SketchUp:

Turn on the following **Toolbars** (View pulldown>Toolbars)
- Large Tool Set
- Face Style
- Standard
- Sections
- Views
- Shadows
- Layers

**Draw lines**
- Align with direction
- Align with another line (inferencing - hover over line and hold down shift key)
- Use keyboard arrows (up arrow blue; right arrow red; left arrow green)
- Use dimensions

**Connect lines to form surfaces**
**Subdivide surfaces with lines**
**Autosnap functions**

**Circles and Arcs**

**Erase lines**

**Draw rectangle**
- Use dimensions

**Rotate view:** hold down center wheel and move mouse
**Pan view:** shift+hold down center wheel and move mouse
**Zoom in:** move mouse wheel away from you
**Zoom out:** move mouse wheel away towards you
**Undo** (Ctrl-Z)
**Redo** (Ctrl-Y)
**Copy** (Ctrl-C)
**Paste** (Ctrl-V)

**Camera:** Camera pulldown>choose Perspective or Parallel Projection

**Views** from toolbar:
- Iso
- Top
- Front
- Right
- Back
- Left
Select a surface
Right Click>Align View

Move lines or points
Select a line or point with the move tool - if you want to move it up and it does not show the blue axis, hold down the up arrow key

Copy: Move + Ctrl key

Push-pull
Select surface>Push-pull
Use dimensions
Draw rectangle on another rectangle
Use scale command and copy to clipboard
Paste from clipboard to another wall aligned with that wall
Erase rectangle to make a hole
Push pull rectangle to form a niche
Erase back face to form a hole
Paint back face with translucent material to look like glass
Round top window or door using arc command

Make Component & give it a name: Select objects>right click> Make Component>Create
Explode Component: Select component>Edit pull down>Component (1 in model)>Explode

Mirror using scale - make a group first

Rotate object - make group first, select group, select rotate command

Use measure tool to check distances
Use measure tool to create guides to snap points to
For example, a rectangular door in a wall

Layers
Make group first
Turn on layer dialogue box: Window tab>Layers
Add layers
Always draw on 0 layer then change a group to another layer by clicking on the group>right click>select Entity Info>change layer
Change color assigned to layer
Display "Color by Layer" in layer dialogue (you will need to click on the details arrow to make fly-out menu visible in Layer Dialogue box
You can change the opacity and value of each color
Paint Bucket Tool
Select "Colors"
Change opacity of colors
Assign colors to surfaces
Select "Materials"
Change size of materials

Shadows
Shadows dialogue
Toggle shadows on or off
Change character of shadows
Change month day and time of day
Light and dark shades and shadows

Animation
Add Scene
View pulldown>Animation>Add scene
Scenes can show layer state (on or off), shadows, colors and materials
Change view>Right click on the Scene>Add Scene
Scene Manager
Play Animation

Quick exercises:

1. Draw a square 30' on a side
   Pull top up 12'
   Draw lines crossing top (make sure that there are four separate lines to center)
   Pull up apex of roof 10'

2. Draw rectangle 40' x 25'
   Pull top up 12'
   Draw a line down center of top
   Move line up 7' to form a gable roof

3. Draw rectangle 35'-6" x 16'- 8 1/2"
   Pull top up 15'
   Draw a line down center of top
   Draw 45 degree lines from corners
   Erase unused line segments
   Move ridge line up 9' to form a hip roof