Your notes

GCSE Maths: revision notes

Constructions and loci

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Constructions

- Use a ruler and a pair of compasses, and leave all your **construction** arcs showing.
- **Perpendicular bisector** of AB: open the compasses to more than half of AB. Draw arcs from A and from B, above and below the line. Join the two points where the arcs cross.
- **Angle bisector**: from the corner, draw an arc crossing both arms. From those two points, draw arcs that cross. Join the corner to where they cross.
- Triangle from three sides: draw one side, then set the compasses to each of the other lengths and draw arcs from each end. The arcs cross at the third corner.

Loci

- A **locus** is a set of points that follow a rule.
- Points a fixed distance from a point make a circle. Points a fixed distance from a line segment make a 'running track' shape: two parallel lines joined by semicircles.
- Points the same distance from two points lie on the **perpendicular bisector**. Points the same distance from two lines lie on the **angle bisector**.

Loci problems

- Draw each **locus** to scale, then shade the region that fits all the rules.
- 'Closer to A than to B' is the side of the **perpendicular bisector** of AB that contains A.
- 'Less than 3 m from P' is the inside of a circle with centre P and radius 3 m.

Shortest distance

- The shortest distance from a point to a line is the **perpendicular** distance.

Key terms

Construction	An accurate drawing made with a ruler and compasses.
Perpendicular bisector	A line that cuts another line in half at right angles.
Angle bisector	A line that cuts an angle in half.
Locus	A set of points that follow a rule (plural: loci).
Equidistant	The same distance from two or more things.
Perpendicular	At right angles to.
Arc	Part of a circle drawn with compasses.

Quick questions

Cover the answers and test yourself: remembering is what makes it stick.

1. What is a locus?
2. What shape is the locus of points exactly 3 cm from a point?
3. Where are the points that are equidistant from two points A and B?
4. Where are the points that are equidistant from two lines that meet?
5. What equipment do you need to construct a perpendicular bisector?
6. Why should you leave the construction arcs on your drawing?
7. What is the shortest distance from a point to a line?
8. What shape is the locus of points exactly 2 cm from a line segment?

Answers

1. A set of points that follow a rule
2. A circle of radius 3 cm
3. On the perpendicular bisector of AB
4. On the angle bisector
5. A ruler and compasses
6. They show your method
7. The perpendicular distance
8. Two parallel lines joined by semicircles

What to do next

Practise 12 questions on this topic

Try 5 exam questions, with mark schemes

Read the lesson, one step at a time

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