

1 Map scales

- a) A map has a scale of 1 : 25 000. Two farms are 6.8 cm apart on the map. How far apart are they in real life, in km?
- b) A footpath is 4.2 km long. Will it fit on a map with a scale of 1 : 50 000 printed on a page 8 cm wide? Show how you know.

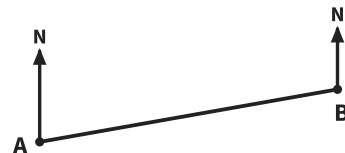
a) $6.8 \times 25\,000 = 170\,000\text{ cm} = 1.7\text{ km}$

b) $420\,000 \div 50\,000 = 8.4\text{ cm}$, more than 8 cm, so no

2 Map scales: measuring

On this map, 1 cm represents 2 km.

- a) Measure AB. Work out the real distance.
- b) Measure the bearing of B from A. Work out the bearing of A from B.



a) 4 cm, so 8 km

b) 080° , so $080 + 180 = 260^\circ$

3 Perpendicular bisector

- a) Construct the perpendicular bisector of PQ. Leave your arcs.
- b) R is the point on your line 5 cm from P. How far is R from Q? Explain.

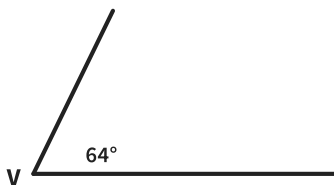


a) it meets PQ at 90° , 2 cm from P

b) 5 cm: R is equidistant from P and Q

4 Angle bisector

- a) Construct the bisector of angle V. Leave your arcs.
- b) Now construct an angle of 16° without a protractor.



a) two angles of 32°

b) bisect one of the 32° angles: $32 \div 2 = 16^\circ$

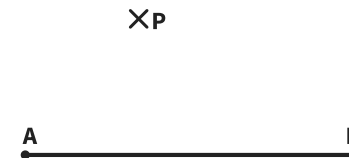
Constructions and loci

revision mat answers

Higher A

5 Perpendicular through a point

- a) Construct the perpendicular from P to the line AB. Leave your arcs.
- b) Measure the shortest distance from P to AB. Find the area of triangle ABP.



a) arcs from P cut AB twice; bisect between them

b) 1.8 cm, $\frac{1}{2} \times 4.4 \times 1.8 = 3.96\text{ cm}^2$

6 Constructing triangles

- a) Construct triangle ABC with AB = 4.5 cm, AC = 3 cm and BC = 2 cm. Leave your arcs.
- b) Measure angle BAC.



a) AB, then arcs of 3 cm from A and 2 cm from B

b) 21° (allow 19° to 23°)

7 Loci: a fixed distance

- a) Garden ABCD is drawn 1 cm to 2 m. A lamp at L lights up to 3 m away. Draw the edge of the lit region.
- b) Shade where the garden is lit and within 2 m of DC.



a) a circle, centre L, radius 1.5 m

b) inside it and within 1 cm of DC

8 Loci: equal distances

- A pond must be nearer S than T, and nearer AD than AB.
- a) Construct the locus equidistant from S and T.
- b) Shade where the pond can go.



a) the perpendicular bisector of ST

b) above the bisector of angle A, on the S side