

Lesson One: *Introduction to Geometer's Sketchpad*

This is the first in a series of lessons designed to learn the software that is changing the way we see Geometry, or at least the way I see it. A limited understanding of computers is needed. I will speak of the top taskbar that includes **File, Edit, Display, Construct**, etc... We will talk about these commands when we have use for them but I recommend looking through each of them right now to get an idea of what is available to us. The beginning lessons will primarily deal with the icons located in the upper left column; **Arrow, Point, Circle, Segment, Hand and Help**. I will also stress that there are a number of ways to achieve the same goal so in no way should my methods be considered the best method for you. If so great, but explore other ways. Follow along, fill in the blanks and remember there is an “**undo**” command under the **Edit** taskbar so explore!!!!!!

Driving Questions: How difficult is this software to understand? How many different ways are there to rename a point??

Objective #1: Understand the **Arrow** and **Point** icons

First thing we need to do is put your name on your sketch. We will do that by starting with the most basic object in Geometry, the _____. In order to plot a point on your sketchpad you need to highlight the **Point** icon. Now on your sketchpad notice how the cursor has changed from an arrow to _____. If you click the mouse now a point will appear. If you would click the mouse again another point will appear because you still have the crosshairs and the _____ icon highlighted. Make another point but right after you do I want you to **undo** that command under the _____ taskbar.

Now I want you to give that point a name so we need to highlight the **Hand** icon. The computer will automatically start with _____ and go through the alphabet but I want you to give that point your name so click on the point. Where you change the name I also want you to ‘style’ it up a little bit. Change the font size to 24, the type of font and any other way that you would like it to be. Once you are happy with it click ‘OK’ twice and your name should appear by the point on your sketchpad. Highlight the **Arrow** icon and click and drag the point to the upper left corner of your sketchpad. What happens when you click and drag your name instead of the actual point??

Objective #2: Understand the Circle icon and renaming points

We now know that in order to create a point we need the _____ icon highlighted and we cannot do anything else until a different icon is picked. Right now we are going to construct a circle so highlight the _____ icon. Notice that the cursor is now a _____. Construct a circle by clicking the mouse where you would like the center to be and then drag the mouse to the desired size and let go. You should notice the circle itself is highlighted now with _____ dots and the cursor is still a _____. Highlight the **Arrow** icon and drag the highlighted circle around and let go. I want this circle to have center Q and passing through the point Z. Now, if you

click and drag the point Z then point Q (does/does not) move also. What happens to point Z if you click and drag point Q??

A very nice feature of this software is that it will calculate measurements for a variety of objects like the area of a circle. Look under the **Measure** taskbar and find area. The problem is that area does not appear available for our use. We must tell the computer what we want to find the area of first so highlight the circle so you see those _____ dots again and now find **area** under the _____ taskbar. Drag the measurement by your circle. Click and drag the two points _____ and _____ again and notice what happens to the area of the circle. Construct a circle with area close to 2.56 in^2 and drag the circle and measure to the upper right hand corner.

Objective #3: Understand the **Segment** icon and midpoint

At this point it is my hope that you are beginning to feel comfortable with the basic ideas of this software. Again I will stress that some of you may take different paths to the same goal, which is a good thing. Explore and use that **undo** button whenever necessary.

Now we will construct a segment. In order to do this we must highlight the **Segment** icon. First I want you to click and hold the Segment icon until you see the **Ray** and **Line** icons also. We need to construct a segment so choose the _____ icon. The cursor is now a(n)_____. Construct your segment by clicking the mouse where you want your segment to begin and drag to the other endpoint and let go. Now is a good time to remember that you must change the icon from **Segment** to **Arrow** so you will not create another segment by accident. Label your segment with endpoints S and G. When you click and drag point S, point G (does/does not) move. How do you move the whole segment? Now let's construct the midpoint. First the computer must know what to find the midpoint of...so _____ the segment and under **Construct** choose **Point At Midpoint** and label that point as M. Now when you click and drag point S the point M remains the _____ of that segment and it should because you constructed it to be the _____. The midpoint implies something about the length so lets find the measures. Again the computer must be told what to find the length of so you must highlight the _____ endpoints that you want to find the distance between. Can you highlight both points at the same time??? Hold the shift key to highlight more than one object at a time. Once you have highlighted the two points under the **Measure** taskbar choose _____. Do this for all 3 segments and place those measures by the segment. Click and drag point S and notice what happens to the measurements. Does the midpoint always bisect the whole segment into two equal pieces?? Construct the segment so it's measure is 3.56 in. which means $SM = \underline{\hspace{2cm}}$ and $MG = \underline{\hspace{2cm}}$.

State an additional ***Driving Question***

Conclusion: These objectives were set to give an overall view of the way this software can be used. You should now be able to draw the basic shapes of Geometry and label those objects as you see fit. The IGO's met or partly met include M7.34, G1, G.5(midpoint), G.16, G.17 and G.23. This was prepared by Steve Freshour for a 50 minute period.