Subject	Year	Month	
Mathematics	9	Sept/Oct	Balcarras From strength to strength

Topic:

CONSTRUCTING BISECTORS AND LOCI — 5 LESSONS

Content (Intent)

Prior Learning

Y7
- Constructing lines and angles
- Constructing triangles and other shapes
- Label notation for angles, parallel and perpendicular lines

Y8
- Create and interpret scale diagrams
- Interpret plan and elevations
- Use compasses to draw circles

Future Learning

KS4: When revising for GCSEs

Objectives

- Use ruler and compasses to construct the perpendicular bisector of a line segment
- Use ruler and compasses to bisect an angle
- HIGHER Use a ruler and compasses to construct a perpendicular to a line from a point and at a point
- Know how to construct the locus of points a fixed distance from a point and from a line
- Solve simple problems involving loci
- HIGHER Combine techniques to solve more complex loci problems
- Choose techniques to construct 2D shapes; e.g. rhombus
- Construct a shape from its plans and elevations and vice versa

For teaching purposes

Possible Questions
- Provide shapes made from some cubes in certain orientations. Challenge students to construct the plans and elevations. Do groups agree?
- (Given a single point marked on the board) show me a point 30 cm away from this point. And another. And another …
- Challenge students to write a set of instructions then follow these instructions very precisely!

Misconceptions
- When constructing the bisector of an angle some students may think that the intersecting arcs need to be drawn from the ends of the two lines that make the angle.
- When constructing the perpendicular bisector, some students may only use one set of intersecting arcs.
- When constructing a locus such as the set of points a fixed distance from the perimeter of a rectangle, some students may not interpret the corner as a point (which therefore requires an arc as part of the locus)
- The north elevation is the view of a shape from the north (the north face of the shape), not the view of the shape while facing north.

Pedagogical notes (implementation)

Always leave construction arcs visible. Arcs must be 'clean'; i.e. smooth, single arcs with a sharp pencil.

How will understanding be assessed & recorded (Impact)

BAM task 2 Construction
End of term Assessment in December
Exams in May

How can parents help at home?

MathsWatch clips (Qualification GCSE)
51, 145a, 145b, 146.

Further reading/discussion

Reading / Enrichment

KM: Construction instruction
KM: Construction challenges
KM: Napoleonic challenge
KM: Locus hocus pocus
KM: The perpendicular bisector
KM: Topple
KM: Gilbert goat
KM: An elevated position
KM: Solid problems (plans and elevations)
KM: Isometric interpretation

Literacy

Compasses
Arc
Line segment
Perpendicular
Bisect
Perpendicular bisector
Locus, Loci
Plan
Elevation

Numeracy Links

Careers Links

Architecture
Landscape Gardener
Aerospace Engineer
Surveyor
Glazier
Groundsman – marking out football pitch