Sketchpad Skills Investigation
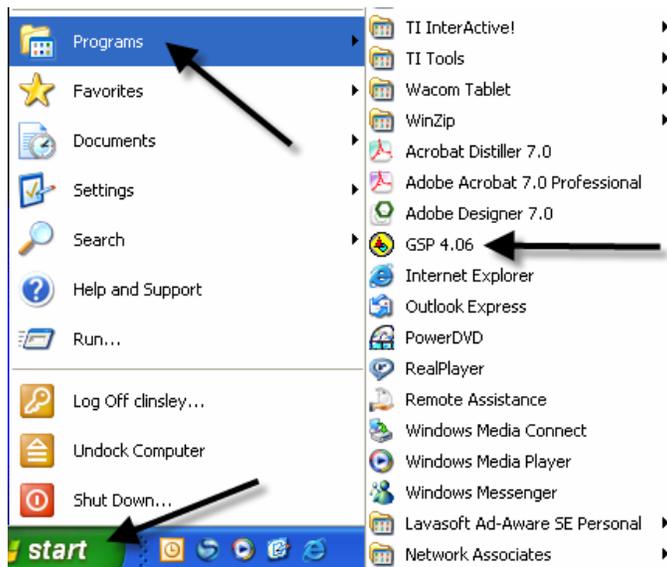
Opening a New Sketch

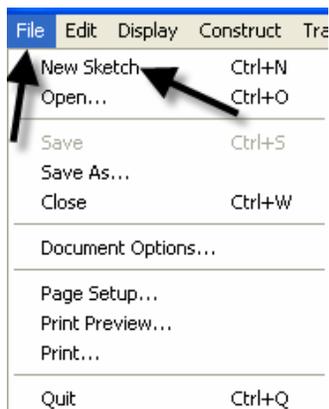1. To **open** the Geometer's Sketchpad ,click on the icon on your desktop

GSP 4.06.lnk

or click on **Start**, **Programs** and find the GSP icon. A new blank sketch will open up.

2. To open a **new sketch** in Geometer's Sketchpad, click on **File**, **New Sketch**.

Creating Points

Select the **Point Tool** and click in the white blank space.

Notice that the last item created stays highlighted. To deselect the last item, use the **Selection Tool** to click anywhere in the blank white space.
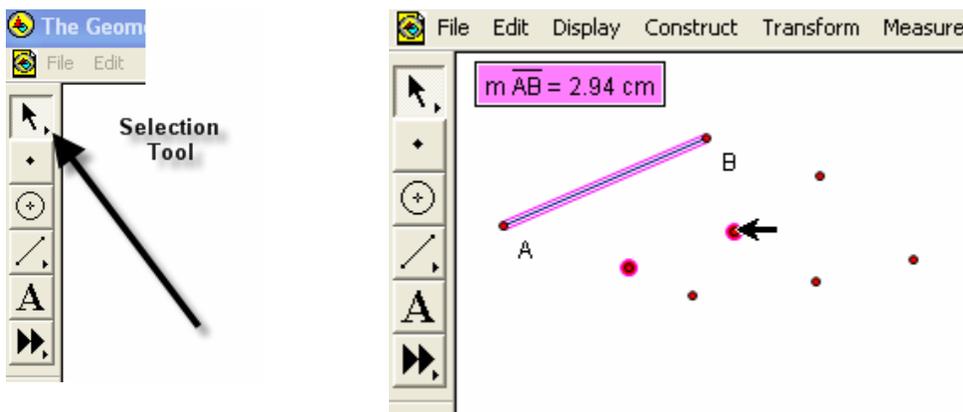
To label points, use the **Text Tool**. Notice that the curser turns into an outline of a hand. As you line up on a point, the hand fills in. Click the mouse to label the point.
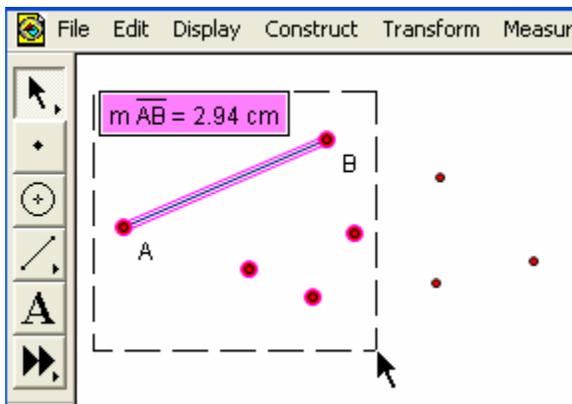
Selection Tool

The selection tool allows for selection/deselection of items in two different ways. First, simply click on the item to be selected/deselected. An item that is highlighted is pink.

The second way is to click and drag. An outline box will appear that will select/deselect everything it touches.
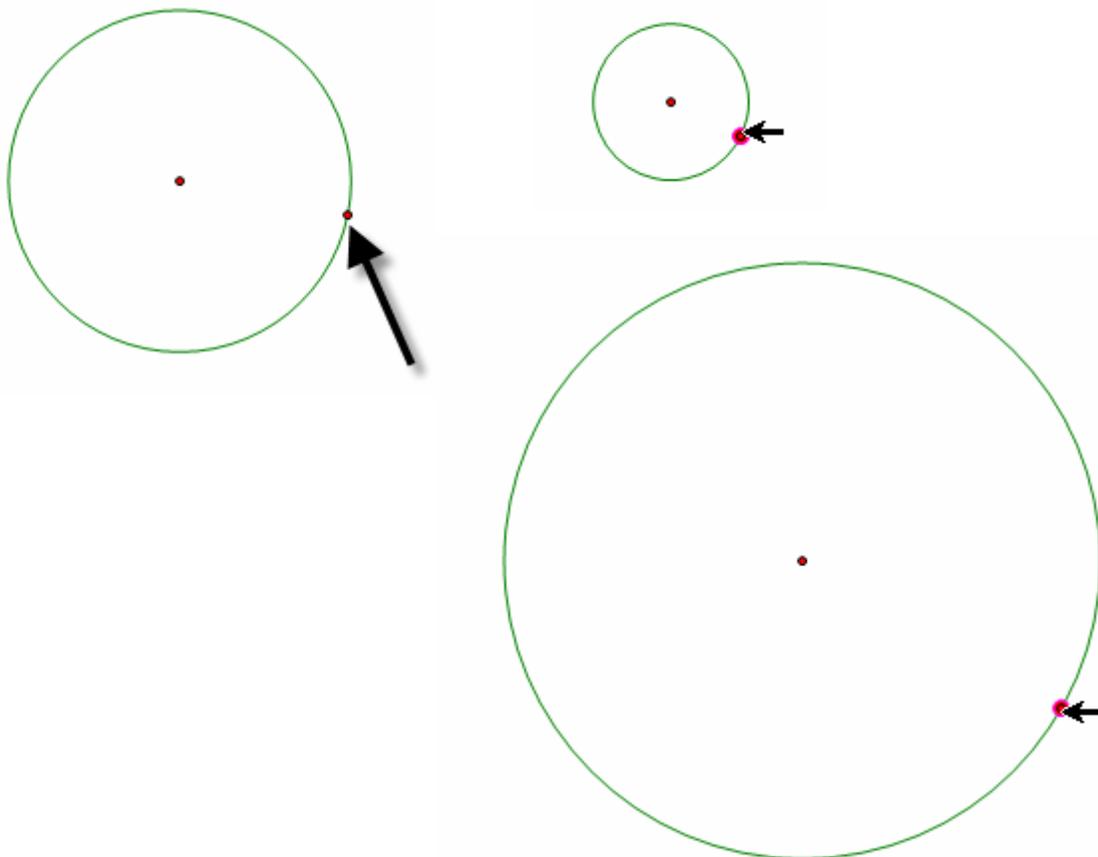
Deleting

 To delete items, simply select them, so they are highlighted, and then hit the **Delete** key on the keyboard.

Circles

To construct a circle use the **Compass Tool**. Notice that the circle forms from the inside out.

The point on the side of the circle is a control point that will allow the size of the circle to get larger and smaller by clicking and dragging.

Lines, Rays and Segments

To create lines, rays or segments, click on the **Straightedge** tool, then slide the cursor to the right to choose the desired tool. Each figure is formed from two points. The segment has two distinct endpoints; the ray has one endpoint and then travels off the screen, and the line has both ends traveling off the screen.
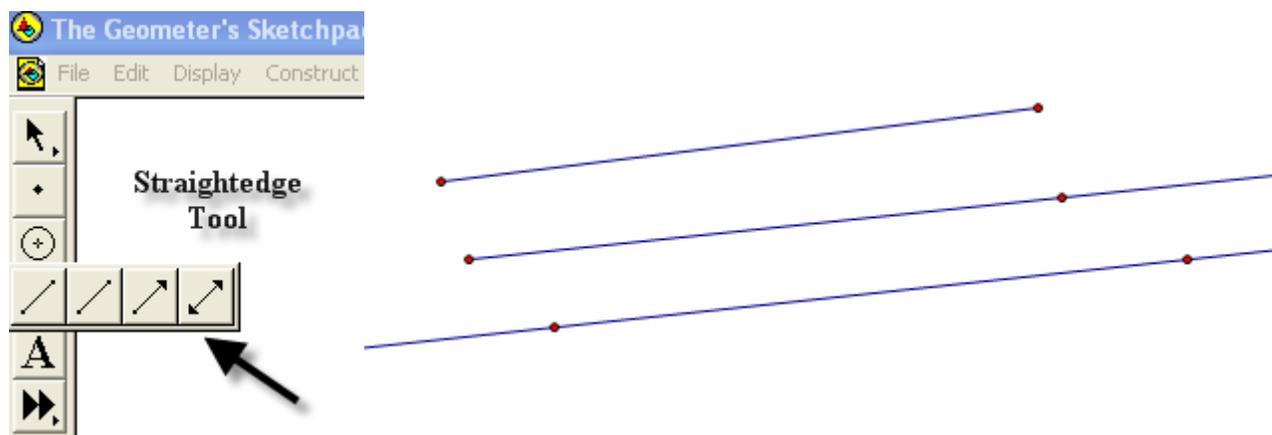
Label the figures by first selecting the **Text** tool and either clicking on two points on the figure or by clicking on the figure between two points.
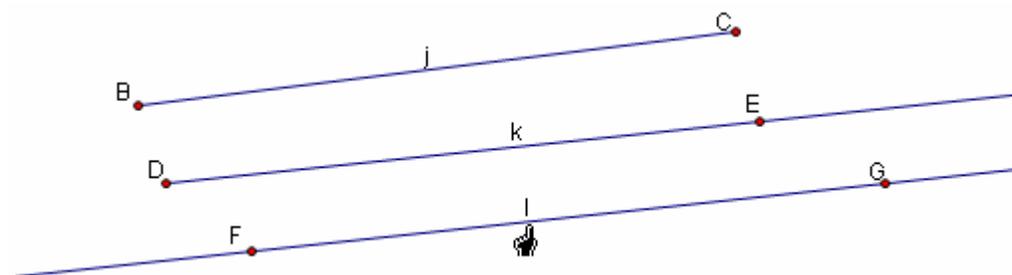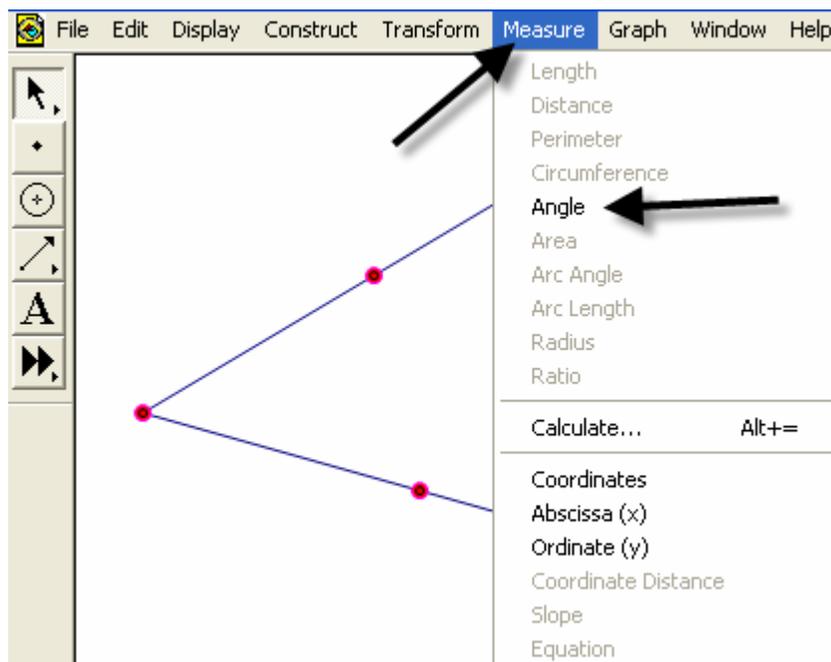
Labels can be changed by double clicking on the label. A box will pop up that provides a place to edit or delete a label.
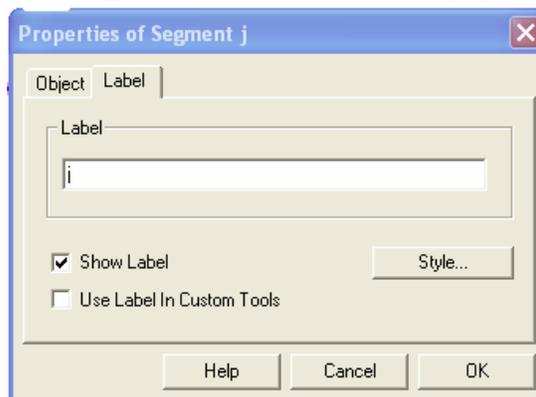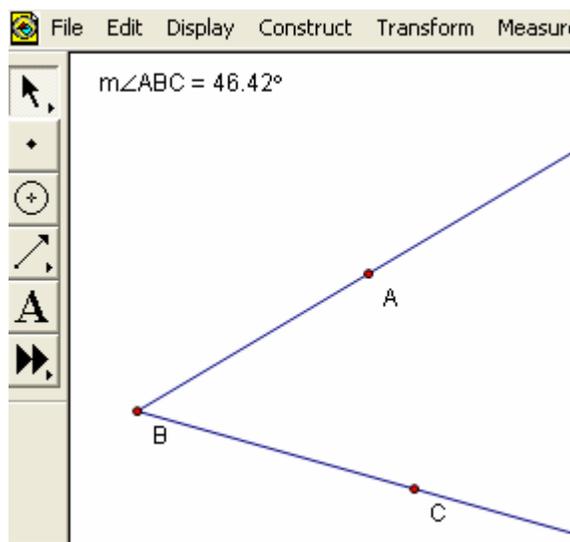
Measuring an Angle

To measure an angle, first highlight it by clicking on three points that could be used to name it, one on a side, then the vertex, and then one on the other side. Use the **Measure** option on the menu bar and select **Angle**.
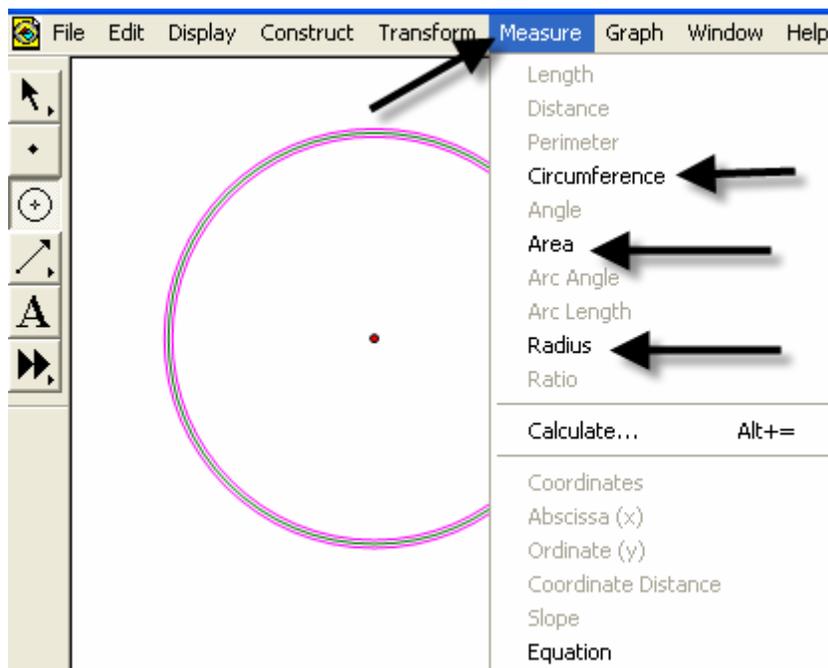

The measurement will appear and the program will automatically label points if they weren't labeled prior to measurement.

Measuring a Circle

To measure a circle, first highlight it by clicking on it. Use the **Measure** option on the menu bar and select the measurement desired.

| File | Edit | Display | Construct | Transform | Measure | Graph | Window | Help |

Length
Distance
Perimeter
Circumference ⬅
Angle
Area ⬅
Arc Angle
Arc Length
Radius ⬅
Ratio

Calculate...   Alt+=

Coordinates
Abscissa (x)
Ordinate (y)
Coordinate Distance
Slope
Equation

The measurement will appear, and the program will automatically label points if they weren't labeled prior to measurement.

Circumference ⊙AB = 17.17 cm
Area ⊙AB = 23.46 cm^2
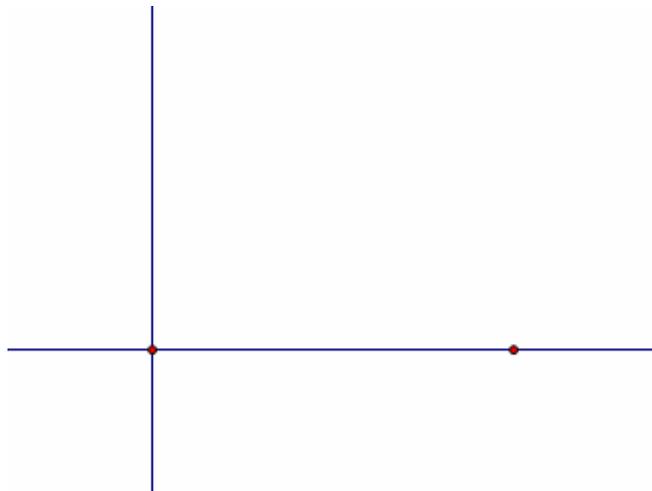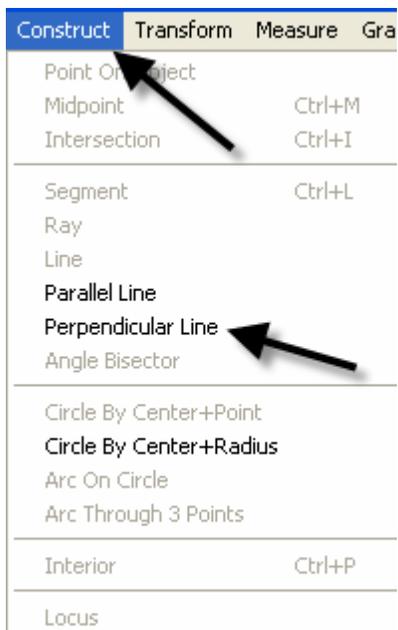Radius ⊙AB = 2.73 cm

A

B
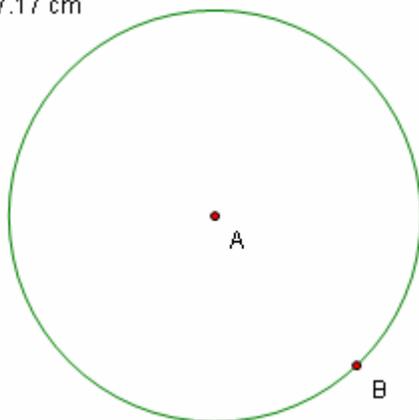
30-60-90 Triangle

1. Draw a horizontal line. If you hold the shift key before letting of the line, it will make it horizontal for you.

2. Construct a perpendicular line by first highlighting the line and one of the points, then clicking on the Construct menu.

3. Create the third side by rotating the original line to form either a 30 or 60 degree angle.

    a) Mark the point of rotation by double clicking on it. There will be a quick flash of concentric circles around the point as it is marked.
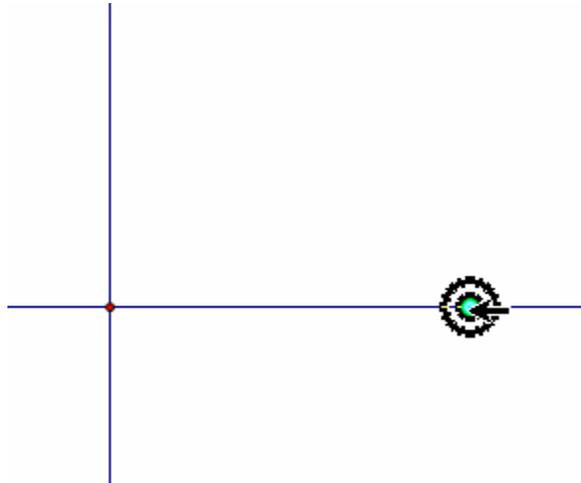

    b) Highlight the original line and use the **Transform** menu with the **Rotate** option.
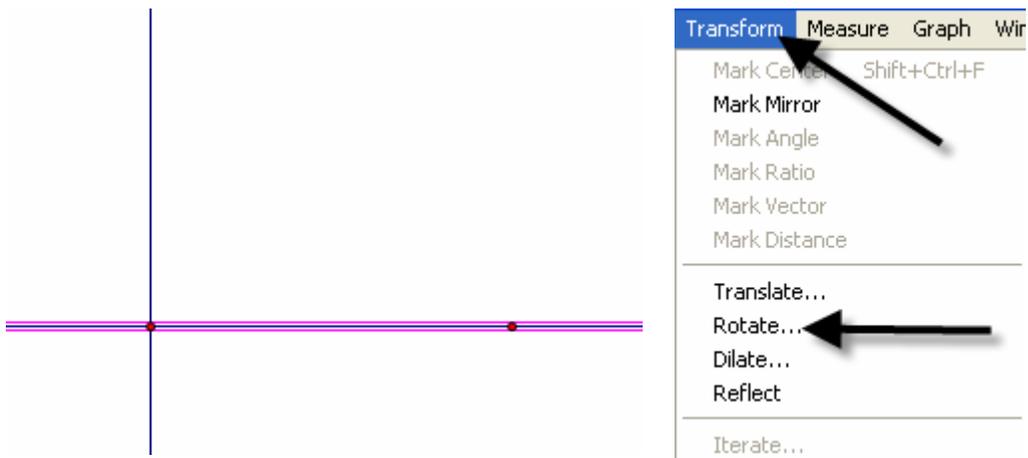
A box will pop up that allows the number of degrees of rotation to be entered. Notice that a shadow of the rotated line appears. This shadow line is a preview of where the rotated line will go. Geometer's Sketchpad has a default of 90 degrees.
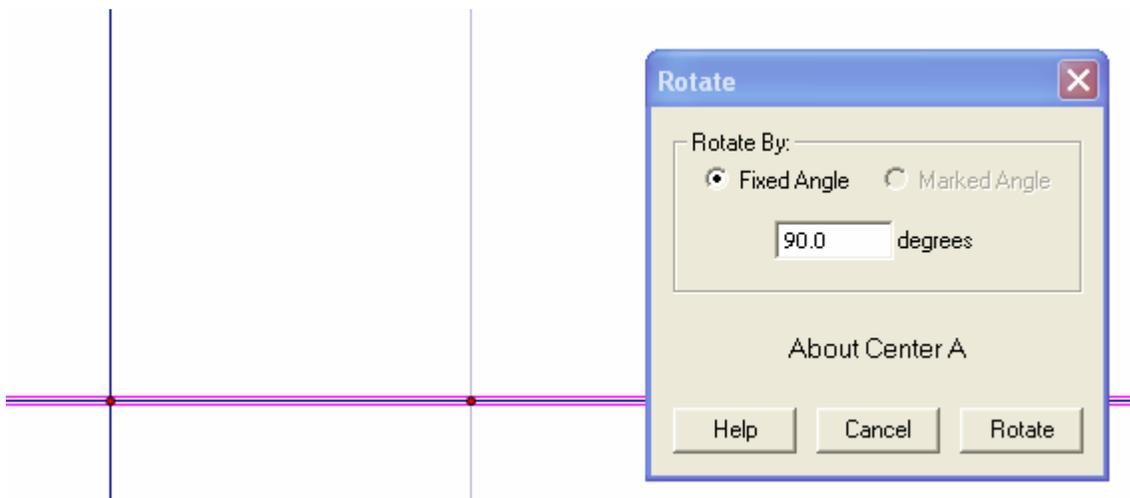
Change the number to a multiple of 30 to get the desired effect. Geometer's Sketchpad treats the point of rotation as the origin and rotates from the side of standard position.
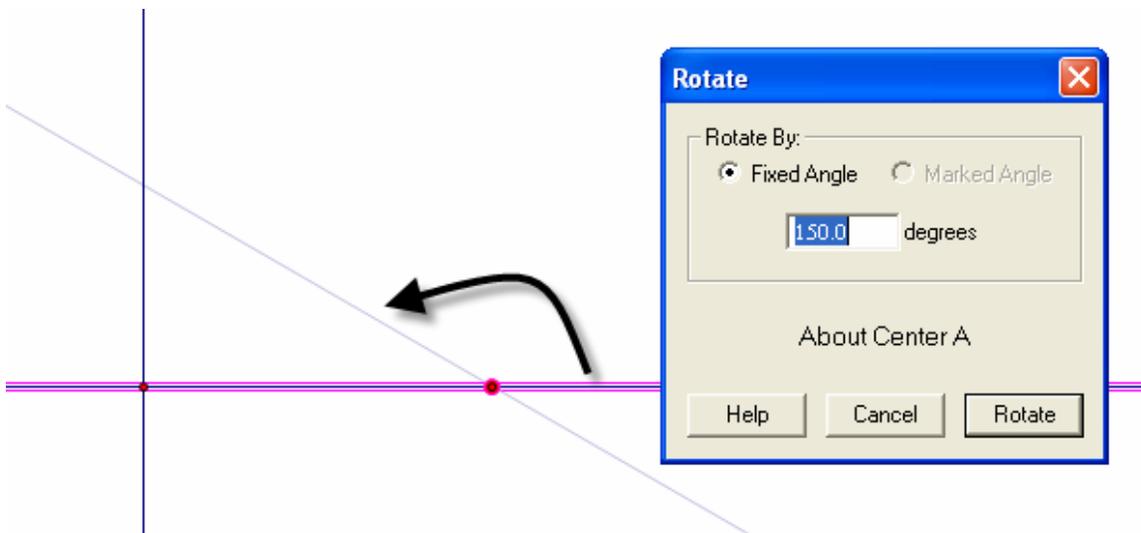
4. Construct a point of intersection where the perpendicular line meets the rotated line either by using the **Point** tool and placing a point or by highlighting both lines and using the **Construct** menu with the **Intersection** option.
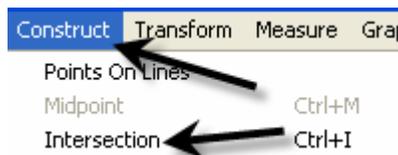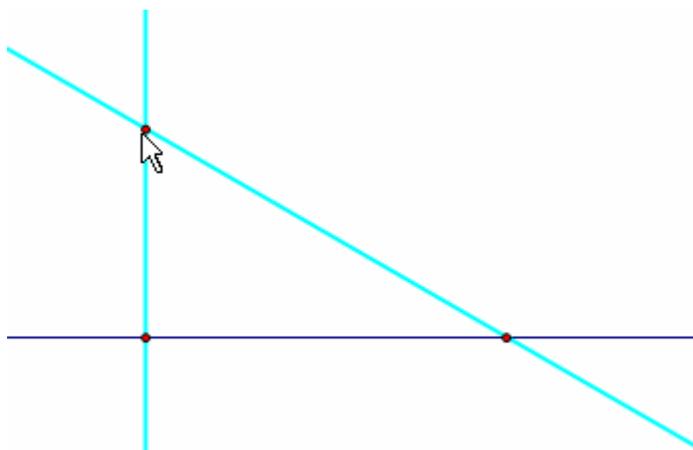
Construction Clean Up

1. To "clean up" a construction, it is often necessary to construct segments, arcs, etc. over the parts of the final product. Follows is an example of a 30-60-90 triangle.

1. Use the **Straightedge tool** to draw segments on top of the sides of the triangle. After drawing the first one, use the **Display** menu to change the **Line Width** and **Color** of the segment. Subsequent segments will then be drawn with this color and thickness.
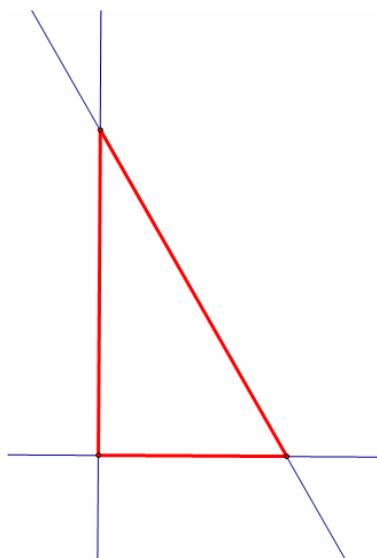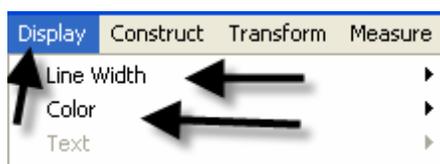
2. To hide construction lines ,create a **Hide/Show** button by highlighting the lines then using the **Edit** menu and the **Action Buttons**⟶**Hide/Show** option**.**
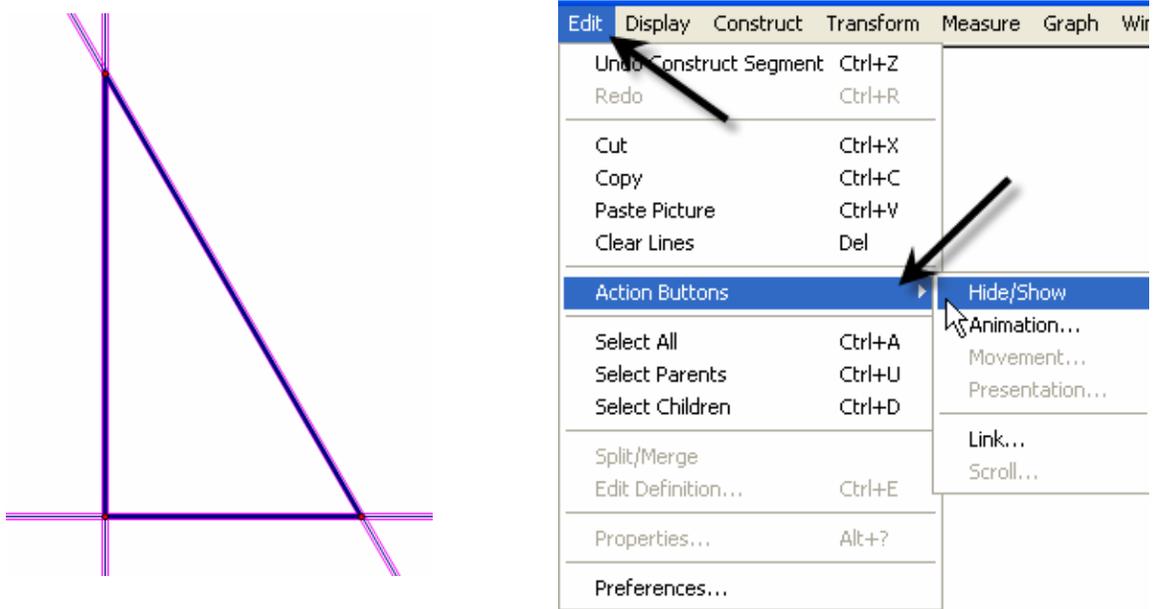
The **Hide Lines** button appears which works as a toggle switch between **Hide** and **Show** when clicked on.
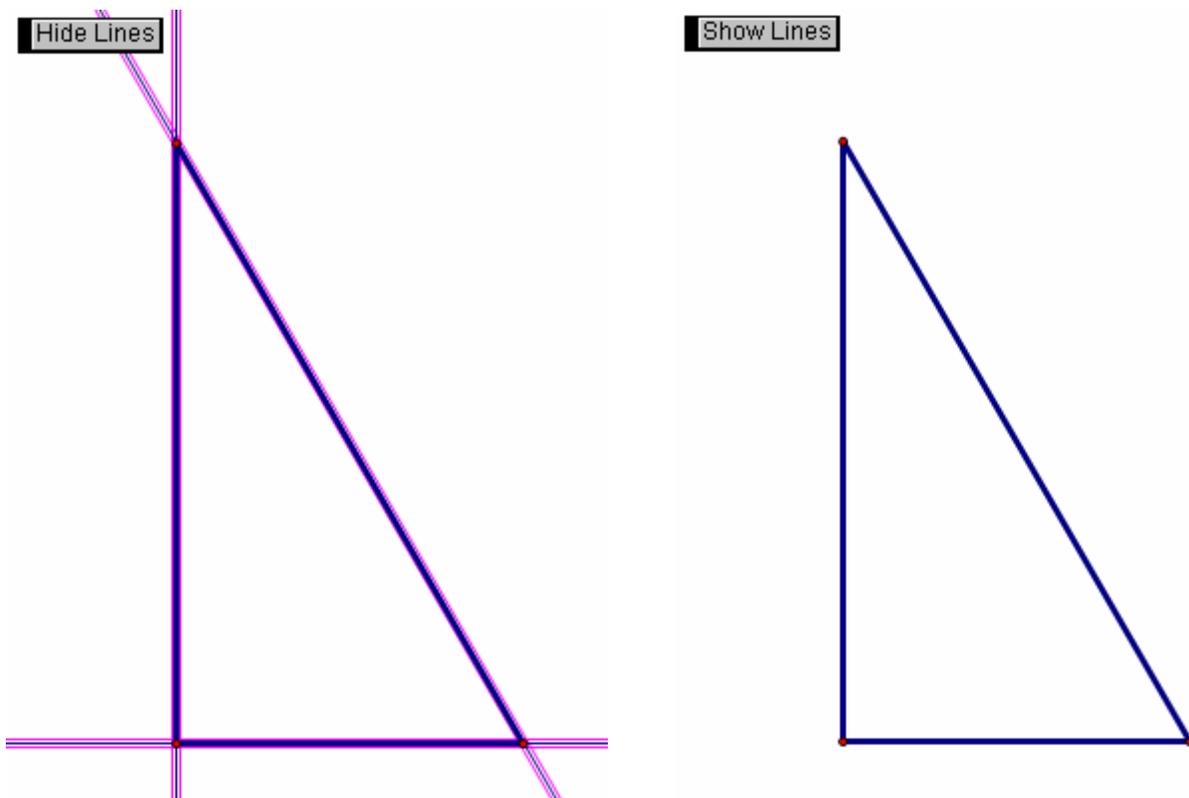
Reflecting

To transform a figure by reflecting, first mark the line of reflection by double clicking on it. A quick flash of two sets of concentric squares will appear on the line as the marking process is taking place. Next, use the Selection tool to highlight the figure to be reflected. Use the Transform menu and the Reflect option to complete the reflection.
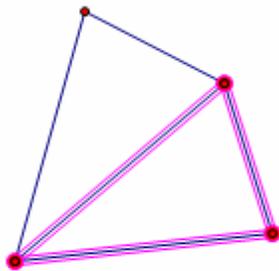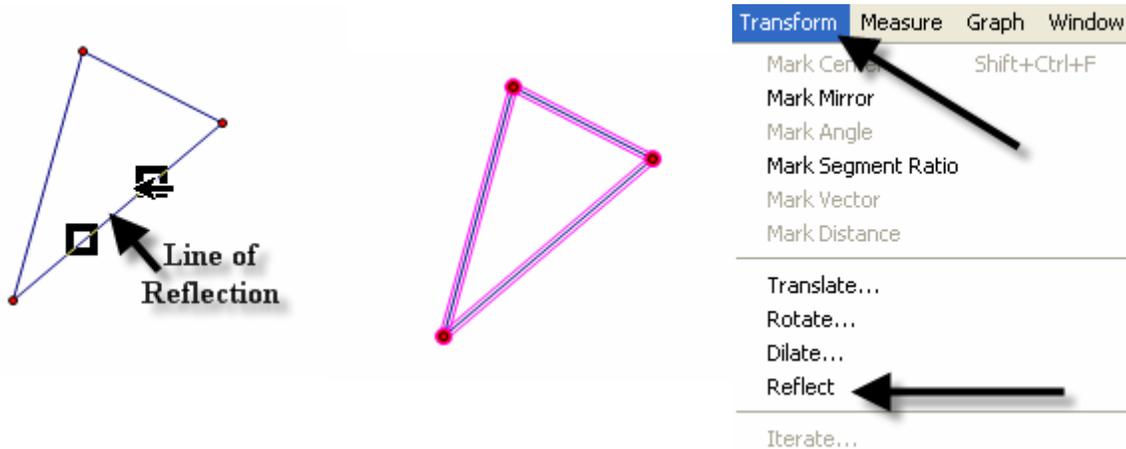
30-60-90 triangle tessellation by reflection

Explore Geometric Properties in the World

Importing Pictures from the Internet

1. Position the cursor on the picture.

2. RIGHT click on your mouse and select COPY.

   Open Link
   Open Link in New Window
   Save Target As...
   Print Target

   Show Picture
   Save Picture As...
   E-mail Picture...
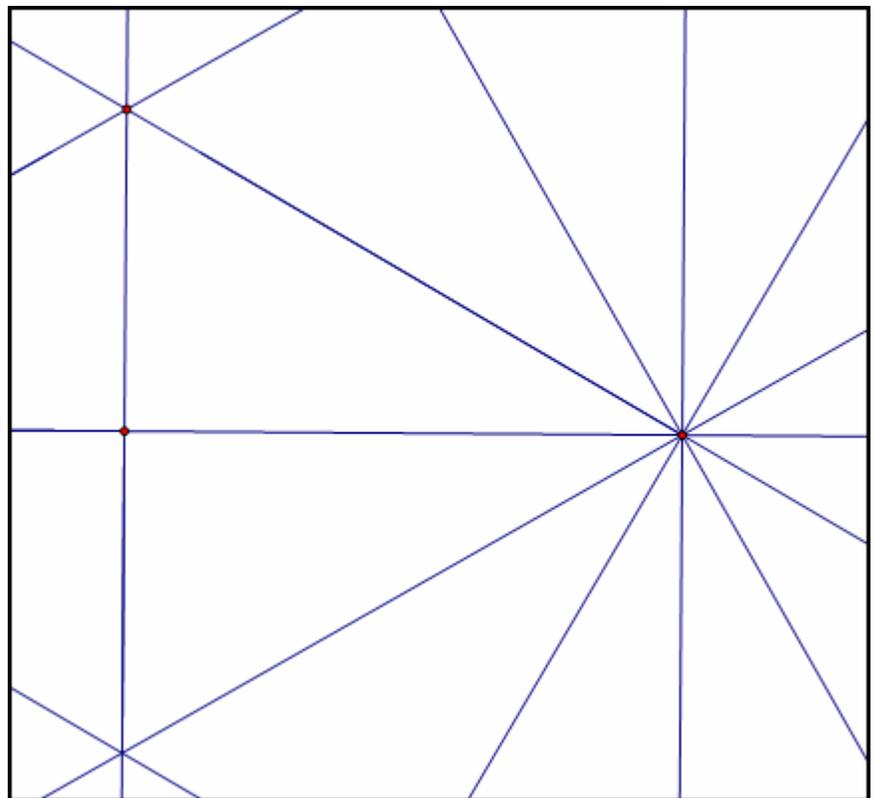   Print Picture...
   Go to My Pictures
   Set as Background
   Set as Desktop Item...

   Cut
   Copy
   Copy Shortcut
   Paste

   Add to Favorites...

   Convert to Adobe PDF
   Convert to existing PDF

   Properties

3. Return to your sketch in Geometer's Sketchpad. Use the **Edit** and **Paste Picture** options from the **Menu** bar.

   Edit   Display   Construct   Tran
   Undo   Ctrl+Z
   Redo   Ctrl+R

   Cut   Ctrl+X
   Copy   Ctrl+C
   Paste Picture   Ctrl+V
   Clear   Del

   Action Buttons   ▶

   Select All   Ctrl+A
   Select Parents   Ctrl+U
   Select Children   Ctrl+D

   Split/Merge
   Edit Definition... Ctrl+E

   Properties...   Alt+?

   Preferences...