

## // Body

shift + A  $\Rightarrow$  add new object

\* triangle fan

S  $\Rightarrow$  scale

s + z  $\Rightarrow$  scale the z axis

period key  $\Rightarrow$  zoom in

number board 1  $\Rightarrow$  front view

number board 3  $\Rightarrow$  side view

N  $\Rightarrow$  bring the side panel

Tab  $\Rightarrow$  toggle edit mode

\* in edit mode

1  $\rightarrow$  point select

2  $\rightarrow$  line select (Alt + select  $\Rightarrow$  select multiple)

3  $\rightarrow$  surface mode, face mode

Alt + click  $\Rightarrow$  select entire edge circle

\* ctrl + A  $\Rightarrow$  reset scale  
(if Bevel not really good)

Z key  $\Rightarrow$  select wire frame mode and other modes

C key  $\Rightarrow$  circle select mode  $\Rightarrow$  right click mouse to exit circle select mode

E key  $\Rightarrow$  extrude the surface

Z + S  $\Rightarrow$  scale and extrude

// double click and rename

right click  $\Rightarrow$  shade smooth  $\Rightarrow$  select auto smooth

R + q + D  $\Rightarrow$  turn 90 degrees based on current view point

R + y + q + D  $\Rightarrow$  turn 90 degrees on the y axis

## // Boolean tool

shift + D + enter  $\Rightarrow$  duplicate

B  $\Rightarrow$  boolean  $\Rightarrow$  Difference  $\Rightarrow$  select another one

shift + D + X  $\Rightarrow$  duplicate and move along x axis

S + Y  $\Rightarrow$  flatten two surface in the y direction

ctrl + R  $\Rightarrow$  loop cut tool (use Z or F to constrain one of two edges)

|| make arms ? drag

Z + click + G → extrude perpendicular

edit mode

shift + S ⇒ move cursor to selected

X ⇒ delete

|| connect two parts shift select → join as one object  
in edit mode → select both objects → ctrl + J

Alt shift select both edge loops → ctrl + Z → bridge edge loops

L ⇒ select all linked components

|| change origin

right click in edit mode → set Origin → origin to 3D cursor

Shift + C ⇒ put cursor back to the grid

proportion editing

G ⇒ change area of influence

O ⇒ turn off the proportion editing

modifier ⇒ solidify

\* ctrl + A ⇒ reset rotation and scale

{\* Tab back to object Mode and click apply

ctrl + R + scroll → cut multi lines

Shift + S ⇒ move cursor to selected

Shift + A ⇒ create new object

|| if not auto shading ⇒

right click ⇒

shade flat

shade auto

Shift + S ⇒ move cursor to selected

\* \* When mirroring ⇒ make sure ctrl + A also origin to the 3D cursor  
reset rotation and scale

Shift + C

hair

subdivision multies

Apply in object mode

\* Apply modifiers from the top stack down

Alt + Z ⇒ transparent mode

Ctrl + "+" expand the selection

hit division key on the number pad ⇒ only show selected in the edit mode  
"/"

hit division key again go back

face ↴

Fill ⇒ Alt + F

grid fill ⇒ preferred

\* Do not apply the mirror editors before UV map

## //UV Mapping

uv editing mode \* check scale unified first !!

Ctrl + Z ⇒ mark scene

↗ in object Mode

A + U ⇒ unwrap

if non uniformed scale ⇒ Ctrl + A ⇒ Apply scale

shader editor → ⊕ UV Grid

create new image ⇒ create image node      uv test pattern → Principle BSDF → Material Output  
change blank to UV Grid

① display

Shift + H ⇒ Hide everything not selected

Alt + H ⇒ bring thing back

select "UV" → average island scale → Pack islands

P → separate by selection ⇒ after apply modifier → Ctrl J

Shift + S ⇒ move cursor to world origin

## // Texture Painting and Sculpting

lay out      use "/" if not showing

### // Texture paint Mode

bY texture slot  $\rightarrow$  base color      \*4      color  $\Rightarrow$  black,

\* save image to local hard drive ("Save as") default is in memory

Alt + A  $\rightarrow$  deselect everything

L + click  $\Rightarrow$  select one piece

A  $\rightarrow$  ctrl Z  $\Rightarrow$  clear seam

\* every time, save image and save the blender file

F key  $\Rightarrow$  change the stroke size

shift + F  $\Rightarrow$  change the stroke strength

## // Sculpting

\* turn off X symmetry

Duplicate

$\leftarrow$  edit mode

Tab + L + shift D + enter + P  $\Rightarrow$  separate by selection  $\Rightarrow$  pull out of the chart

modifier  $\Rightarrow$  multi resolution

ctrl + drag  $\Rightarrow$  push in stroke

Texture  $\Rightarrow$  new  $\rightarrow$  change the texture to noise

babble the sculpting to normal map

UV Mapping  $\Rightarrow$  "-" delete previous material  $\Rightarrow$  "+" name a new material

width \*4 , height \*4  $\rightarrow$  4096px

new image to node editor  $\Rightarrow$  choose the image

Shift + A

render panel  $\Rightarrow$  cycles render

bake type  $\Rightarrow$  from combined to normal

non color data

Shift + A  $\Rightarrow$  Normal Map

S - I