

Essential 3D Rhino Commands

Basic solids:

- Box
- Sphere (Ellipsoid)
- Cone (TCone)
- Pyramid (TruncatedPyramid)
- Cylinder (Tube) (Torus)
- Pipe

2D curves -> 3D shapes

- ExtrudeCrv: make a surface by sweeping a curve along a line
- Revolve: make a surface by rotating a curve around an axis
- Loft: make a surface that connects two or more curves
- Sweep: make a surface by sweeping a curve along another curve

3D shapes -> 2D curves

- dupEdge: produce curve from edge of a solid
- dupBorders: produce curve from boundary of a surface
- make2d: create 2d shape of selected surface, according to current view
- unrollSrf: turn a volume into flat components

Combining/intersecting solids:

- BooleanUnion: add solids together
- BooleanDifference: subtract one solid (or group of solids) from another
- BooleanSplit: split solids where they intersect
- BooleanIntersection: create a solid from the intersection of other solids

Tweaks:

- Cap: create a planar surface covering a hole in a surface/polysurface (or end of an extrusion)
- FilletEdge: change sharp edge into radiused edge
- ChamferEdge: replace sharp edge with two edges and an angled face
- Hide/Show: hide selected objects; show all hidden objects on active layer

Cursor control:

- .x .y .z / .xy etc. filters
- CPlane
- w0,0,0 (world coordinates)

Prepping for 3D printing:

- What: (looking for valid polysurface / closed solid polysurface)
- ShowEdges (select Naked Edges)
- JoinEdge (attempts to fix Naked Edges)
- see also: <http://wiki.mcneel.com/rhino/3dprinting>

Essential 2D Rhino Commands

(Adapted from <http://blog.lib.umn.edu/ali/rhino/2011/01/minimal-rhino-the-30-commands-to-know.html>)

Creating Objects:

- Point (click point in viewport, or type in coordinates; type an “r” before a pair of coordinates to make relative to last point - e.g. r3,4.2 will place a point 3 units to the right and 4.2 units above the last)
- Line (or Polyline)
- Curve
 - PointsOn (shows Control Points)
 - EditPtOn (shows Knots)
- Rectangle (or Polygon)
- Circle (or Arc)
- TextObject: insert text as objects (note: for vector engraving, select curves, not surfaces or solids)
- Hatch: fill a closed curve with a pattern (for raster engraving)

Measuring:

- Length: report (in the command window) the total length of a line or curve
- Distance: report the distance between two points
- Area: report the area inside a closed curve
- Dim: create a dimension object (note: dimension will not change if original target changes)

Transforming an Existing Object:

- Move: move an object from one point to another
- Copy: copy and move an object (CTRL-C and CTRL-V copy and paste on top of the original)
- Scale: resize an object, by typing in a scaling factor OR choosing reference points for before/after
 - Scale1D: resize lines, or stretch planar objects in 1 dimension only
 - Scale2D: resize curves/planar objects while maintaining aspect ratio
- Align: align an object to a reference (good for centering text)
- Mirror: copy and reflect an object around an axis
- Extend: continue a line or curve
- Rotate: rotate an object around a point
- Array: copy and move an object into an array with x by y (by z) elements
 - ArrayPolar: copy and rotate an object *n* times around a center point
- Offset: copy in place and scale an object
- Orient: move, rotate, and scale an object in one command

Combining and Breaking Apart Objects:

- Join/Explode: combine multiple contiguous segments into one curve/polyline, and vice versa (must have a closed curve before using Hatch, Area, etc.)
- Group/Ungroup: group/ungroup multiple objects for selecting/moving, etc.; group all TextObject curves before Aligning
- Divide: divide lines into *n* equal parts
- Split: divide a line/curve at a point or intersecting curve
- Trim: split at intersecting curve AND automatically delete the segment that was clicked on

Navigating Inside the Viewport:

- Zoom (alias: z): drag a window and the viewport will zoom to it
 - Zoom Selected (alias: zs): Zooms viewport to the size of the selected objects
 - Zoom Extents (alias: ze): Zooms viewport to the extents bounding all unhid objects
- Pan: slide the viewport up/down/left/right
- RotateVlew/RotateCamera: tumble around the view or tumble the view around you
- MaxViewport: maximize the current viewport
- UndoView/RedoView: undo or redo the last viewport change