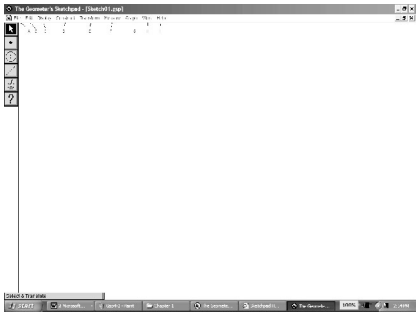
# *The Geometer's Sketchpad*® 3

## The Menus



**File**: Used to open, save, close, and print documents.

**Edit**: Used to undo and redo actions.

**Display**: Used to control an object's appearance, to label/hide/animate objects, and to set preferences.

**Construct**: Used to construct new geometric objects based on selected objects in your sketch.

**Transform**: Used to apply geometric transformations to selected objects.

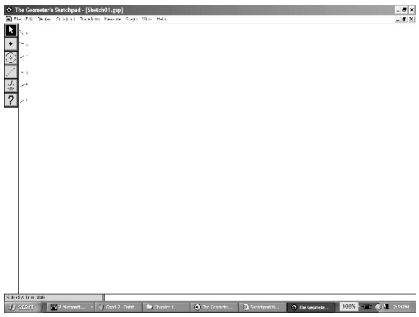
**Measure**: Used to give various measures based on selected objects in a sketch.

**Graph**: Used to create grids and axes for plotting points.

**Window**: Used to manipulate windows within *The Geometer's Sketchpad*® to create a script.

**Help**: Used to access the available help files.

## The Toolbox



**Selection Arrow Tool**: Used to select, move, and transform objects in a sketch.

**Point Tool**: Used to draw and plot points.

**Compass Tool**: Used to draw circles.

**Straightedge Tool**: Used to draw line segments, lines, and rays.

**Text Tool**: Used to label/unlabel points and lines, and to write text within a sketch.

**Object Information Tool**: Provides information about selected objects.

## Creating a New Sketch

- To create a new sketch window, on the **File** menu, click **New Sketch**.

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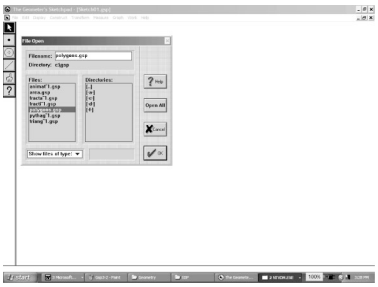
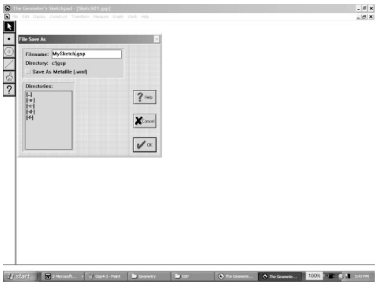
## Opening an Existing Sketch



- On the **File** menu, click **Open…** .
- Navigate to the directory where the sketch you wish to open is saved.
- Click the name of the sketch you wish to open, and click **OK**.

## Saving a Sketch



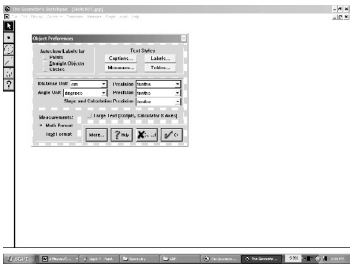
To save a sketch for the first time:
- on the **File** menu, click **Save**
- navigate to the directory in which you wish to save the sketch
- *The Geometer's Sketchpad* ® will give the sketch a name in the **Filename** text box. To use that one, click **OK**.

  *OR*

- to give the sketch the name you wish, delete the given name, and type the name you want in the **Filename** text box. Click **OK**.

To resave a previously saved sketch:
- on the **File** menu, click **Save**.

## Closing a Sketch Without Exiting *The Geometer's Sketchpad*®

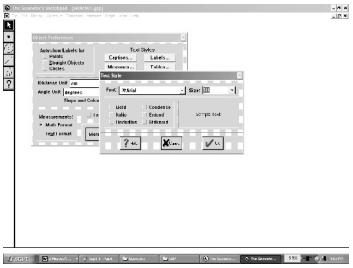


- On the **File** menu, click **Close**.

## Exiting *The Geometer's Sketchpad*®

- On the **File** menu, click **Exit**.

## Setting Preferences



- On the **Display** menu, click **Preferences…** .
- Select the desired units and precision for **Distance**, **Angle**, **Slopes**, and **Calculations**.
- If you click any of the boxes under the **Autoshow Label for**, the selected objects will automatically be labelled by *The Geometer's Sketchpad*® at the time the object is created.
- The boxes under **Text Styles** allow you to change the style and size of the text used in **Captions...**, **Labels...**, **Measures...**, **Tables…** .

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## Selecting Points and Segments

- Click the **Selection Arrow Tool**. The mouse cursor will appear as an arrow.
- Move the cursor to the point or segment you wish to select. When the cursor becomes a horizontal arrow, click once with the mouse, and the point or object will be selected.
- To select more than one point or segment, hold down the SHIFT key, and continue clicking each point or object you would like selected.

## Deselecting

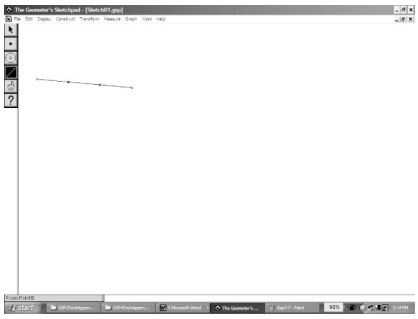
- To deselect a single point or segment, hold down the SHIFT key, and move the cursor to the point or segment you wish to deselect. When the cursor becomes a horizontal arrow, click and the point or object will be deselected.
- To deselect all selected items, click any white space.


## Constructing Line Segments

- Click the **Point Tool**, and create two points in the workspace.
- Click the **Selection Arrow Tool**, and select both points.
- On the **Construct** menu, click **Segment**.

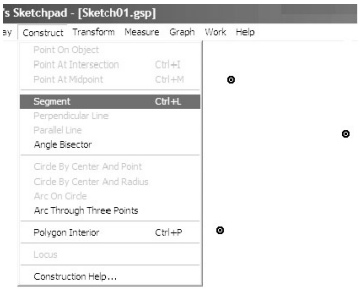
*OR*

- Click the **Straightedge Tool**.
- Move the cursor to the workspace.
- Click and hold the left mouse button.
- Drag the cursor to form the segment.
- Release the mouse button.



## Constructing Triangles

- Click the **Point Tool**. Draw three points in a triangular shape in the workspace.
- Click the **Selection Arrow Tool**, and select the three points.
- On the **Construct** menu, click **Segment**.



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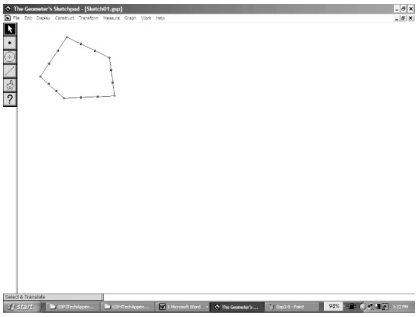
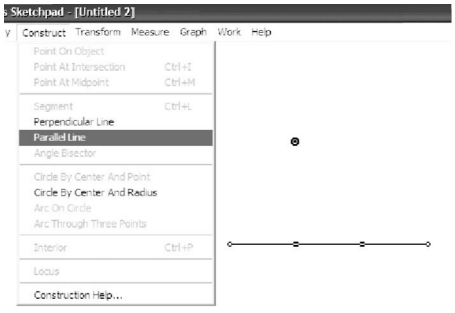
## Constructing Polygons

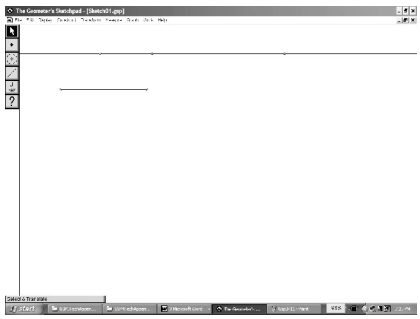


- To construct a polygon: Click the **Point Tool**. Draw four or more points in the workspace.
- Click the **Selection Arrow Tool**, and select all the points in either clockwise or counterclockwise order.
- On the **Construct** menu, select **Segment**.

## Constructing Parallel Lines

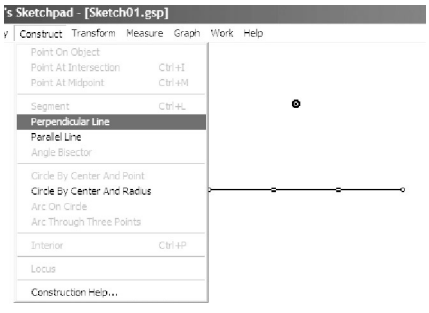
To construct a line parallel to an existing line:
- click the **Point Tool**, and place a point above or below the existing line
- click the **Selection Arrow Tool**, and select the point and the line
- on the **Construct** menu, click **Parallel Line**.

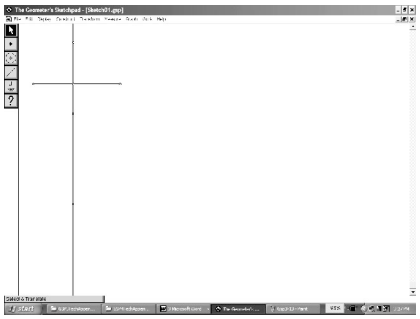


## Constructing Perpendicular Lines

To construct a line perpendicular to an existing line:
- click the **Point Tool**, and place a point above or below the existing line
- click the **Selection Arrow Tool**, and select the point and the line
- on the **Construct** menu, click **Perpendicular Line**.



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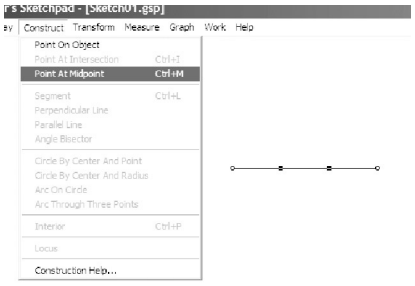
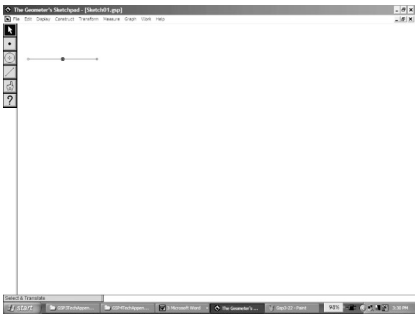
## Constructing a Midpoint




- Click the **Selection Arrow Tool**, and select the line.
- On the **Construct** menu, click **Point At Midpoint**. A point will appear on the line. That point will be fixed at the middle of the line.

## Finding Measures



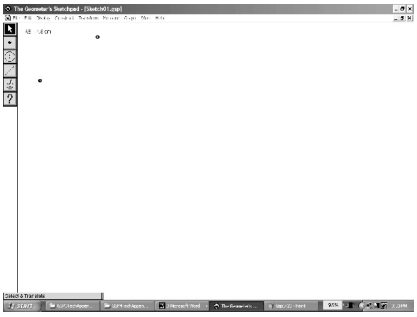
For all measures, *The Geometer's Sketchpad*® will display the desired measure using the units and precision selected in **Preferences…** on the **Display** menu.

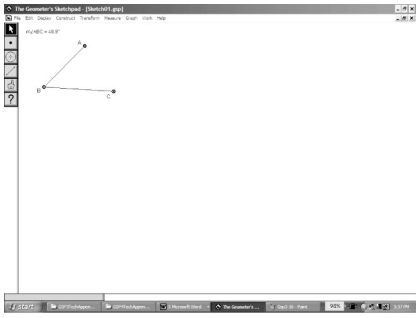
To measure the distance between two points:

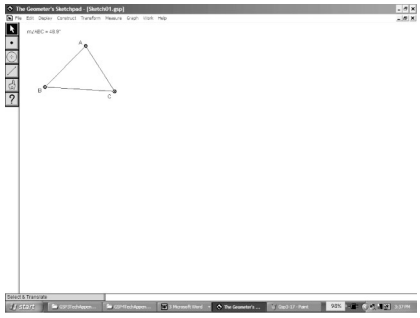
- ensure nothing is selected
- select the two points
- on the **Measure** menu, click **Distance**.

To measure the length of a line segment:

- ensure nothing is selected
- select the two points
- on the **Measure** menu, click **Length**.

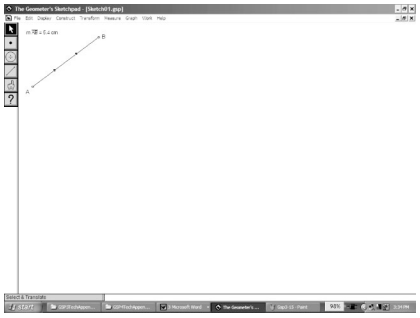






To measure an angle:

- ensure nothing is selected
- select the three points that form the angle. Make sure that the second point selected is the vertex of the angle.
- on the **Measure** menu, click **Angle**.



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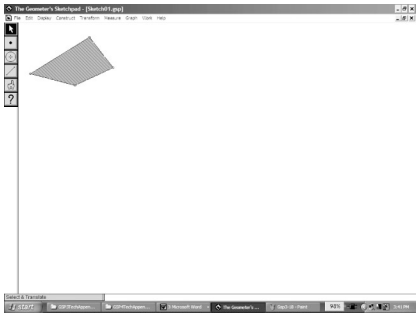
## Constructing and Measuring Polygon Interiors

*The Geometer's Sketchpad*® will measure the perimeter and area of a polygon. However, you must construct the interior of the polygon first.

To construct the interior:

- select all the points representing the vertices of the polygon. Here we have a quadrilateral, so four points were selected.
- on the **Construct** menu, click **Polygon Interior**.



To measure the perimeter and area:

- click the polygon's interior
- on the **Measure** menu, click **Perimeter**
- click the polygon's interior
- on the **Measure** menu, click **Area**.