

Constructions and loci

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Foundation and Higher • Lesson resources

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Purpose

Use ruler and compass constructions and interpret loci as sets of points satisfying distance conditions.

Vocabulary

Locus: set of all points satisfying a condition. Bisect: divide into two equal parts. Perpendicular bisector: line at 90° through a segment midpoint. Construction arcs: retained compass evidence.

Why the method works

Equal-radius arcs from endpoints intersect at points equally distant from both endpoints; their joining line is the perpendicular bisector. To bisect an angle, mark equal distances along its rays, then intersect equal-radius arcs from those marks. Congruent triangles explain the equal angles. Distance from a point to a line is measured along a perpendicular.

Method and checking

Use a sharp pencil, straightedge and compass; leave arcs visible. For a perpendicular from a point, an arc centred there cuts the line twice; bisect that segment and join to the point. At a point on a line, mark equal distances either side, then use equal arcs. For loci, draw each condition separately and retain their intersection.

Common errors and next attempt

If a midpoint is guessed, demand two pairs of arcs. If distance to a line is slanted, compare it with a perpendicular. If a circle is shaded for exactly 3 cm, distinguish boundary from region. Recheck with the practical sheet.