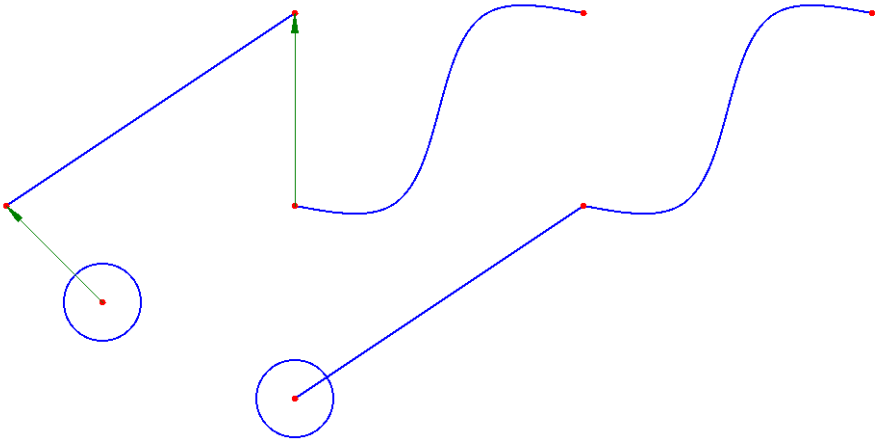
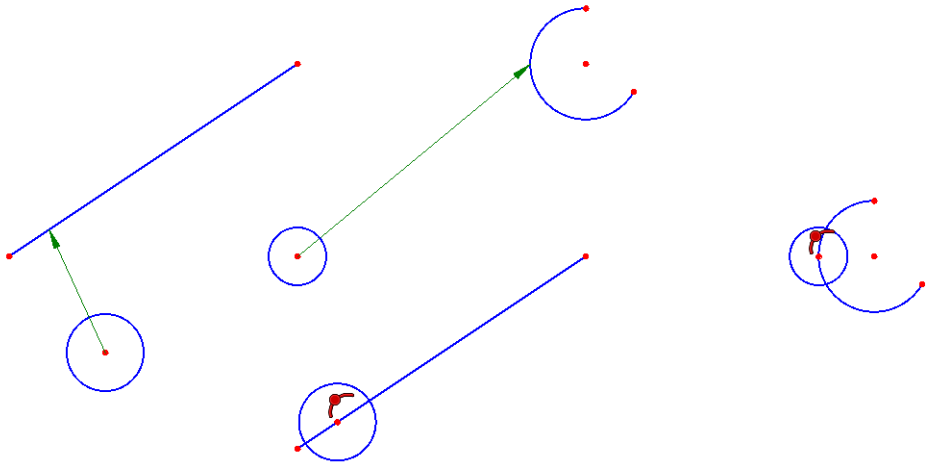
FreeCAD Cheat Sheet: Sketcher Constraints

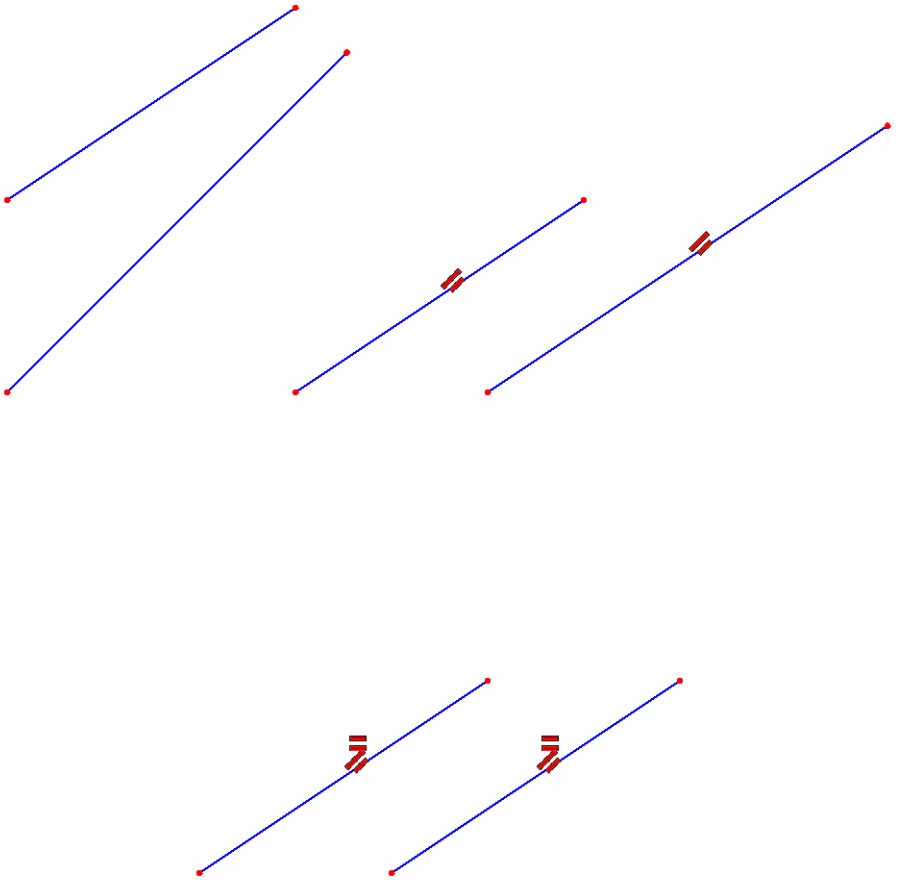
1) Coincident
2) Point on Object
3) Vertical
4) Horizontal
5) Parallel
6) Perpendicular
7) Tangent
8) Equal
9) Symmetric
10) Block
11) Lock
12) Horizontal Distance
13) Vertical Distance
14) Length
15) Radius
16) Diameter
17) Angle

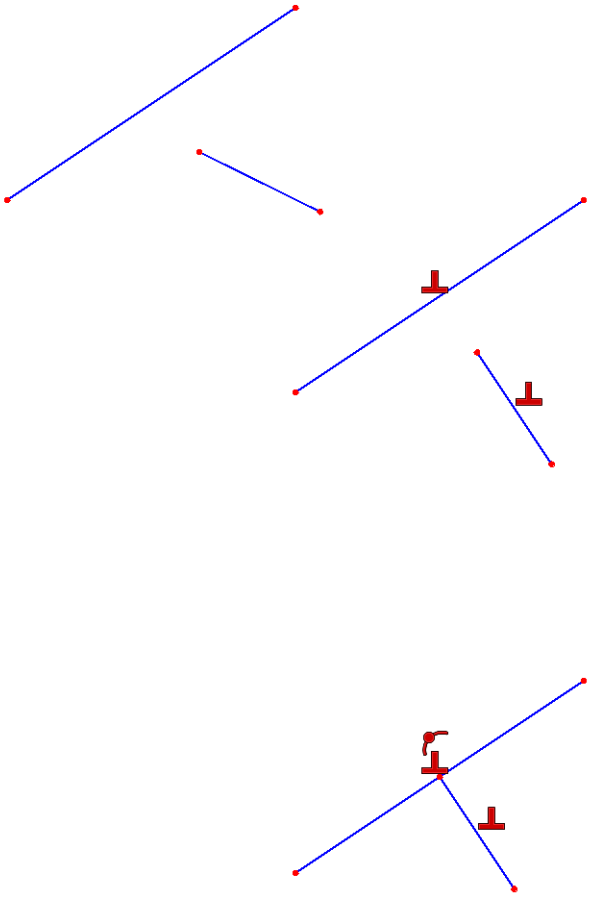
What is a constraint?

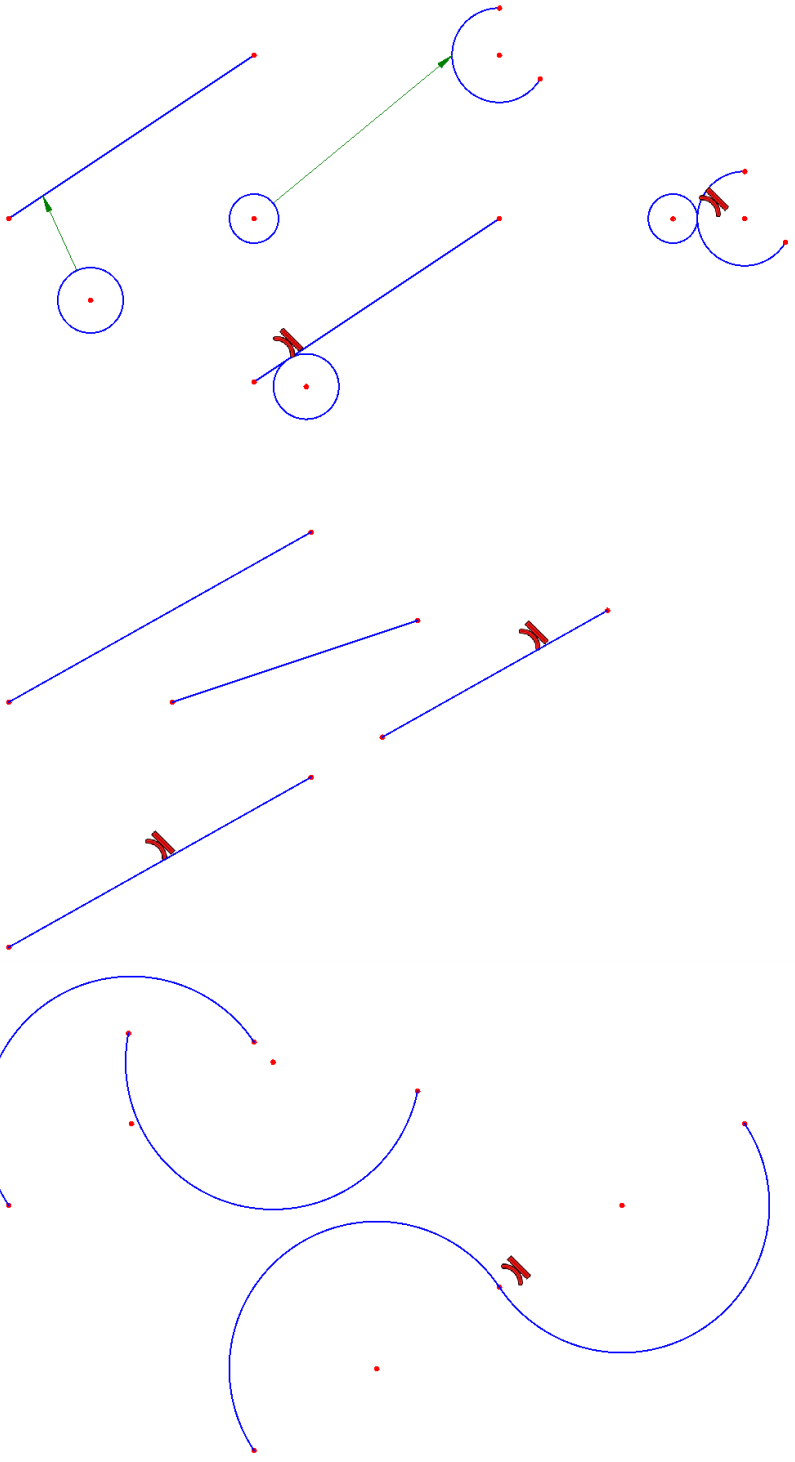
Constraints ensure points or lines with a geometric relationship stay consistent throughout the sketch.

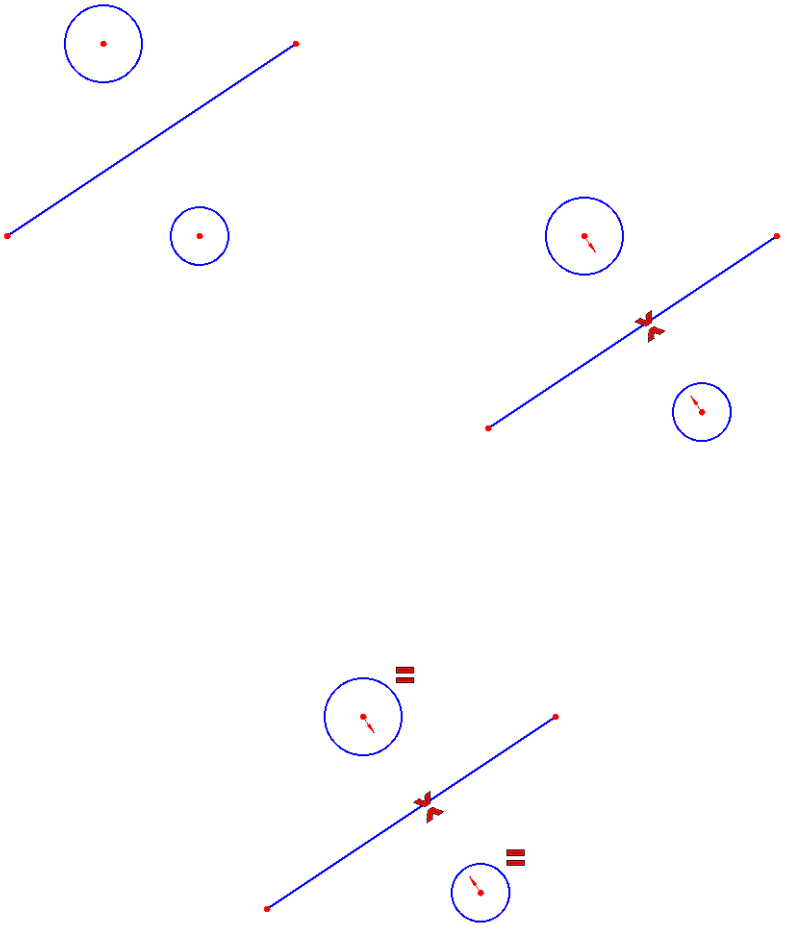
Constraint	Description & Example
	Attach a point to another point. If both points are unconstrained the second point selected will move to the first point selected. 

Constraint	Description & Example
	Attach a point to a line or arc. 
	Ensures the selected line always stays vertical on this sketch plane.
	Ensures the selected line always stays horizontal on this sketch plane.

Constraint	Description & Example
	Orients two lines to be parallel. Use in conjunction with **Equal** to make both lines the same length. 

Constraint	Description & Example
	Orients two lines to be perpendicular. Use in conjunction with **Point on Object** to create a T-shape. 

Constraint	Description & Example
	Attach an arc or ellipse to a line or another arc/ellipse. Can also be used to make two arcs/ellipses tangent and two lines collinear. 

Constraint	Description & Example
	Ensures two lines share the same length or an arc or circle share the same radius. If both circles or arcs are unconstrained the second shape selected will match the first shape selected.
	Orients two points to share the same distance and angle from a line. Preselect two points and a line before invoking this command. Use **Equal** to ensure figures symmetric across the line are mirrored. Use **Distance** to set the distance from the line of symmetry. 

Constraint	Description & Example
	Prevents lines from changing slope/angle, length or location.
	Applies a **Distance** consraint to a point relative to the sketch origin. Preselect one point before invoking this command.
	Dimensions the length of a horizontal line or distance between two points.
	Dimensions the length of a vertical line or distance between two points.
	Dimensions a line or distance between two points.
	Dimensions the radius of a circle or arc.

Constraint	Description & Example
	Dimensions the diameter of a circle.
	Dimensions the angle between two lines.

Sketcher Constraints: Shortcuts


Coincident (C)


Point on Object (Shift + O)


Vertical (V)

Horizontal (H)


Parallel (Shift + P)


Perpendicular (N)


Tangent (T)


Equal (E)


Symmetric (S)


Block (none)


Lock (none)


Horizontal Distance (Shift + H)


Vertical Distance (Shift + V)


Length (Shift + D)


Radius (none)


Diameter (none)


Angle (A)

Customize shortcuts!

Menu bar → Tools →
Customize... → Keyboard →
Category: Sketcher