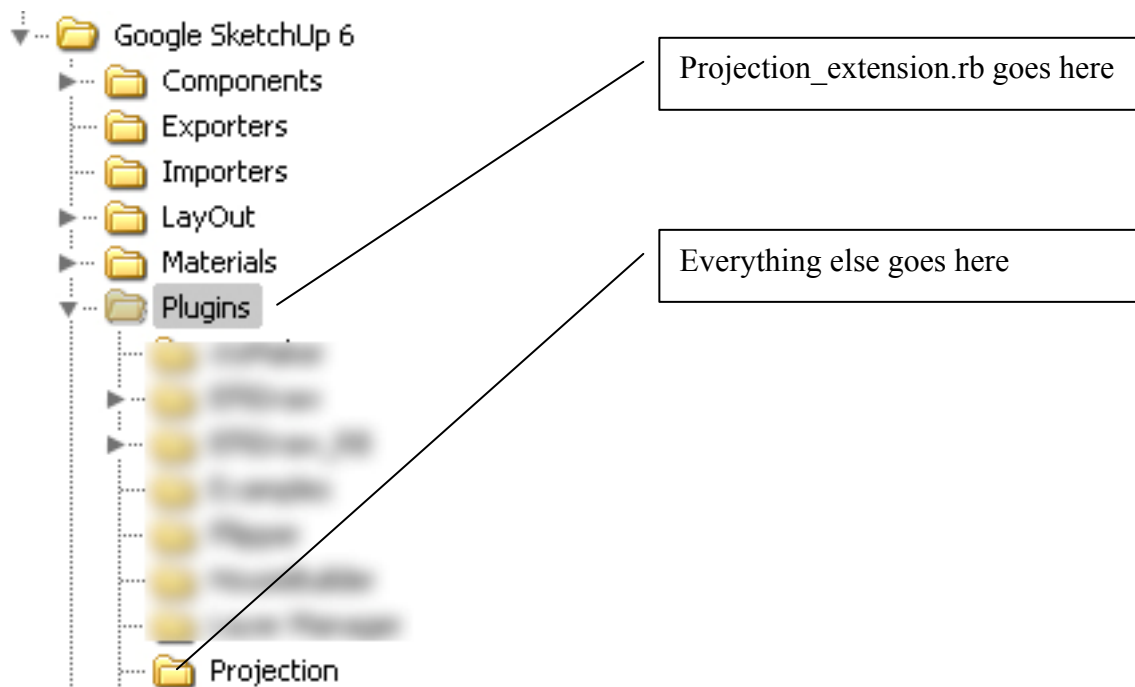# Projections and guides tools for SU6+ (Free and Pro)
D. Bur, June 2009

This set of tools is intended to provide several guide tools and projection tools to ease your drawing process. Not tested with SU7, so feel free to report bugs.
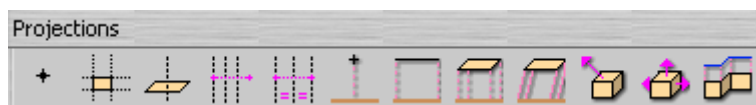
1. Installation (PC):

Unzip the archive in your "Plugins" folder, having the "keep folders structure" checkbox ticked.
You should have the following structure:

Projection_extension.rb goes here

Everything else goes here

Re-launch SketchUp. A new toolbar is available on your screen or in "View/Toolbars/Projections".
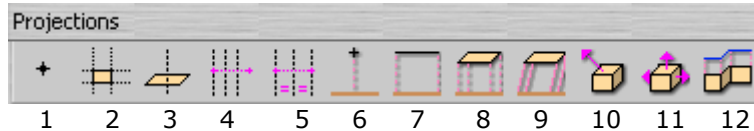
2. Usage:

The toolbar has:

      5 icons that are guides tools (1 to 5)
      7 icons that are projection tools (6 to 12)

Notes:

- *Each guide tool uses the color you set for the guides in your current style when it creates guides,*
- *All temporary displays that are perpendicular to something are colored "Magenta", which is the perpendicular inference color in SketchUp.*
- *Almost every tools use custom cursors and inference*
- *All tools are working with lines, faces, guides, that are within groups and components, as well as at "model" level.*
- *An automatic "clean-up" routine erases all double guides (superimposed guides) each time you use a tool.*
- *All tools are "undoable".*
- *All tools check that a selection exists (if needed) and filter objects types within the selection to ignore incorrect objects.*
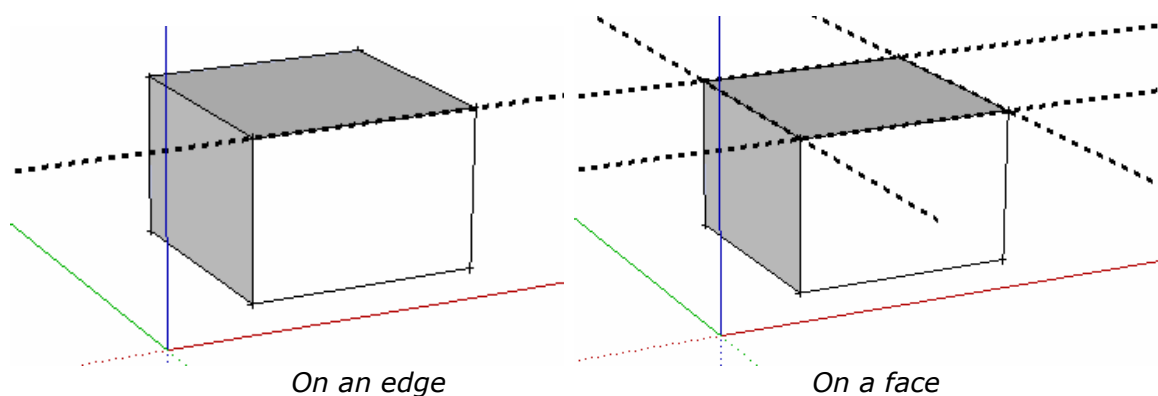
Tool #1:

It just creates a guide point where you click…
Hit Escape to abort, or select another tool.
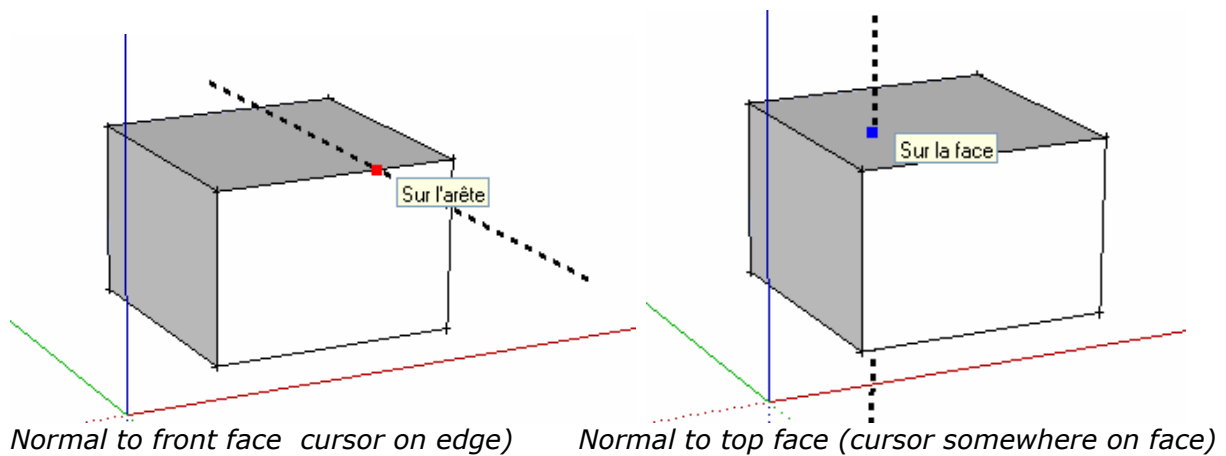
Tool #2:

This tool creates guides either over the line you click, or over every edge of the face you click. A temporary display shows what is to be created if you click:

On an edge   *On a face*
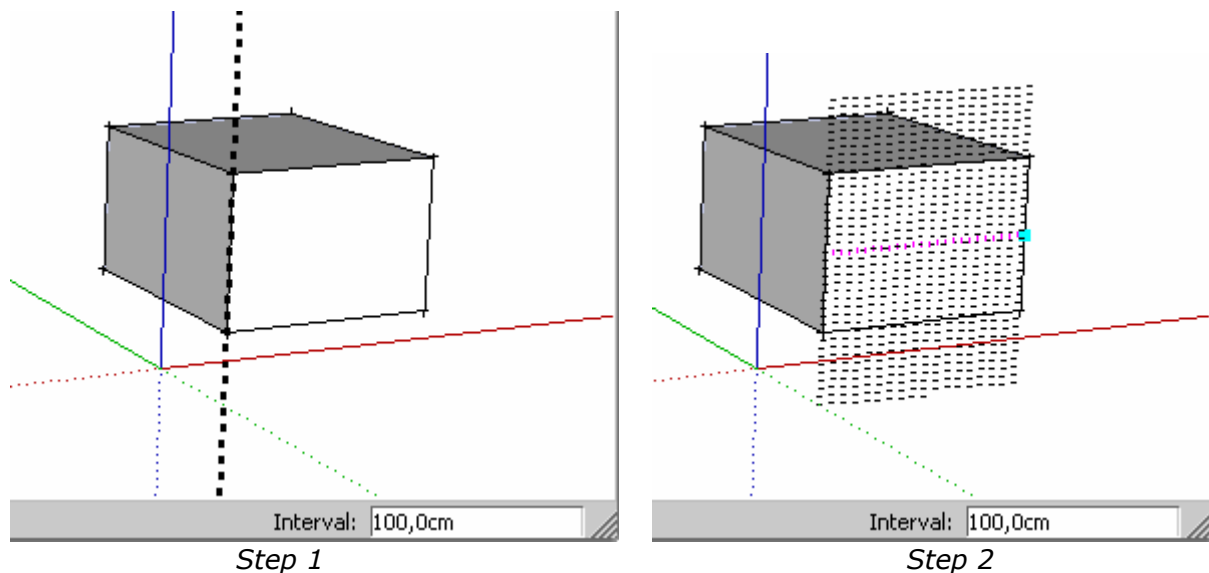
Hit Escape to abort, or select another tool.

Tool #3:

This tool creates a guide perpendicular to the plane of the face where the cursor is. Move the cursor over a face and click to create the guide.

Normal to front face cursor on edge)   *Normal to top face (cursor somewhere on face)*

Hit Escape to abort, or select another tool.

Tool #4:

This tool creates parallel guides at regular intervals you specify. Move the cursor over an edge and click. Move the cursor over a second edge, face or any location, and click. Parallel guides are created, the distance between them being the distance you entered in the VCB (default 1 meter).

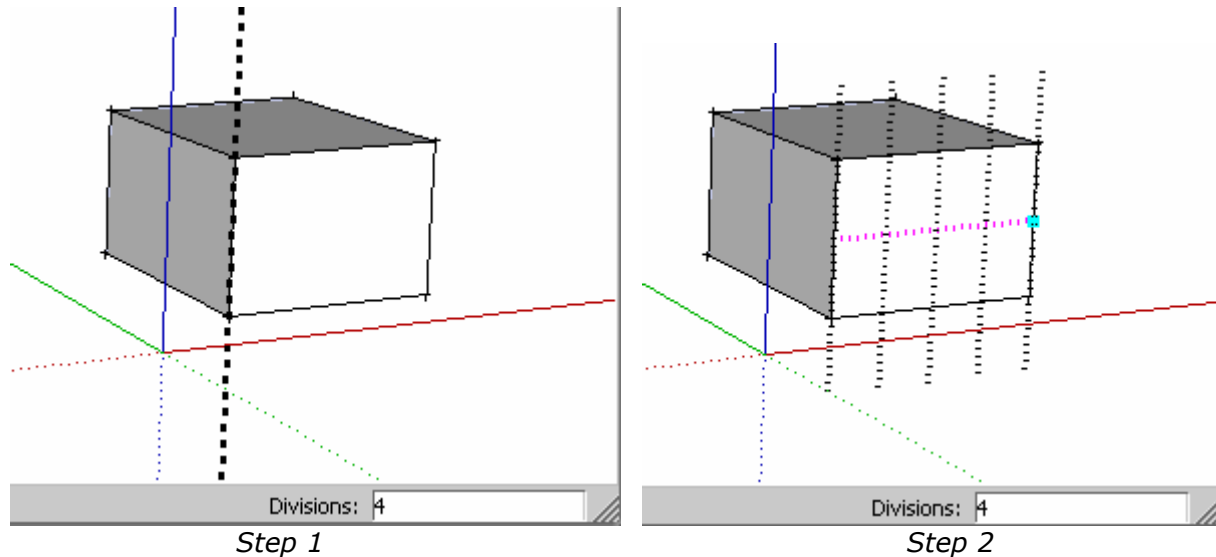*Step 1*   *Step 2*

The first interval between guide is counted from the first edge you click.
After guides are created, you are ready for another suite of guides starting from the same edge.
Hit the Enter key to choose another starting edge, or type a new distance.
Hit Escape to abort, or select another tool.

Tool #5:

This tool creates guides at regular divisions between the points you click. Move the cursor over an edge and click. Move the cursor over a second edge, face or any location, and click. Parallel guides are created, the distance between each of them being the distance between clicks divided by the number of divisions you entered in the VCB (default 2).

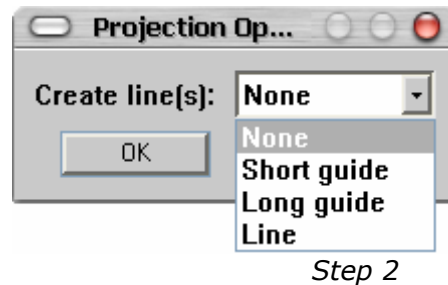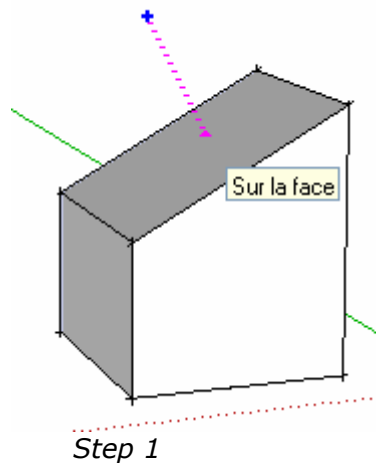| Divisions: 4	Divisions: 4
Step 1	*Step 2*

After guides are created, you are ready for another suite of guides starting from the same edge.
Hit the Enter key to choose another starting edge, or type a new divisions number.
Hit Escape to abort, or select another tool.

Tool #6:
This tool projects a guide point, perpendicularly to a guide line, a line, or a face.
Select the guide point and click the icon. Move the cursor over guides,edges or faces to see the projection, and click. Choose wether you want a finite guide, infinite guide, or a regular line to be created between the point and its projection.

When done, you are ready to project the point on something else, just click another edge, guide or face.
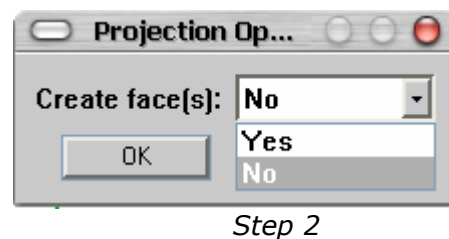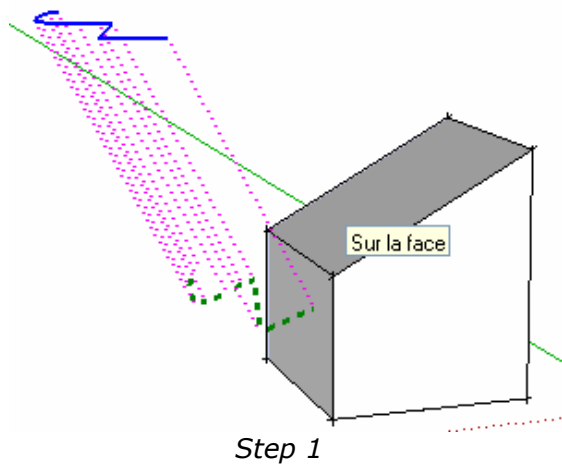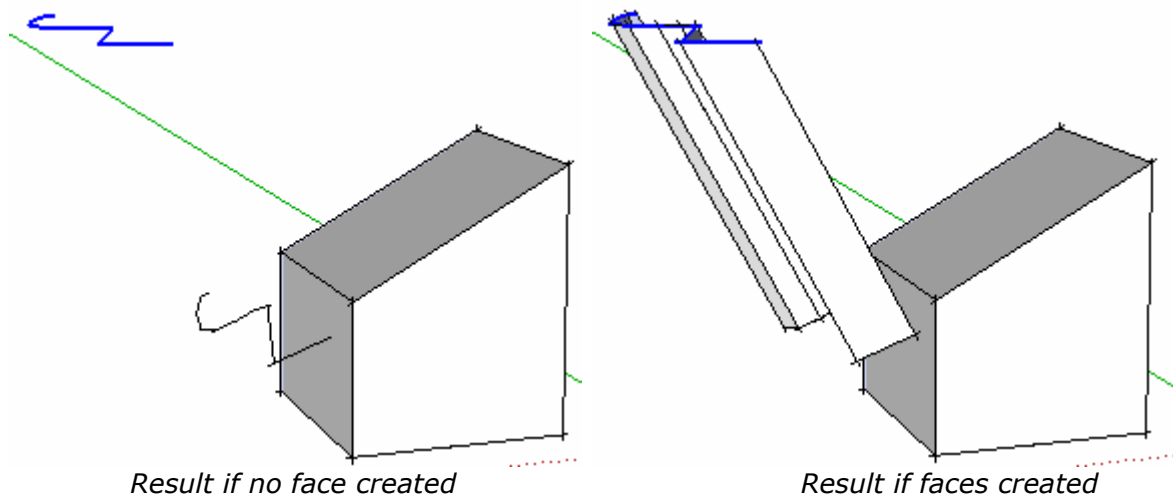
Step 1   *Step 2*

Hit Escape to abort, or select another tool.

Tool #7:

This tool projects a line or set of lines (curves, circles, arcs as well), perpendicularly to a face.
Select the lines and click the icon. Move the cursor over faces to see the projection, and click. Choose wether you want to create faces between the lines and their projections, or not.

Step 1   *Step 2*

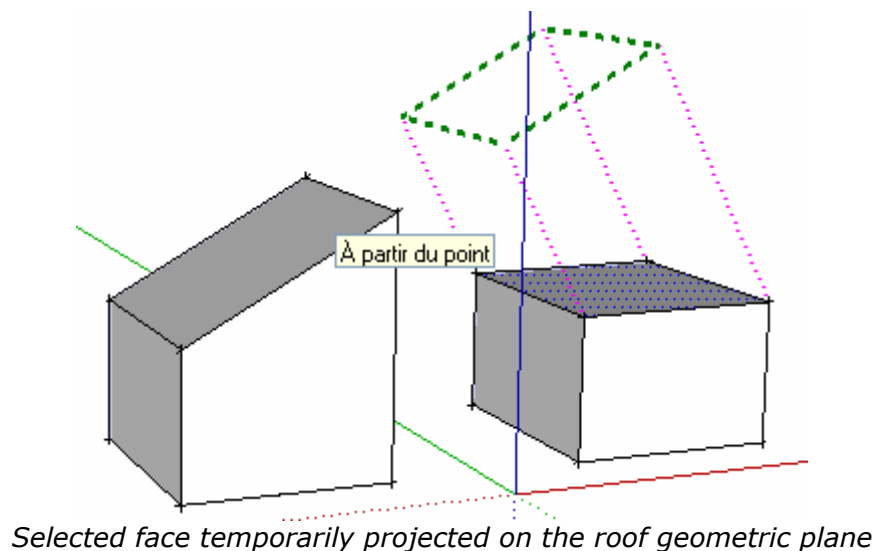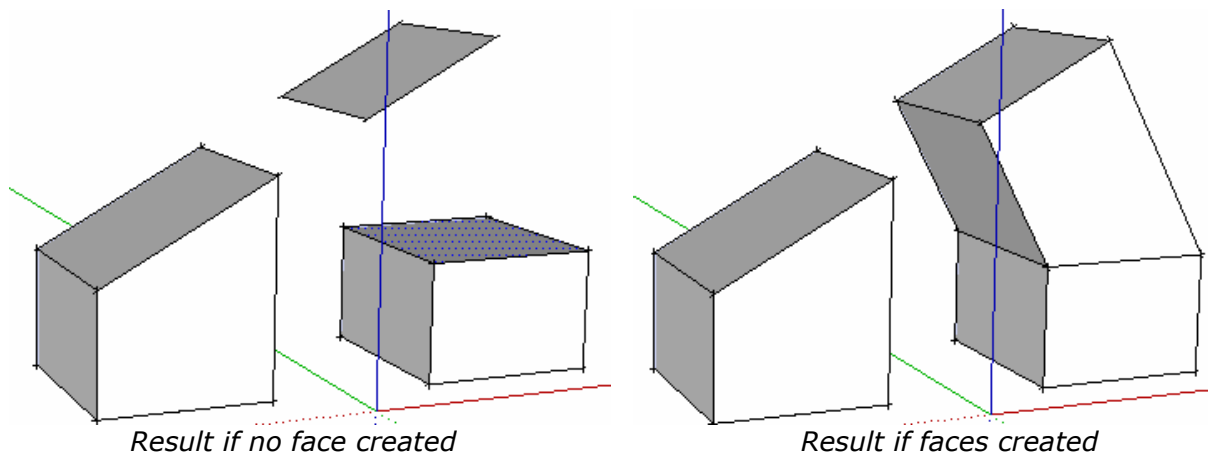*Result if no face created*   *Result if faces created*

When done, you are ready to project the lines on something else, just move the cursor over your drawing to choose another face.
Hit Escape to abort, or select another tool.

__Note__: when projecting a set of lines on a face that lies in the same geometric plane than the set, you will get a straight line or a set of "flat" faces.

Tool #8:

This tool projects a face or set of faces perpendicularly to a face.
Select the faces and click the icon. Move the cursor over faces to see the projection preview (green and pink dashed lines), and click. Choose wether you want to create faces between the faces and their projections, or not.
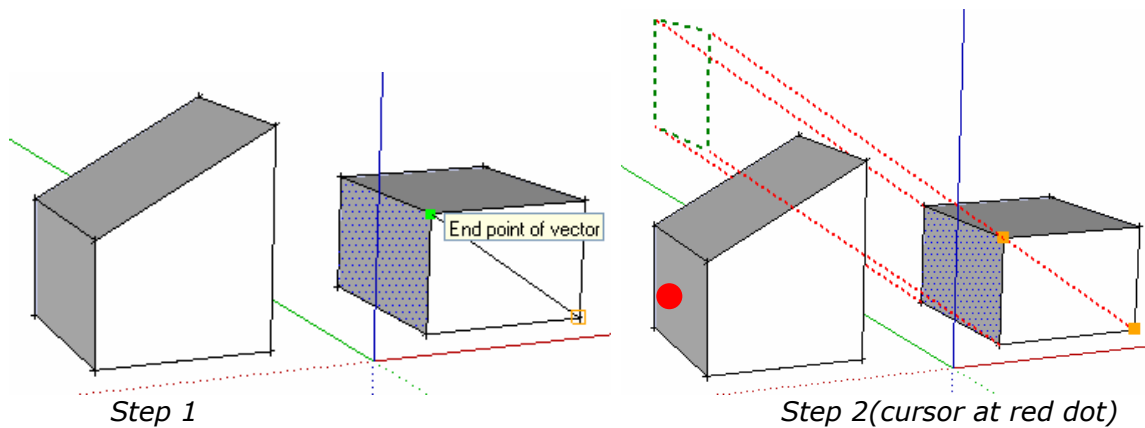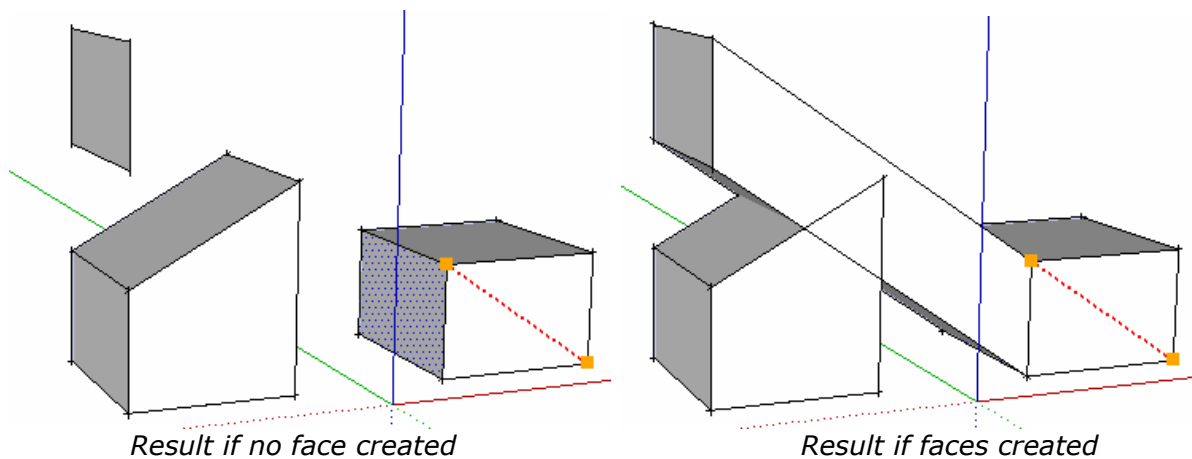

Selected face temporarily projected on the roof geometric plane

Result if no face created   *Result if faces created*

Tool #9:

This tool projects a face or set of faces on the geometric plane of a face, but along a vector.

Select the face(s) and click the icon. Click the two points that define the vector, that's-to-say the projecting direction. Move the cursor over faces to see the projection preview (green and pink dashed lines), and click.

Step 1   *Step 2(cursor at red dot)*

Choose wether you want to create faces between the faces and their projections, or not.

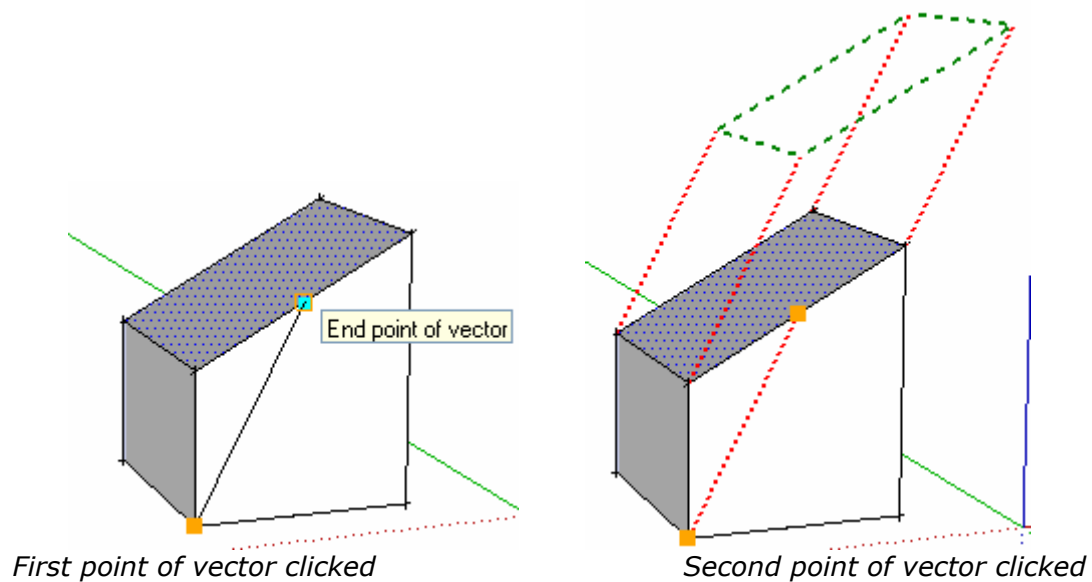*Result if no face created*   *Result if faces created*

When done, you are ready to project the face(s) on something else, just move the cursor over another face and click.
Hit Escape to abort, or select another tool.
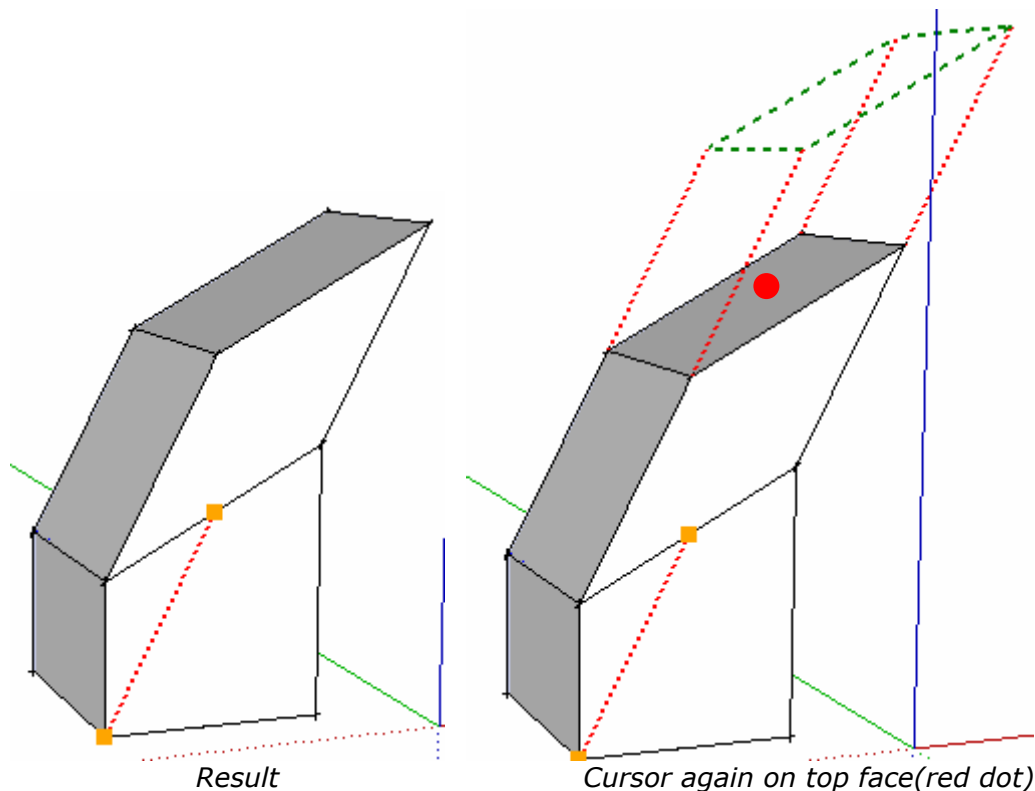
Tool #10:
This tool push-pulls a face or set of faces along a vector.
It can be used with or without a selection.

- When faces are selected:

Click the icon. Click the two points that define the vector, that's-to-say the push-pull direction. Move the cursor over faces to see the projection preview (green and pink dashed lines), and click.

First point of vector clicked   *Second point of vector clicked*

Result   *Cursor again on top face(red dot)*

When done, you are ready to push-pull the faces on something else, just click another face.
Hit Enter to start a new vector, hit Escape to abort, or select another tool.

- When nothing is selected:

Click the two points that define the vector, and move the cursor over faces. The preview shows what the result will be, click to push-pull.
Hit Enter to start a new vector, hit Escape to abort, or select another tool.
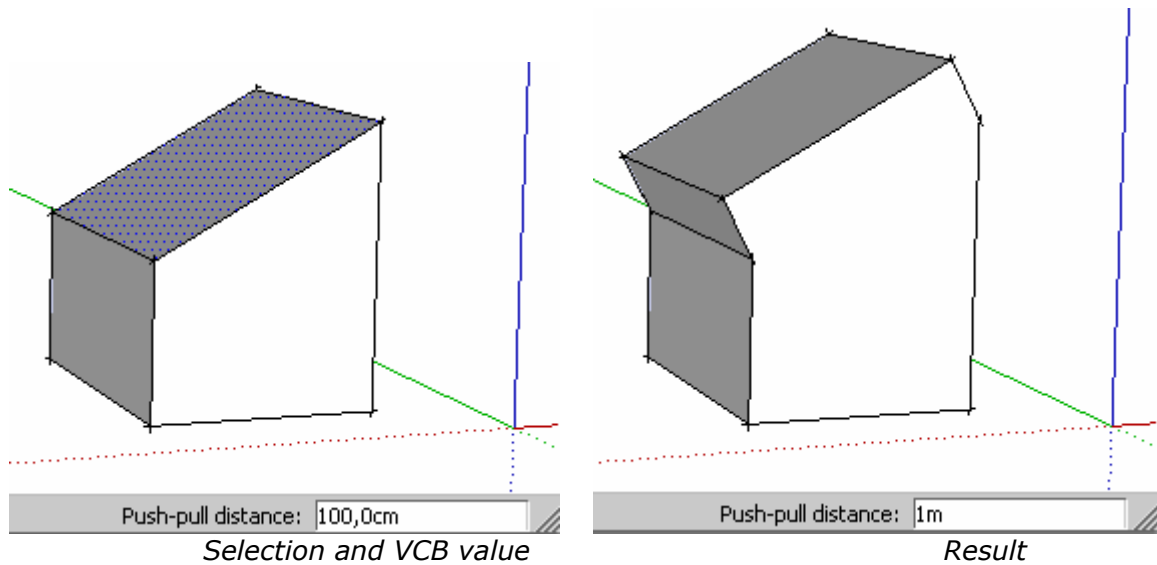

Tool #11:
This tool push-pulls a face or set of faces along its/their normal(s).
It can be used with or without a selection.

- When faces are selected:

Click the icon. Check the VCB for the push-pull distance (default 1 meter), and type a new distance when needed. Click anywhere on the screen to push-pull the selection. When done, you are ready to click on other faces to push-pull them by the same distance.

Notes: you can use either positive or negative values as push-pull distances. The script uses your current unit but you can also add a suffix to your value to use another unit, such as 1mm, 5cm, 8,74m, and so on. Distance can be changed at any time. If the tool has been used before, the previous value is used as default.

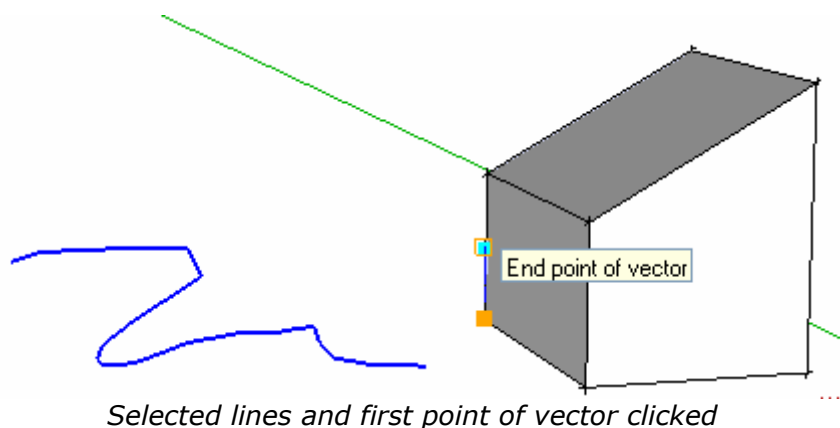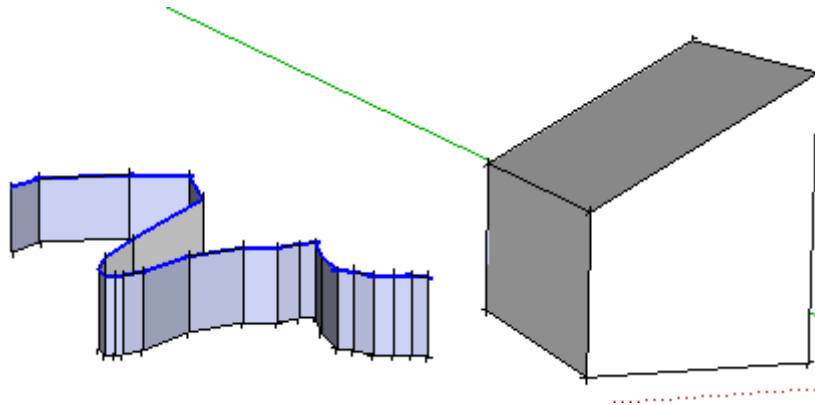| Push-pull distance: 100,0cm	Push-pull distance: 1m
Selection and VCB value	*Result*

- When nothing is selected:

Click the icon, and move the cursor over faces, click to push-pull. When done, you are ready to click on other faces to push-pull them by the same distance.
A new distance can be entered in the VCB at any time.

Tool #12:

This tool extrudes a line or set of lines (curves, circles, arcs as well), along a vector.

Select the line(s) and click the icon. Click the two points that define the extrusion direction and distance. When the first point is clicked, check the VCB to see the extrusion value.

Selected lines and first point of vector clicked

Result (note that the resulting lines are selected and ready for another extrusion)

When done, you are ready to extrude the resulting lines along another vector.

Note: you can type a distance in the VCB just after the first point of vector. In this case, the direction of extrusion is defined by the current cursor position, and the distance of extrusion will be the VCB distance.

Hit Escape to abort, or select another tool.

_____ *End of document* _____