

1 Map scales: measuring

- a) On a map, 4 cm stands for 1 km. Write the scale as a ratio in the form 1 : n .
- b) A road is 6 km long. How much longer is it on a 1 : 25 000 map than on a 1 : 60 000 map?

a) $1 \text{ km} = 100\,000 \text{ cm}$, so $1 : 25\,000$

b) $600\,000 \div 25\,000 = 24 \text{ cm}$

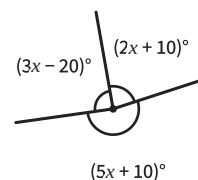
$600\,000 \div 60\,000 = 10 \text{ cm}$

$24 - 10 = 14 \text{ cm longer}$

2 Angle facts

Three lines meet at a point.

- a) Work out the value of x .
- b) One of the angles is reflex. Work out its size.



Not drawn accurately

a) $(2x + 10) + (3x - 20) + (5x + 10) = 360$

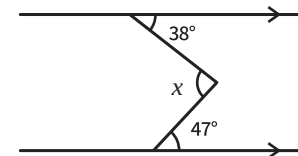
$10x = 360$, $x = 36$

b) $5 \times 36 + 10 = 190^\circ$

3 Angles on parallel lines

The two horizontal lines are parallel.

- a) Work out x . Give reasons.
- b) Jo says $x = 180 - 38 - 47$. Explain her mistake.



Not drawn accurately

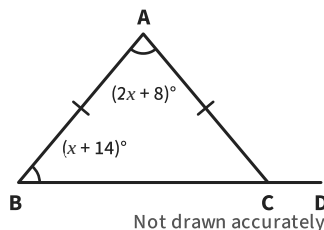
a) a parallel line through the corner: alternate angles are equal, $x = 38 + 47 = 85^\circ$

b) it is not a triangle: x is the two angles added

4 Angles in isosceles triangles

$AB = AC$. BCD is a straight line.

- a) Work out the value of x .
- b) Work out angle ACD.



Not drawn accurately

a) $2(x + 14) + 2x + 8 = 180$

$4x + 36 = 180$, $x = 36$

b) angle ACB = 50° , $180 - 50 = 130^\circ$

Angles and polygons

revision mat answers

5 Angles in regular polygons

- a) Each interior angle of a regular polygon is 4 times its exterior angle. How many sides does it have?
- b) Explain why no regular polygon has an interior angle of 130° .

a) $e + 4e = 180$, $e = 36^\circ$

$360 \div 36 = 10 \text{ sides}$

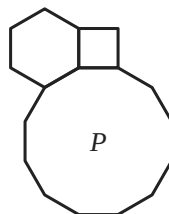
b) exterior angle $180 - 130 = 50^\circ$

$360 \div 50 = 7.2$, not a whole number of sides

6 Angles in regular polygons

A square, a regular hexagon and a regular polygon P meet at a point with no gaps.

- a) Work out each interior angle of P.
- b) How many sides does P have?



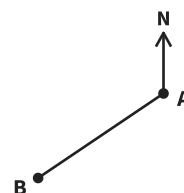
a) hexagon: $720 \div 6 = 120^\circ$

$360 - 90 - 120 = 150^\circ$

b) exterior 30° , $360 \div 30 = 12 \text{ sides}$

7 Bearings

- a) Measure the bearing of B from A.
- b) Lin says the bearing of A from B is 416° . Explain her mistake and give the right bearing.



a) 236°

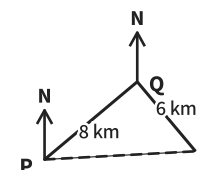
b) a bearing is less than 360°

$236 - 180 = 056^\circ$

8 Bearings

A boat sails 8 km from P to Q on a bearing of 050° , then 6 km to R on a bearing of 140° .

- a) Show that angle PQR = 90° .
- b) How far is R from P?



Not drawn accurately

a) bearing of P from Q: $050 + 180 = 230^\circ$

$230 - 140 = 90^\circ$

b) $8^2 + 6^2 = 100$, $PR = 10 \text{ km}$