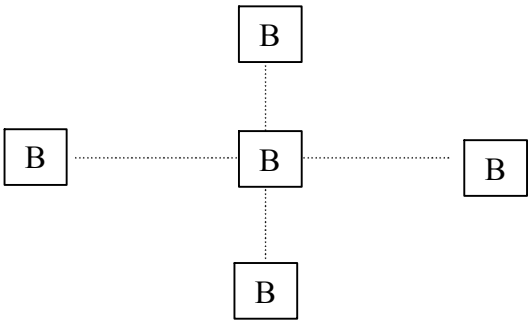
Locus

Shirley Aydon
Westville Girls' High, Durban

Learners find loci very abstract. To try and help them visualise the concept I take my class out onto the school field which has concrete steps along the one side. (Any flights of stairs would suffice.) Four learners place their school bags (B) at the "ends" of the axes and one at the "origin". Rope could be used to indicate the axes. The class sit on the top steps. From here they have a "bird's eye" view of the set of axes and the shapes formed by their class-mates.



Activity 1
About 8 or more learners are asked to go and stand "5 units from the origin". No mention is made of the word *locus*. The first four learners usually stand "on the axes" but then the rest have to think. Soon the shape becomes apparent and together we describe the shape and work out the equation of all the points.

Activity 2
Another group of learners are told to stand "5 units from the y-axis". The first few usually stand on one side, until one brave person tries the other side. Once the shape is apparent we describe it and work out the equation.

Activity 3
Another group of learners are told to stand "equidistant from both axes". Again we describe the "shape" and work out the equation.

Activity 4
Two learners are told to go and stand in quadrants 1 and 3. (I specify the quadrants so the points are not too close together and also do not form a horizontal/vertical line.) Then others are told to stand "equidistant from Ann and Bongiwe". The first person goes to the midpoint of the line segment joining Ann and Bongiwe, but the others, with encouragement/advice from the rest of the class, soon work out a plan. Together we describe the equation they have formed, but agree the equation is a bit too difficult to work out mentally!

Back in the classroom I draw the four loci which the class have mapped out on the board and together we calculate the equation of the fourth locus looking at the two approaches. Only at this point do I introduce the idea of the *locus* of a point as a set of points being traced out. Then we move onto the traditional questions. Throughout this section I refer back to our outside lesson and so try to make the section more concrete.

I have found this approach to be very effective in getting the idea of loci across. I also find it better if the learners get the idea that we are looking for the equation of a set of points fulfilling certain conditions before introducing the word *locus*, which seems to scare them.