

Handout 3

Basic Commands and Constructions (Modes) of Cinderella

In this session you will learn about:

- Cinderella basic commands
- Cinderella basic constructions (modes)

Cinderella Basic Commands

Open New Cinderella Window



To get a new construction window in Cinderella, do one of the following:

- From the **File** menu select **New**.
- Press the keyboard shortcut **Ctrl+N**.
- Click on the new button  on the standard toolbar.

The New command opens a new, blank Cinderella window in Euclidean View for creating and modifying geometric constructions. In this new window, everything is reset to the default state.

Open/Load Cinderella Saved File


To open/load a Cinderella saved file, do one of the following:

- From **File** menu select **Open**.
- Press the keyboard shortcut **Ctrl+O**.
- Click on **Open** button  on the standard toolbar.
- Double-click the Cinderella file icon; it could be similar to this icon .

The open command opens a dialog box for opening an existing Cinderella file.

Save Construction

To save the current construction, do one of the following:

- From **File** menu, select **Save**.
- Press the keyboard shortcut **Ctrl+S**.
- Click on **Save** button  on the standard toolbar.

The save command opens a dialog box that allow you to save the current Cinderella construction to a name that you specify.

Save Construction with New Name


To save the current construction with a new name, do one of the following:

- From **File** menu select **Save as**.
- Press the keyboard shortcut **Ctrl+Shift+S**.
- Click on **Save as** button  on the standard toolbar.

The save as command opens a dialog box that allows you to save the current Cinderella construction to another name that you specify.

Create an Interactive Web Page

To create an interactive web page of the current construction, do one of the following:

- From **File** menu select **Export to HTML**.
- Press the keyboard shortcut **Ctrl+E**.
- Click on **Create an Interactive Web Page** button  on the standard toolbar.

This action will open a dialog box that allows you to save the current Cinderella file as a web page.

Two **warnings** should be taken into consideration, while you are creating interactive web pages:

- (1) The construction data has to be saved as Cinderella file with the extension **“cdy”** before you export it to HTML.
- (2) The construction data has to be saved into the same directory your webpage will be resided in.

Undo

Undo command enables you to take one or more actions backward. You can undo as many backward actions as you want; however each click on the undo button takes you one action backward. The undoable actions are:

- Construction steps
- Movements
- Appearance changes
- Zooming, translating, and rotating views

- Deletion of elements

Redo 

Redo command enables you to take one or more actions forward. Here you can also redo as many forward actions as you want.

Delete 

Delete command is used to delete currently selected elements and other elements that depend on them.

Selection Commands

Under the Edit menu, there are several tools for selection that enable you either to select all elements, all points, all lines, or all conics and circles. *All* of these tools are also accessible via corresponding buttons on the standard toolbar.

Select All Elements 

It is used to select all geometric elements in the construction.

Select All Points 

It is used to select all points in the construction.

Select All Lines 

It is used to select all lines in the construction.

Select All Conics 

It is used to select all conics and circle in the construction.

Deselect Everything 

It is used to clear the current selection in the construction.

Cinderella Basic Constructions (Modes)

Move Mode

The move mode is one of the most important tools that provide Cinderella with the dynamic behavior – the ability to move free elements and the whole constructions moves accordingly without destroying the configuration which is a very beneficial characteristic in exploring geometric relationships.

Generally, move mode has twofold functions that enable you to select and move elements around the construction area.

There are two types of points: **free/movable points** and **fixed points**.

Free points: these are not dependent on the elements of the construction and can be moved around the construction area freely and the rest of the construction moves/changes accordingly.

Fixed points: are points that are dependent on the position of other free elements of the construction and cannot be moved.

In the construction area, you can visually distinguish between the free and fixed points by their appearance: fixed points appear darker.

Moving Points

To move a free/movable point, move the mouse pointer over the point you want to move. Press the left mouse button. Hold it pressed and drag the mouse. The point follows the mouse pointer.

Selecting Elements

The move mode can also be used to select one or more geometric elements in the construction area. To select an element, just click over the element you want to select. By holding the shift key you can select several elements at the same time.

You can easily recognize the selected elements, since they are highlighted in all views. You may select elements for the following reasons:

- To individualize the appearance of geometric elements using the inspector which is available under the item menu **“Edit/Information”**.
- To delete the selected elements using **“Delete”** action.
- To simultaneously move the selected elements.

Add a Point

Add a point mode construct a single new point by using a single press-drag-release sequence mouse input. Constructing a point can be described as follows:

- **Pressing** the left mouse button generates the point.
- **Dragging** the mouse while the left mouse button is pressed changes the position and definition of the point.
- **Releasing** the mouse button fixes the definition of the point.

The definition of the point depends on the position on which the mouse was released. In other words, if at the moment of release the mouse is ...

- ... over no element at all, then a free point is added and can be freely moved in “Move Mode”.
- ... over an existing element (line, circle, conic), then a semi free point is added on the existing element and can be moved along the existing element in “Move Mode”.
- ... over the intersection of two elements (line, circle, conic) ,then the intersection of these elements is added as a fixed point that can not be moved in “Move Mode”.
- ... over an existing point, then no point will be added.

Add a Line

Add a line constructs two points and a straight line joining them by using a single press-drag-release sequence mouse input. Constructing two points and a line joining them can be described as follows:

- **Pressing** the left mouse button generates the first point. The definition of this point depends on the position of the mouse when the button is pressed as explained earlier in “**Add a Point**”.
- **Dragging** the mouse while the left mouse button is pressed generates the line and the second point. The definition of the second also depends on the position of the mouse.
- **Releasing** the mouse button freezes the second point and ends up with the straight line that joins the two points.

Line through Point

Line through point mode constructs a line through a point with a certain slope so that when the point is moved, the slope of the line remains constant. However, in move mode it is also possible to select the line and change its slope. Constructing line through point can be described as follows:

- **Pressing** the left mouse button generates the point.
- **Dragging** the mouse while the left mouse button is pressed generates the line.
- **Releasing** the mouse button freezes and finishes the construction.

Add a Parallel

Add a parallel mode constructs a line through a point parallel to another line by using a single press-drag-release sequence mouse input. Constructing the parallel can be described as follows:

- **Move** the mouse pointer over the line you want to construct a parallel to it. Then **press** the left mouse button. This action generates the parallel line and a point, which the parallel line passes through it.
- **Drag** the mouse while the left mouse button is pressed. This action moves the parallel line and the generated point to the desired position.
- **Release** the mouse button. This action freezes the definition of the parallel line and the new point, and finishes the construction.

Add a Perpendicular

Add a perpendicular constructs a line through a point perpendicular to another line by a single press-drag-release sequence using the mouse. Constructing the perpendicular can be described as follows:

- **Move** the mouse pointer over the line you want to construct a perpendicular to it. Then **press** the left mouse button. This action generates the perpendicular line and a point, which the perpendicular line passes through it.
- **Drag** the mouse while the left mouse button is pressed. This action moves the perpendicular line and the generated point to the desired position.

- **Release** the mouse button. This action freezes the definition of the perpendicular line and the new point, and finishes the construction.

Add a Circle

Add a circle mode constructs a circle given by its center and a point on its circumference by using a single press-drag-release sequence mouse input. Constructing a circle in this mode can be described as follows:

- **Pressing** the left mouse button generates the center of the circle.
- **Dragging** the mouse while the left mouse button is pressed generates the circle and the circumference point.
- **Releasing** the mouse button freezes the definition of the circumference point and finishes the construction.

Midpoint

Midpoint mode constructs two points and the point that is the midway between them using a single press-drag-release sequence with the mouse. Constructing the midpoint can be described as follows:

- **Pressing** the left mouse button generates the first point.
- **Dragging** the mouse generates the second point and the midpoint as well.
- **Releasing** the mouse freezes the definition and finishes the construction.

Segment

Segment mode constructs two points and a line segment joining them by using a single press-drag-release sequence mouse input. Constructing two points and a line segment joining them can be described as follows:

- **Pressing** the left mouse button generates the first point.
- **Dragging** the mouse while the left mouse button is pressed generates the second point and the line segment joining the two points. The definition of the second also depends on the position of the mouse.
- **Releasing** the mouse freezes the second point and ends up with the line segment line that joins the two points.

Student Activity:

Use Cinderella to come up with dynamic configurations for each of the following figures:

- Triangle
- Equilateral triangle
- Isosceles triangle
- Right-angled triangle

- Quadrilateral
- Trapezium
- Parallelogram
- Rectangle
- Rhombus
- Square

- Circle
- Tangent to a Circle