

1 Map scales

- a) On a map with scale 1 : 50 000, a wood covers 6 cm^2 .
Work out its real area in km^2 .
- b) A path is 8 cm long on a map with scale 1 : 25 000.
How long is it on a map with scale 1 : 40 000?

a) 1 cm^2 is 0.25 km^2 , $6 \times 0.25 = 1.5 \text{ km}^2$

b) $8 \times 25\,000 \div 40\,000 = 5 \text{ cm}$

2 Map scales: measuring

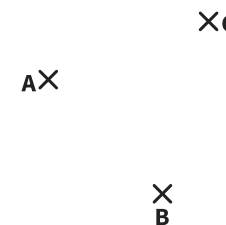
- a) B is on a bearing of 070° from A and on a bearing of 310° from C. Mark B.
- b) Work out the size of angle ABC.



- a) the two bearing lines cross at B
b) A from B is 250° , C from B is 130°
b) $250 - 130 = 120^\circ$

3 Perpendicular bisector

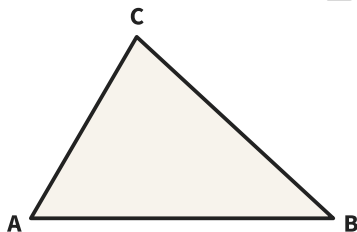
- a) Construct the circle that passes through A, B and C. Use a ruler and compasses.
- b) Where is the centre of such a circle when angle ABC is 90° ? Explain why.



- a) bisect AB and BC: the centre is where they cross
b) the midpoint of AC: AC is a diameter

4 Angle bisector

- a) Construct the bisectors of angles A and B. Mark the point I where they meet.
- b) Construct the circle, centre I, that touches all three sides.



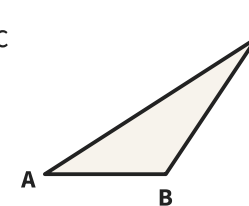
- a) I is the same distance from all three sides
b) radius: the perpendicular from I to AB

Constructions and loci

revision mat answers

5 Perpendicular through a point

- a) Construct the perpendicular from C to the line AB. Use a ruler and compasses.
- b) Now construct the line through C that is parallel to AB.



- a) extend AB; arcs from C cut it twice; bisect
b) the perpendicular to your line at C

6 Constructing triangles

- a) Construct two different triangles ABC with $AB = 3.6 \text{ cm}$, angle $BAC = 20^\circ$ and $BC = 1.5 \text{ cm}$.
- b) Measure AC in each triangle.



- b) 2.5 cm and 4.2 cm (allow 0.2 cm either way)

7 Loci: a fixed distance

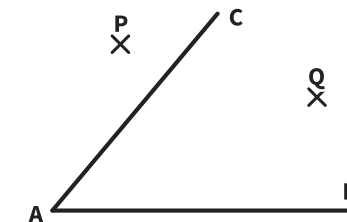
- a) Draw the locus of points outside the rectangle that are 0.5 cm from its edge.
- b) The rectangle is $a \text{ cm}$ by $b \text{ cm}$. Show that the locus is $2a + 2b + \pi \text{ cm}$ long.



- a) four lines and four quarter circles at the corners
b) $2a + 2b + \text{a circle of radius } 0.5: 2\pi \times 0.5 = \pi$

8 Loci: equal distances

- a) Mark X, the same distance from both roads and from P and Q.
- b) Shade where it is nearer AB than AC and nearer Q than P.



- a) where the bisectors of angle A and of PQ cross
b) below the angle bisector, on Q's side