on a bearing of 145^0 from Alpha.
Gamma is 16 km from Alpha and is on a bearing of 220^0 from Alpha.

(a) Using a scale of 1 cm: 2 km make a scale Drawing.

(b) Use your drawing to find the distance between Beta and Gamma.

(c) Use your drawing to find the bearing of Gamma from Beta.
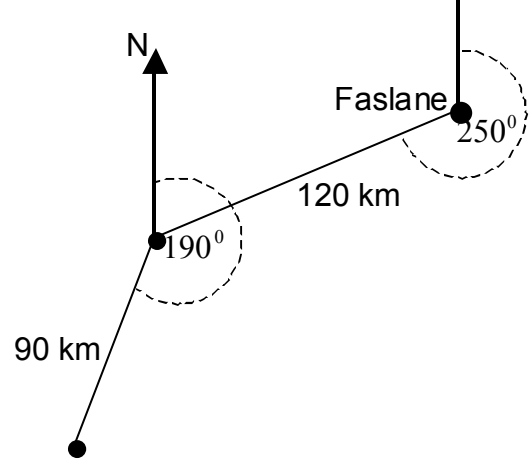

11. David takes part in a cross-country race.
He leaves the starting point of the race and runs due west for 5.5 km before changing direction and running 6.3 km in a north-west direction.

(a) Make a scale drawing of David's run.

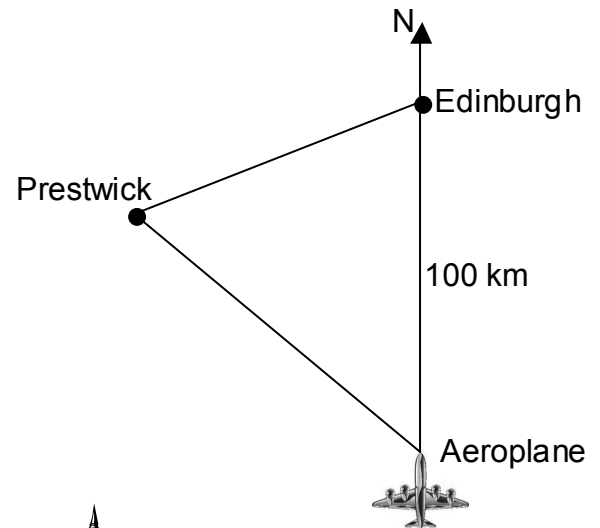(b) Use your drawing to find how far David is from the starting point.

N

12. A submarine leaves Faslane in Scotland
and sails into the Atlantic Ocean on a bearing
of 250^0 for a distance of 120 km before
changing course and sailing on a bearing of
190^0 for 90 km.

Faslane

250^0

120 km

190^0

(a) Make a scale drawing of this information.

90 km

(b) Find the distance and the bearing of the
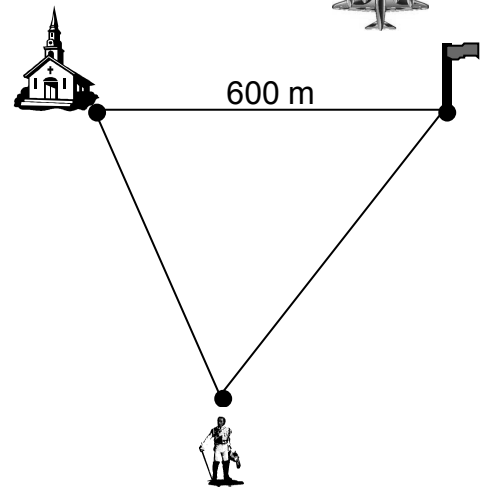submarine from Faslane.

N

13. An aeroplane flying to Edinburgh is 100 km
due south of Edinburgh when the pilot is told
to change direction because of fog.
He is told to fly to Prestwick on a bearing of 320^0.
The bearing of Prestwick from Edinburgh is 240^0.

Edinburgh

Prestwick

100 km

(a) Make a scale drawing of the diagram shown.

(b) Use the scale drawing to find the distance of
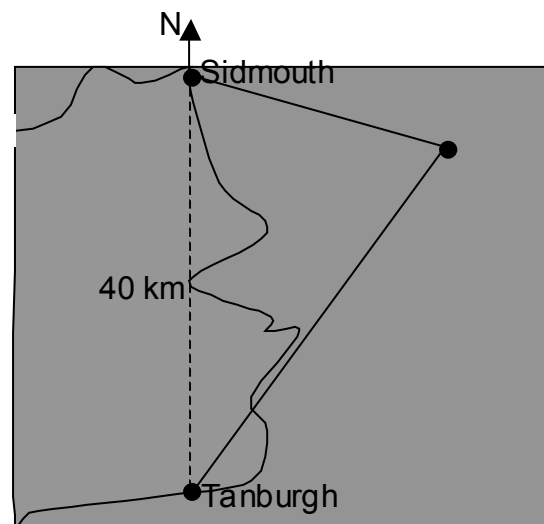the aeroplane from Prestwick.

Aeroplane

600 m

14. A church is 600 metres due west of a flagpole.
A statue is on a bearing of 160^0 from the church
and on a bearing of 220^0 from the flagpole.

(a) Using a scale of 1 cm: 100 m make a scale
drawing of the three landmarks.

(b) Use your scale drawing to find the distance
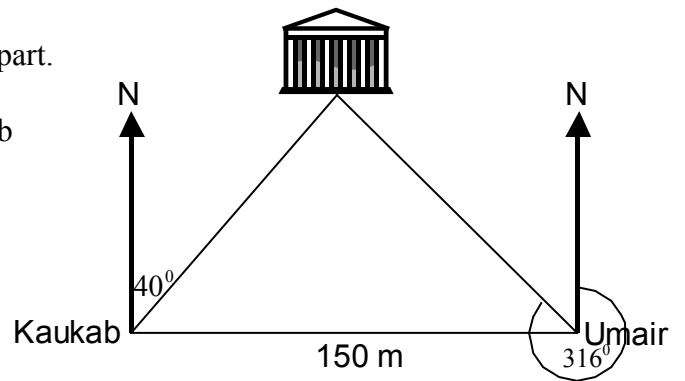from the church to the statue.

N

Sidmouth

15. The diagram shoes the ports of Sidmouth and
Tanburgh.
Sidmouth is 40 km due north of Tanburgh.
An oil tanker out at sea is on a bearing of 095^0
from Sidmouth and on a bearing of 035^0 from
Tanburgh.

40 km

(a) Show this information in a scale drawing.

(b) Find the distance of the oil tanker from
Tanburgh.

Tanburgh

16. Kaukab and Umair are standing 150 metres apart.
    Umair is due East of Kaukab.
    A temple is on a bearing of 040° from Kaukab
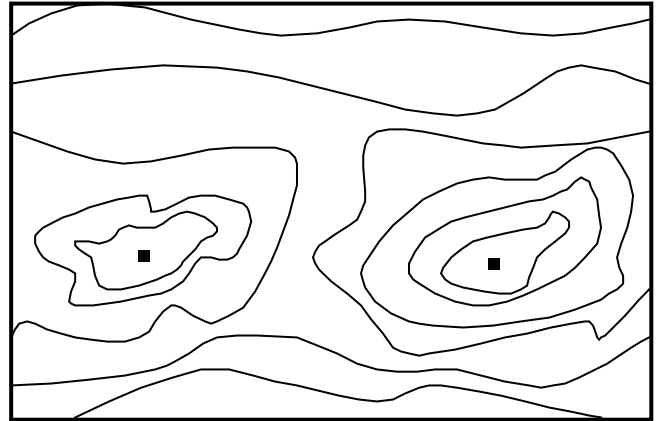   and on a bearing of 316° from Umair.

    (a) Show this information in a scale drawing.

    (b) How far is Kaukab from the temple?

17. The diagram shows part of a map.
    The two dots represent hilltops.

    The scale of the map is 1:50 000.

    Calculate the actual distance between
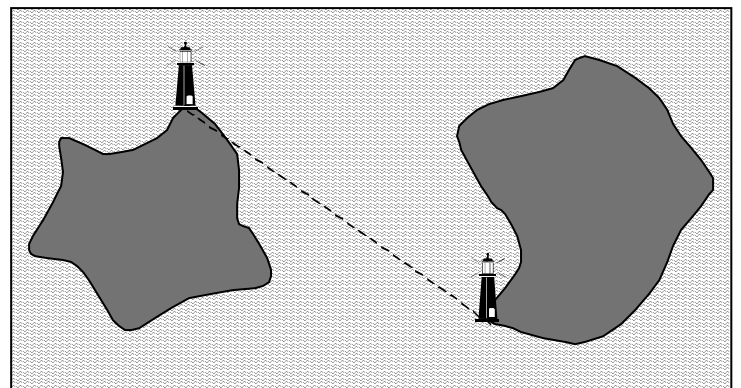   hilltops. Give your answer in kilometres.

18. The diagram shows a map of part of
    Southern France.
    Given the scale of the map is 1:1300000,
    find the actual distance from Marseille
    to Toulon.

19. The diagram shows two lighthouses
    situated on two small islands.
    The scale of the map is 1: 200 000.

    Use the diagram to find the actual
    distance between the lighthouses
    in kilometres.

20. The diagram opposite shows a
    map of South America.
    The scale of the map is
    1 : 70 000 000.

    Use the diagram to find the actual
    distances of

    (a) Manaus to Buenos Aires

    (b) Rio de Janeiro to Quito

    (c) Caracas to Lima.

    Give your answers in kilometres.