Who's got my Script?

In your investigations of loci using The Geometer's Sketchpad, you may find yourself repeating the same construction or set of steps over and over. Sketchpad's way of automating this procedure is called a **script**. A script is a recording of a set of steps which may be replayed any time you want to follow the same procedure on a new object. The best part is, the script may be turned into a tool which appears in your tool box.

Our first Script: The perpendicular bisector

"The perpendicular bisector is the locus of points equidistant from two given points." Anytime we need to find a point which is the same distance from A and B, it must be on the perpendicular bisector. The "PB" is also the mirror line or crease line which would be created if the page were folded so that A was placed on top of B. (Don't try this with your computer monitor.)

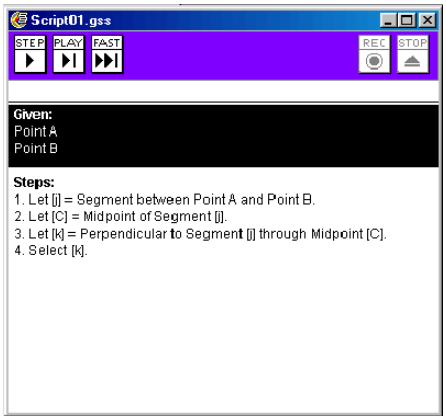
Let's create our first script which will make perpendicular bisectors.

do this #1

T_____ *Open a new sketch (File, New Sketch)*
T_____ *Open a new **script** (File, New Script)*
T_____ *Click on the record button (REC)*
T_____ *In the sketch, create a line segment AB*
T_____ *construct the midpoint of AB*
T_____ *construct the perpendicular to AB passing through the midpoint.*
T_____ *Click on the STOP button.*
T_____ *Save the script as PB1.gss*

Looking at the script we can see that there are two parts.

Given: Lists the elements which must be selected before the script can play.



Steps: The actual steps you went through as you recorded your script.

To play the script, select any two points you want to match the givens, in this case, the endpoints of a segment. To run the script click on

- Step: to play one step at a time
- Play: to play all the steps one at a time from beginning to end
- Fast: just show the final result

do this #2

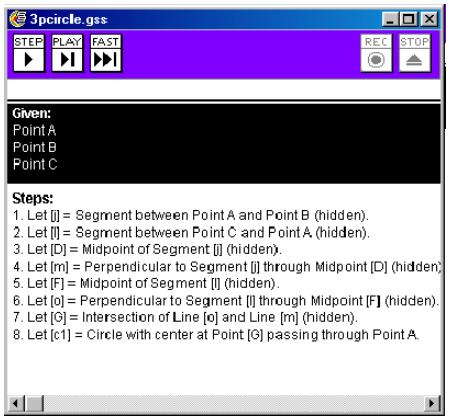
T_____ *Start a new sketch.*
T_____ *Construct a triangle*

ABC.

T_____ *Select vertices A and B and Step through the script.*
T_____ *Select vertices B and C and Play the script.*
T_____ *Select vertices A and C and Fast forward through the script.*
T_____ *Select two perpendicular bisectors and construct their point of intersection.*
T_____ *Select the intersection and vertex A and construct a Circle by Center and Point.*
T_____ *Hide all the elements of your sketch except the original three vertices and the circle.*
T_____ *Select the three points and the circle.(Select All)*
T_____ *Under the work menu select Make Script.*

This has shown us another way to make a script, i.e. after we are done. The steps may not be in exactly the same order as GSP simplifies any constructions make this way.

Save this as 3pcircle.gss. We now have a script which will construct a circle passing through three given points.

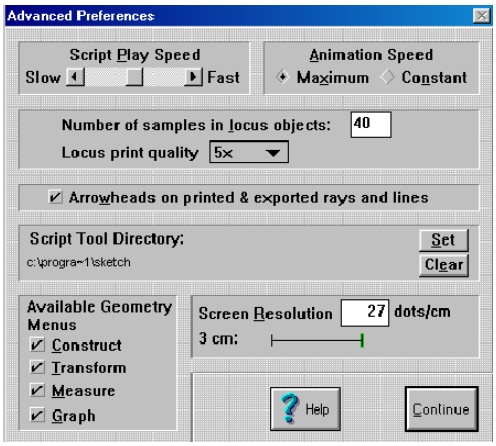


From Scripts to Tools.

Now we have two scripts, PB1.gss and 3pcircle.gss. The easiest way to use these is to set up the toolbox to access your scripts.

Click on Display, and choose Preferences. Click on the More button to reveal the Advanced Preferences

.Now click on the Set button beside Script Tool Directory and navigate to the directory where you have been saving your scripts.



Click on Continue and OK.

You should now have the script tool in your toolbox. It looks like this:

When you click on this tool you should get a listing of scripts in the directory you specified. These should include our scripts PB1 and 3pcircle.

do this #3

T_____ *open a new sketch*
T_____ *construct a line AB near the bottom of the screen*
T_____ *construct a point C **on** the line*
T_____ *select C and line AB and construct a perpendicular line*
T_____ *construct a point D **not** on the line*
T_____ *select the script tool PBI and match it to points C and D*
T_____ *construct the point of intersection F, of the two perpendiculars*
T_____ *select F and C and construct locus*
T_____ *hide everything except for the parabola, points D and F and the line passing through AB*
T_____ *select everything on the screen and Make Script from the Work menu*
T_____ *save the script as parab1.gss*

You should now try to make scripts which construct ellipses and hyperbolae. See your text for different ways to construct these objects.

This toolkit contains a number of scripts which might be useful in your study of loci and conics.

Filename	**constructs a...**	**given...**
square.gss	square	adjacent vertices
Perp_Bi.gss	perpendicular bisector	endpoints
3ptcircle.gss	circle	3 points on circle
parab.gss	parabola	two points on directrix, focus
Ellipse1.gss	ellipse	focus, radial point, focus
conic	ellipse or hyperbola	focus, radial point, focus
conic_Dr.gss	ellipse or hyperbola	centre and radius of circle
cf_hyp.gss	hyperbola	centre and focus
2fp_hyp.gss	hyperbola	two foci and point on hyperbola
H_line	line at given distance (from Harcourt)	parallel line, segment