Aalto University
School of Engineering

CREO GETTING STARTED AND SKETCHER CONSTRAINTS AND DIMENSIONS

Figure 1: One of Creo Parametric 6.0 start-up screens.

Learning Targets

In this exercise you will learn:

- ✓ Starting Creo first time
- ✓ Knowing customizations done using Creolib
- ✓ Get to know different constraint types in Creo sketcher.
- ✓ Get to know different dimension types in Creo sketcher.

Environment for this sheet

Common for all exercises:

- ✓ Utilized program is PTC Creo Parametric 6.0.2.0 (64 bit).
- ✓ Operative system is Microsoft Windows10 (64 bit).
- ✓ RMB is right mouse button.
- ✓ LMB is left mouse button.
- ✓ MMB is middle mouse button (press the wheel).

Setting Up

Starting shortcut

Our university's Creo installation comes with customization package distributed thru Creolib. It can be accessed by starting Creo using "*Creo 6.0 & Creolib*" shortcut (Figure 2). This customization package defines the settings for the CAD models (templates, dimensioning types, etc.) and the user interface (location of the buttons, colors etc.).

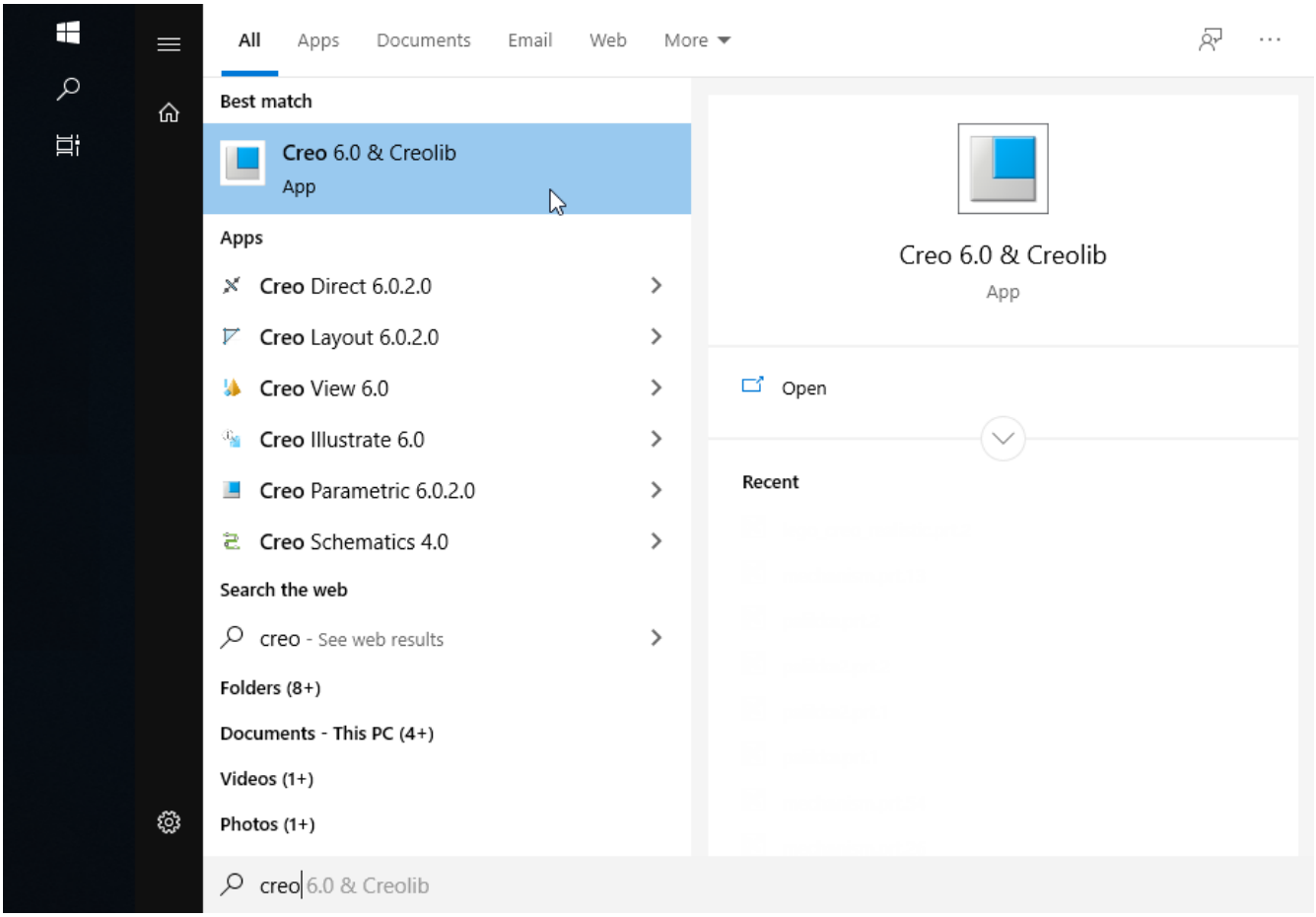

Figure 2: *Creo 6.0 & Creolib* shortcut in the Window's starting menu.

Working directory

Creo uses one folder as a working directory. It is a location where Creo saves normal, temporary and log files and from where Creo reads user's customization files (if they exist). When Creo is first time started with Creolib shortcut, this folder is automatically created. The default working directory in our university's computer system is Z:\Creo_working_dir\. (Figure 3)

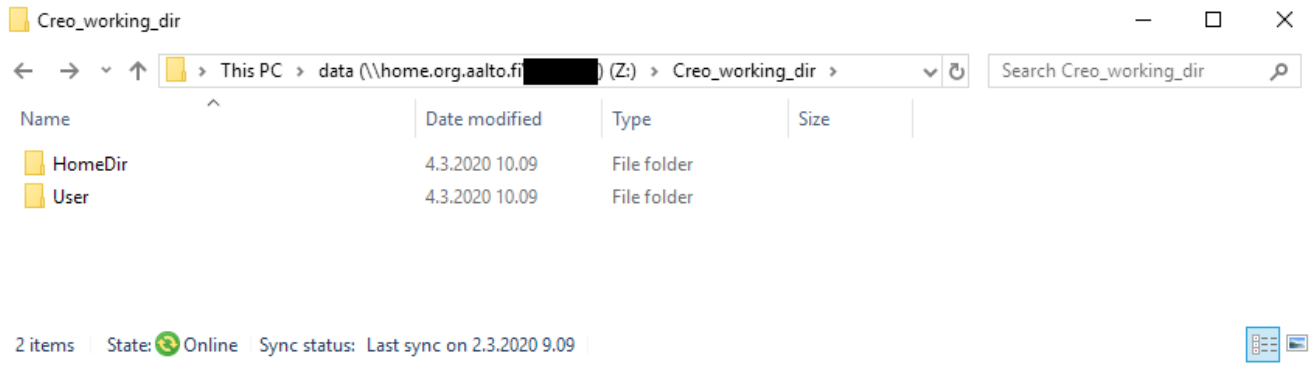

Figure 3: Folders in Creo working directory.

In the subfolder *User* a configuration file called *config.pro* can be found. This contains the settings defined by the user. This file has same predefined options that are commented out (!! as comment symbol). If comment is removed, Creo will start with those options.

config.pro in User folder

This is a text file that can be edited using any text editor. It can be also modified thru Creo (File→Options→Configuration Editor). This file contains user modification options to Creo (Table 1). By default, there are some most common options listed, but out commented (!! in text).

Table 1: A part of config.pro file. Notice the out commented option (marked with !!)

```
…
!!simprep_ondemand_cleanup              restore_and_erase
!!simprep_ondemand_regeneration         maste
!!sketcher_lock_modified_dims           no
!!sketcher_refit_after_dim_modify       no
!!sketcher_undo_reorient_view           no
!!spin_center_display                   no
!!spin_rate_zoom_sensitive              no
!!spin_with_notes                       yes
…
```

config.pro in HomeDir

This file is automatically rewritten when Creo is started using Creolib. This is a collection of different settings from different modules and should not be modified. To have your own custom settings, modifie config.pro in User folder instead.

Sketch Constraints

Here are listed all nine geometric constrains for sketched geometries. They can be accessed and used from *Constrain* group when in **Sketch** mode.

Vertical

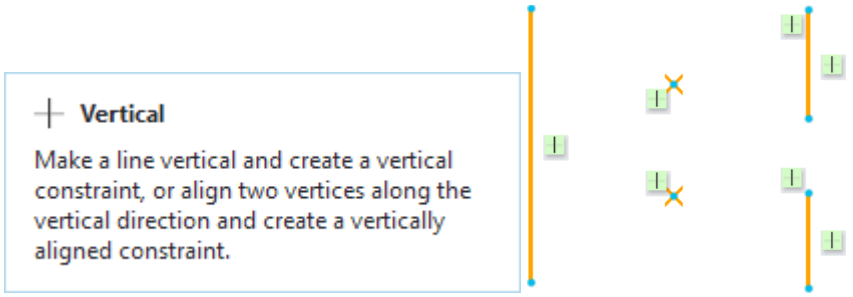

Figure 4: From left: vertical line, two points vertically aligned, two vertical lines vertically aligned.

Horizontal

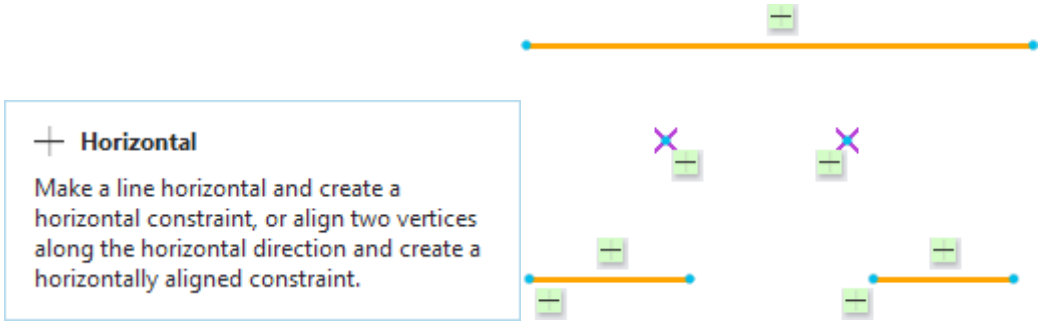

Figure 5: From top: horizontal line, two points horizontally aligned, two horizontal lines horizontally aligned.

Perpendicular

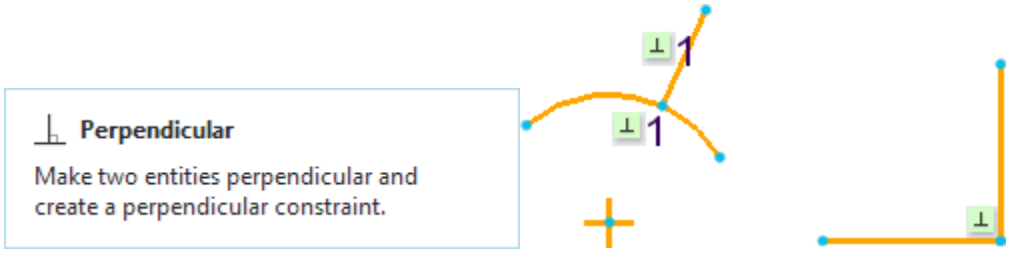

Figure 6: On left: arc and line perpendicularly, on right: two lines perpendicurally.

Tangent

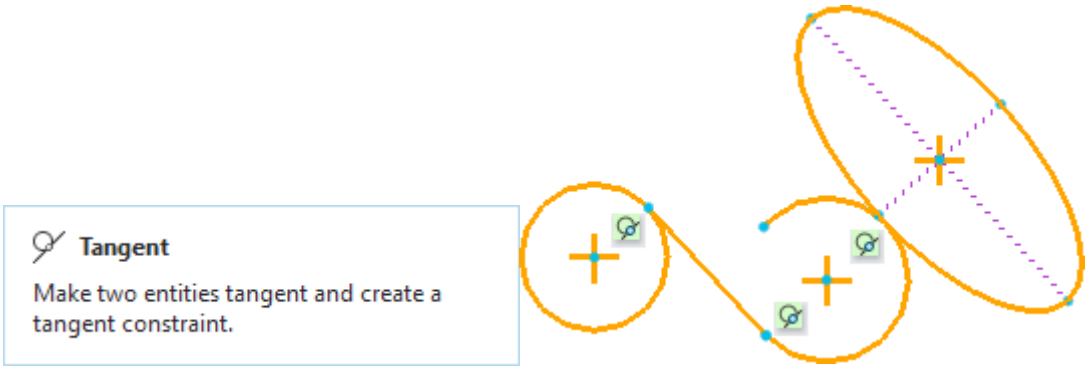

Figure 7: From left: circle and line tangentially, line and arc tangentially, arc and ellipse tangentially.

Mid-point

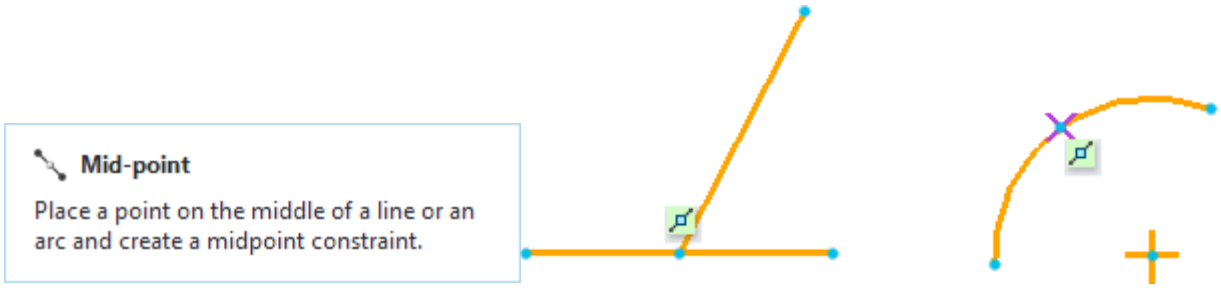

Figure 8: On left: line attached to the mid-point of the line, on right: point on middle of arc.

Coincident

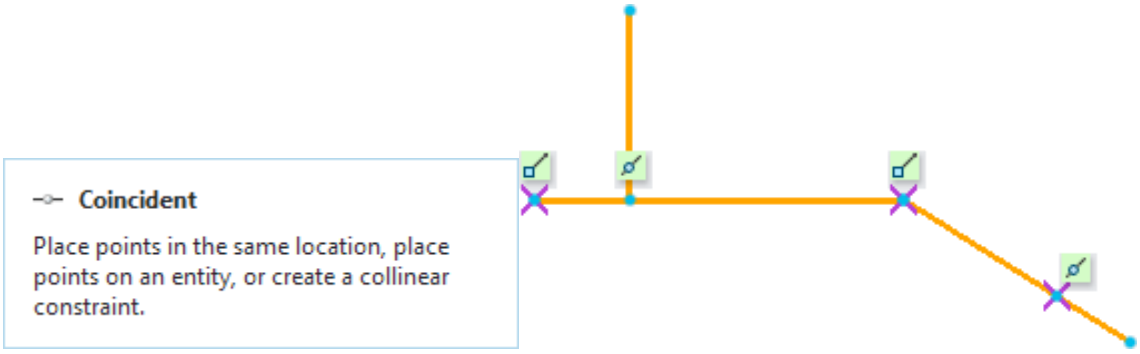

Figure 9: From left: point on start point of the line, start point of the line on line, point on end point of the line, point on the line.

Symmetric

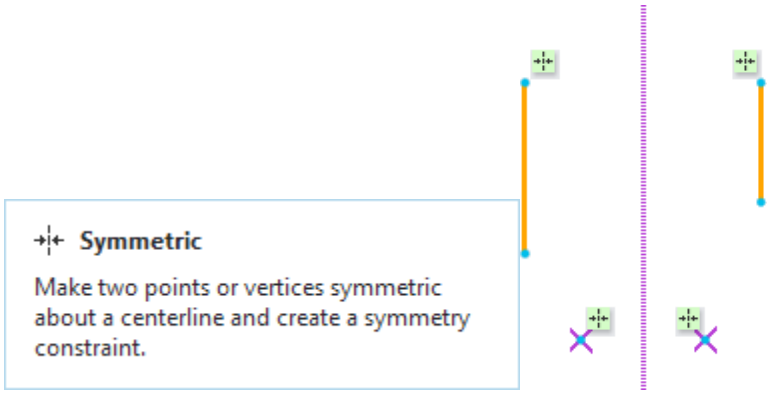

Figure 10: On top: start points of the lines symmetric about the centerline, on bottom: two points symmetric about the centerline.

Equal

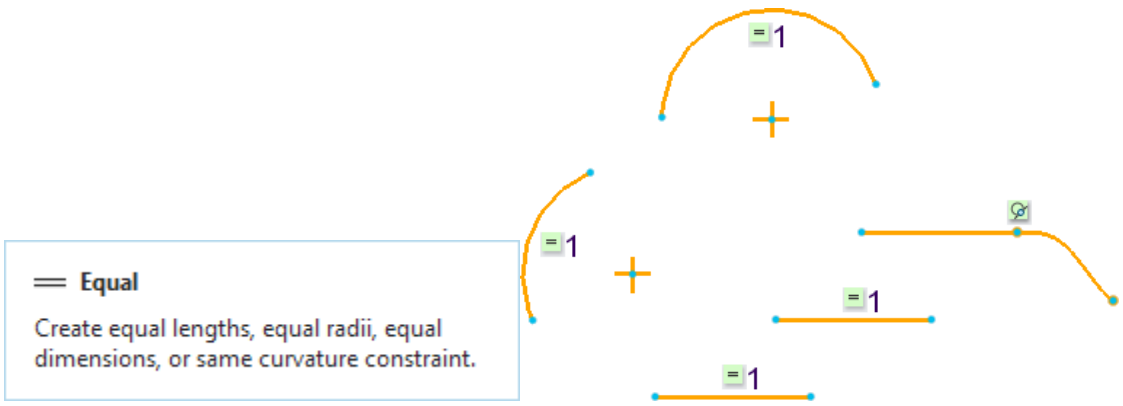

Figure 11: On left: two arcs have the same radius, on bottom: two lines have same length, on right curvature (2G continuity) between line and spline.

Parallel

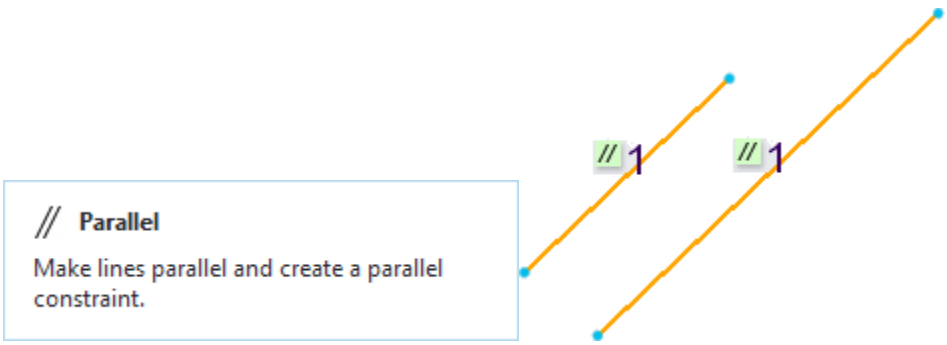

Figure 12: Two lines are parallel.

Making dimensions

Here is showed different kind of usage of the **Dimension** (, *Dimension* group) tool in the sketcher. The basic workflow is to select one or more entity (line, point, arc, reference) and then press **MMB**. Depending on what was selected before and where the MMB was pressed, the dimension appears.

Here different kinds of situations are presented. Notice that there are more options available.

One entity selected

Figure 13: On the left: Line selected (1) and location of MMB click. On the right: Linear dimension created.

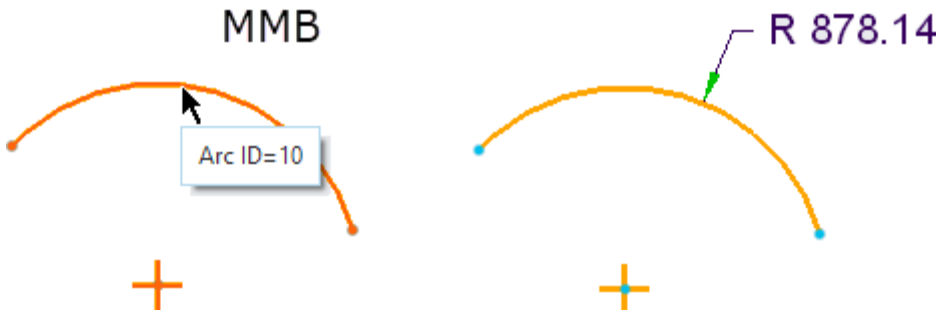

Figure 14: On the left: Arc selected (1) and location of MMB click. On the right: Radius dimension created.

Two entities selected

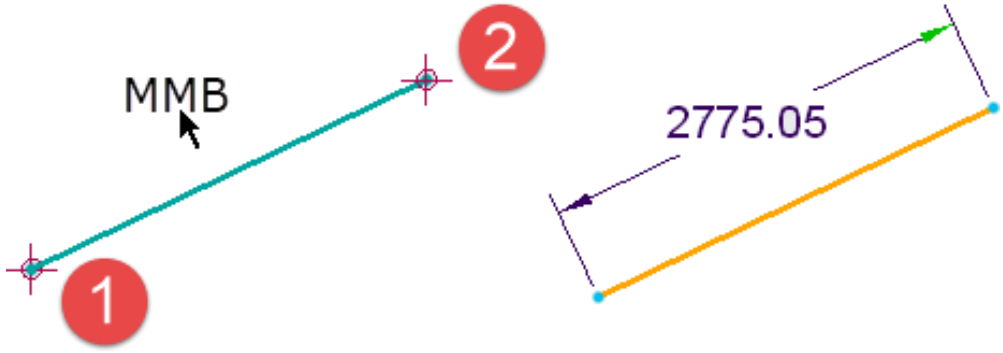

Figure 15: On the left: Two points selected and location of MMB click. On the right: shortest linear dimension appeared.

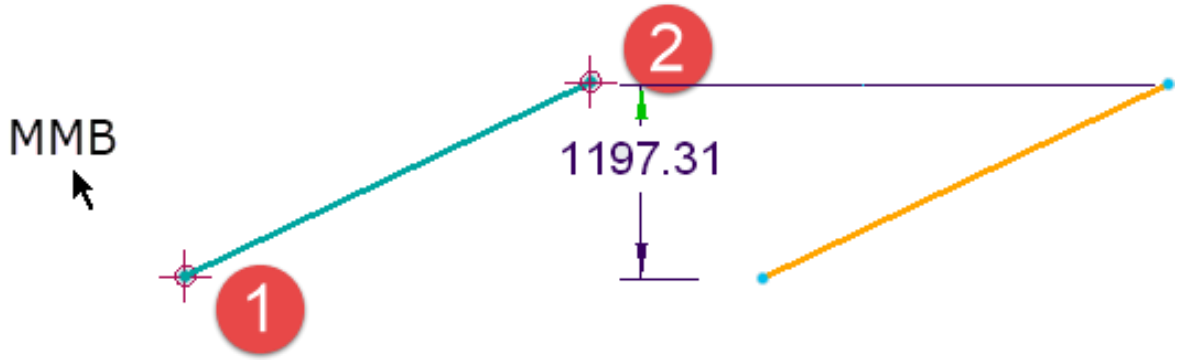

Figure 16: On the left: Two points selected and location of MMB click. On the right: A vertical dimension created.

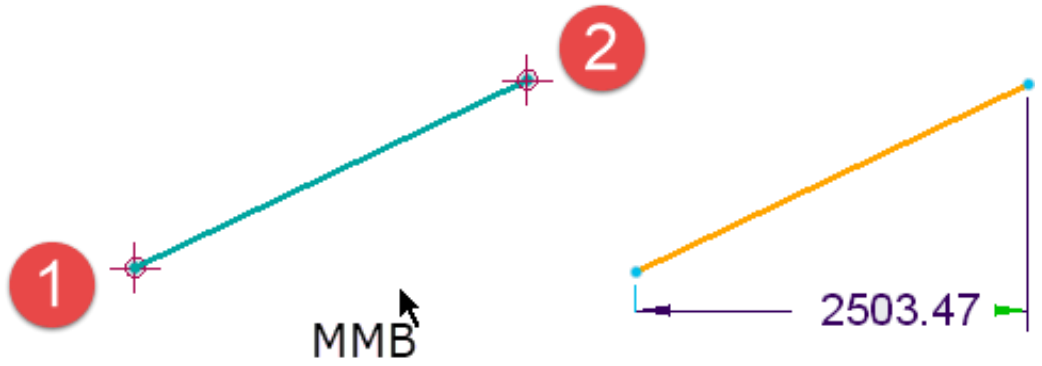

Figure 17: On the left: Two points selected and location of MMB click. On the right: A horizontal dimension created.

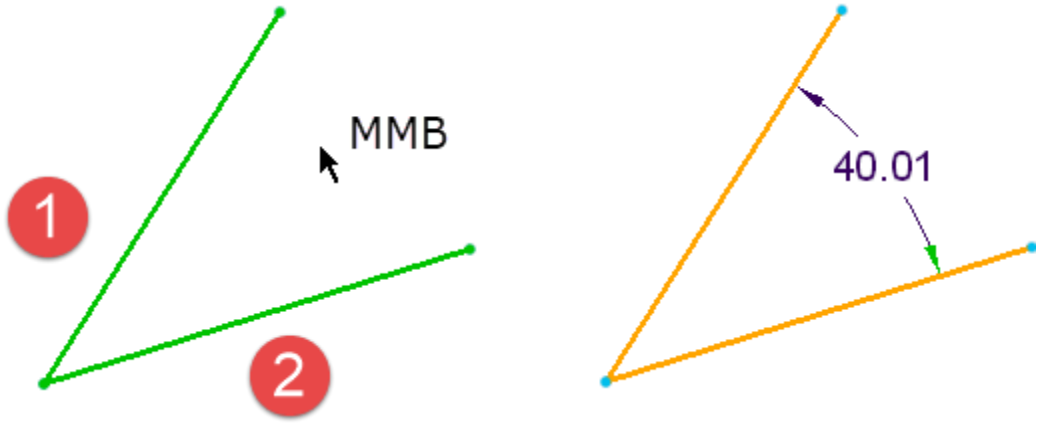

Figure 18: On the left: Two lines selected and location of MMB click. On the right: A new angular dimension created.

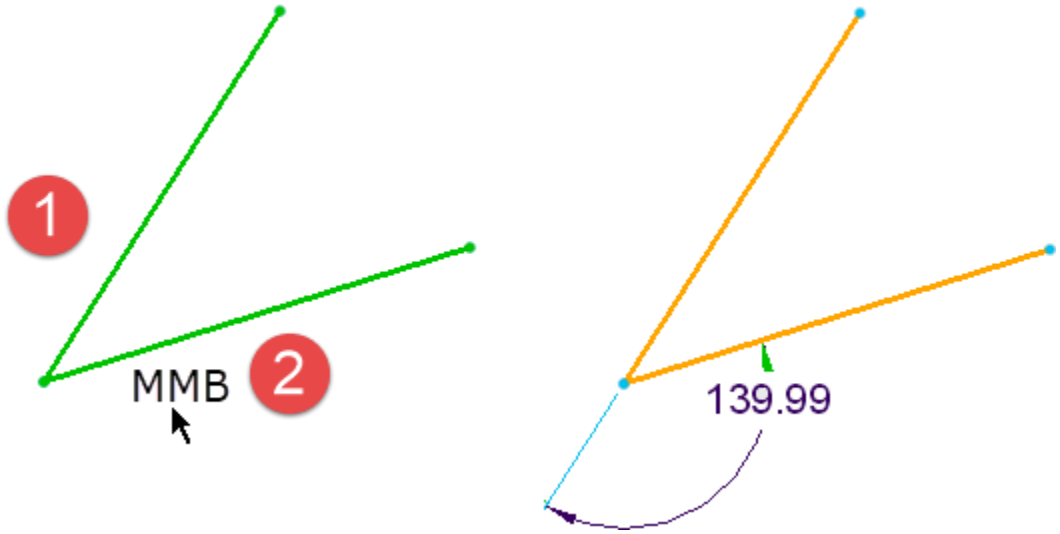

Figure 19: On the left: Two lines selected and location of MMB click. On the right: A new angular dimension created.

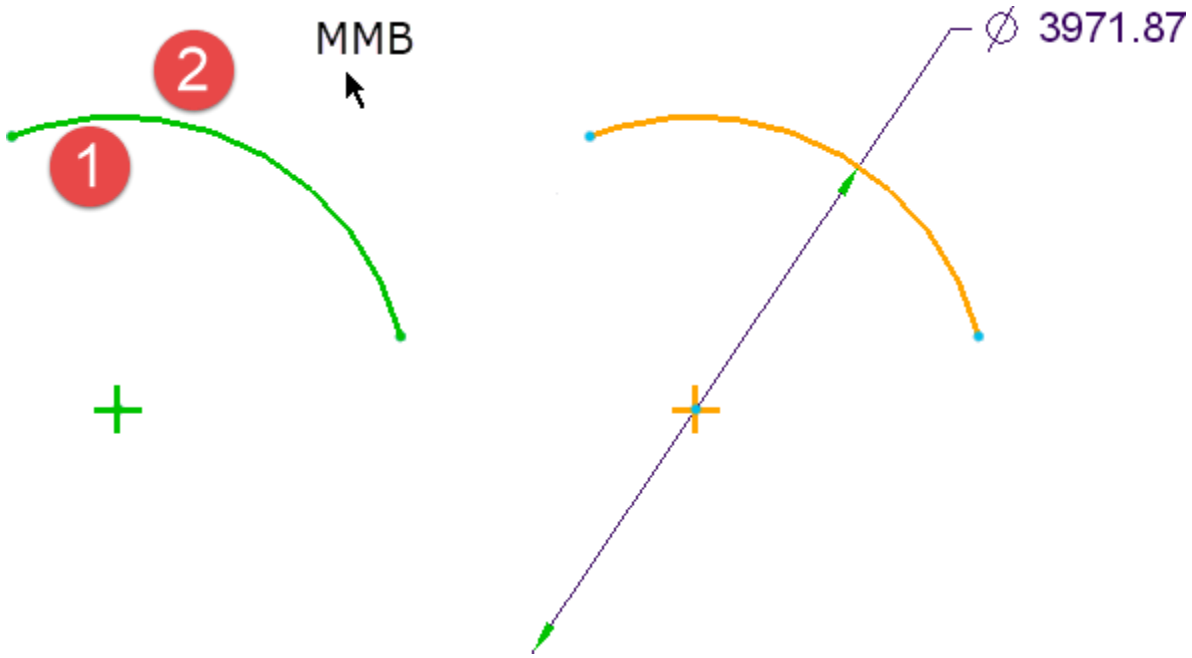

Figure 20: On the left: The same arc selected twice and location of MMB click. On the right: A new diameter dimension created.

Three entities selected

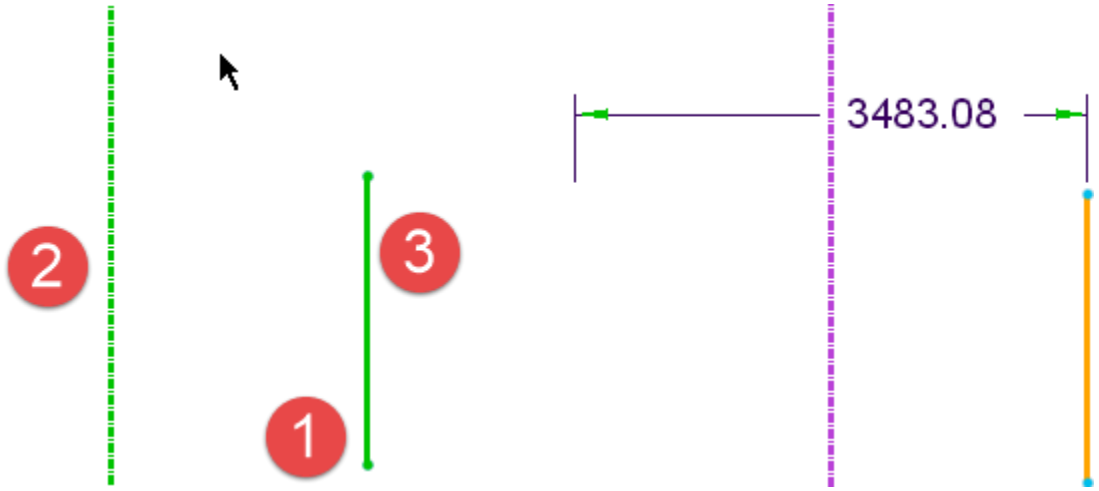

Figure 21: On the left: Line selected (1), then the centerline (2), then line again (3) and location of MMB click. On the right: A new diameter (symmetric) dimension created.

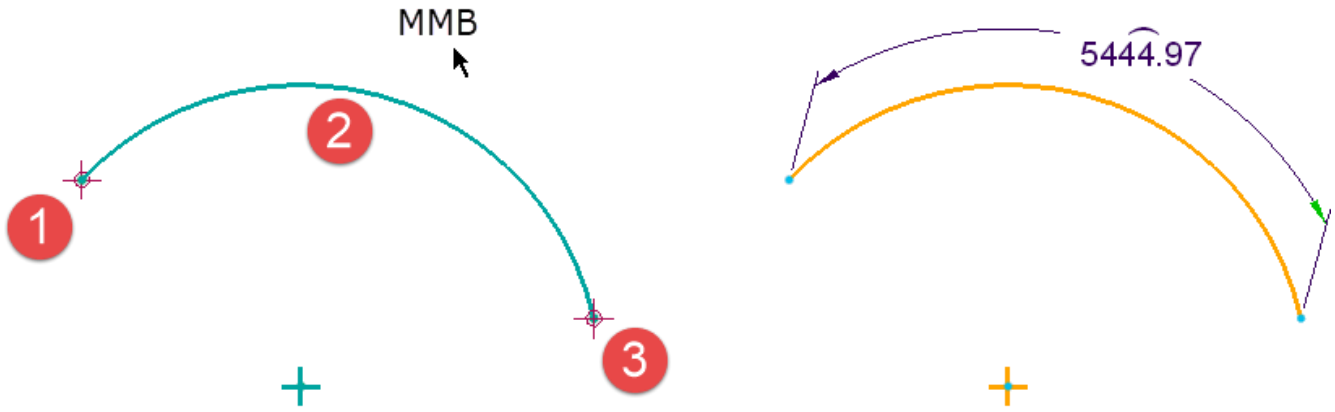

Figure 22: On the left: A point (1) selected, then arc (2), then point (3) and location of MMB click. On the right: a new arc length dimension created.

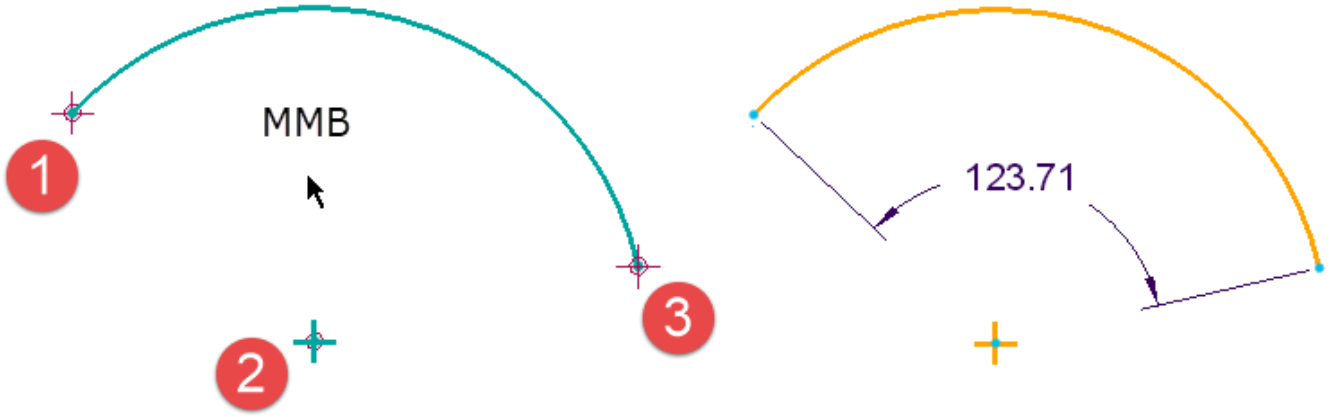

Figure 23: On the left: A point (1) selected, then arc's center point (2), then other point (3) and location of MMB click. On the right: A new arc angular dimension created.