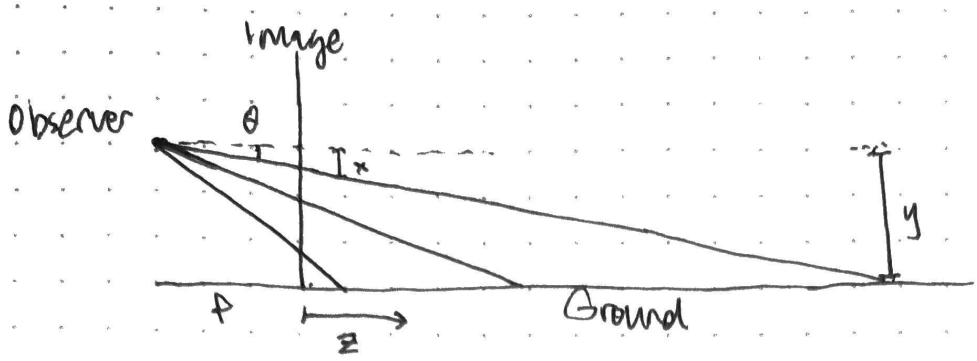
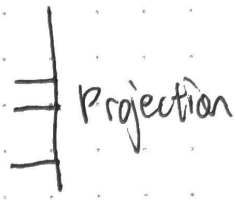




$\tan\theta = \frac{x}{\text{focal Length}}$

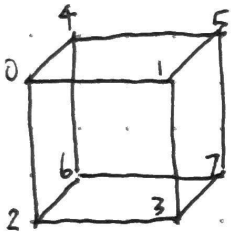
~~$\theta = \tan^{-1}\left(\frac{y}{z}\right)$~~

$x = \text{focal Length} \cdot \tan\theta$

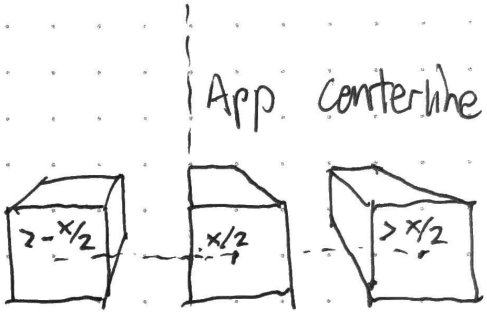
$\theta = \tan^{-1}\left(\frac{y}{z+f}\right)$

$x = \text{focal Length} \cdot \frac{y}{z+f}$

~~$x = f \cdot \tan\theta$~~

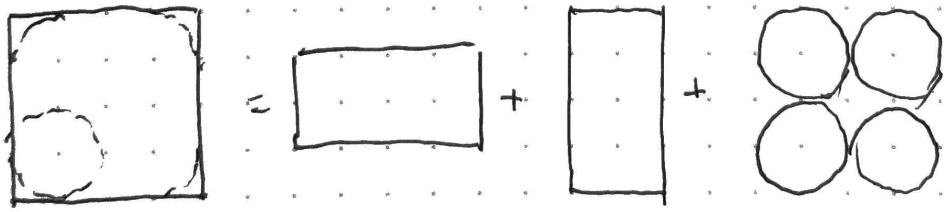


Corner point indices

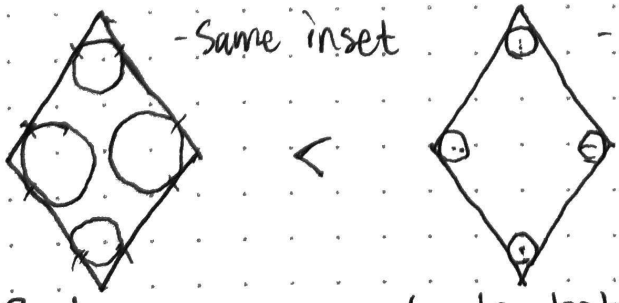


Face drawing decisions:
- front edge compared to back edge
- position based

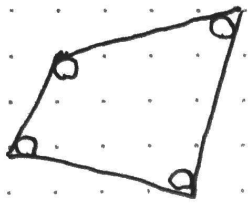
Rounded polys



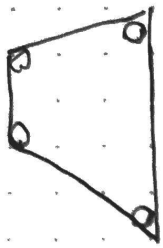
- Round corner radius must be proportional



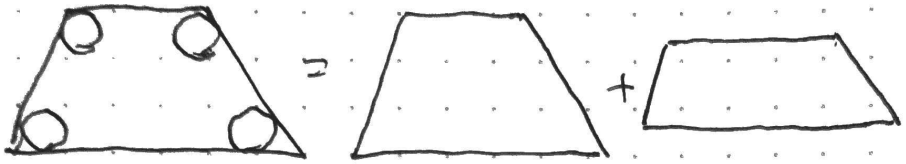
- Same inset
- Bad
- Looks better
- Same radius
  - Make function of vertical edge?
  - How get fixed radius



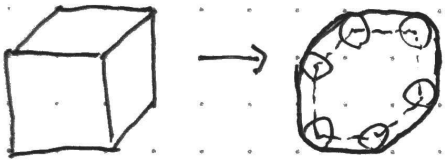
- Irregular quad
- Very hard



- Trapezoid
- Much easier
- Round on max side length.



Also draw hex profile?



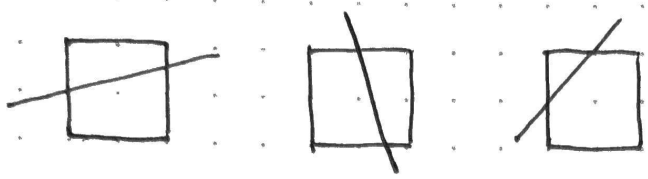
Slicing Algorithm

- [ ] Turn blade to plane
- [ ] Get edges of cube
- [ ] Find edge intersects
- [ ] split point arrays
- [ ] Reorder points

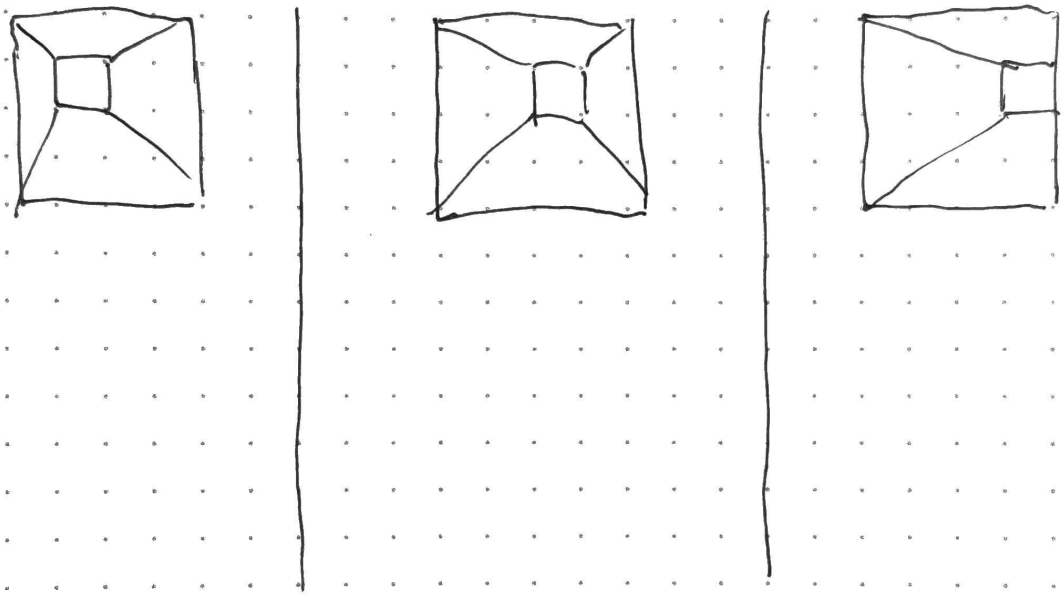
Slicing
- Global to local coords system

① 2.5D slicing?

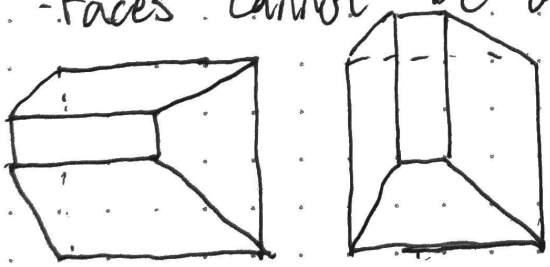
- Find plane equation
- points > or < go to diff. halves?



Face orders



- Faces cannot be ordered purely on position

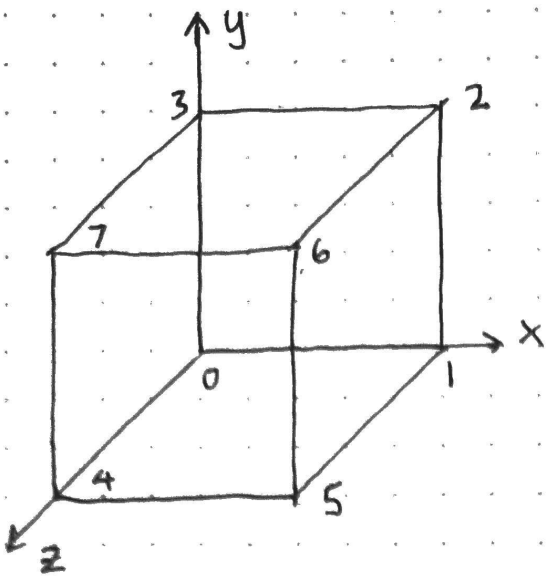


- Same pos
- Diff ordering
- Does this matter?
- No, right? not for my slices

left, top top, left

- create example shapes, then debug

- Order by z magnitude of the faces?
- What about pointing in/outwards?

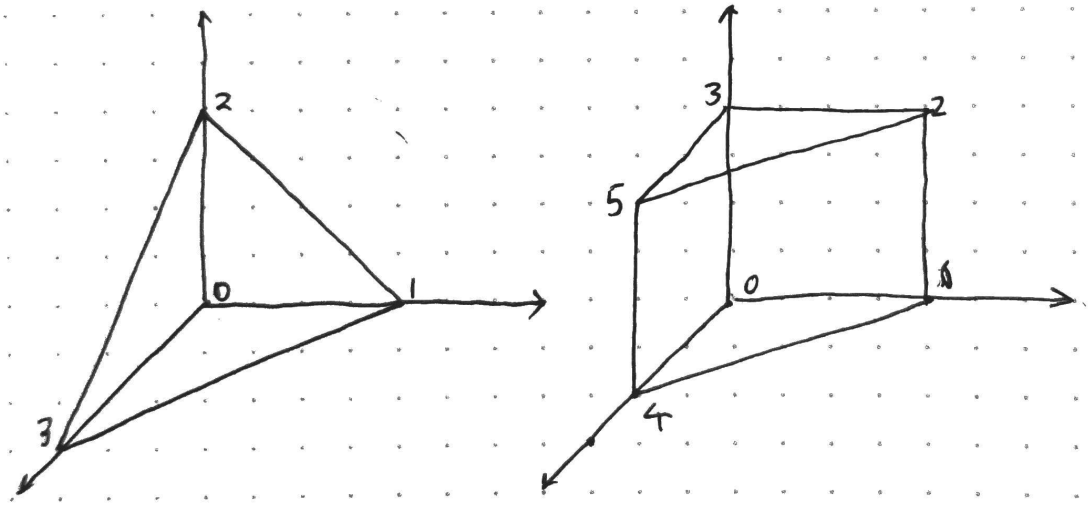


|3,2,1| + |3,1,0| = |3,2,1,0|

|5,1,0| + |5,4,0| = |5,1,0,4|

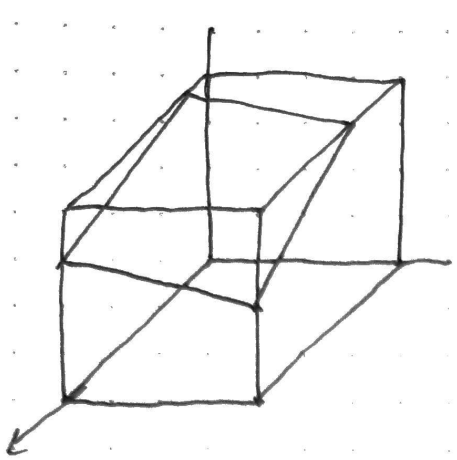
|7,3,0| + |7,4,0| = |7,3,0,4|

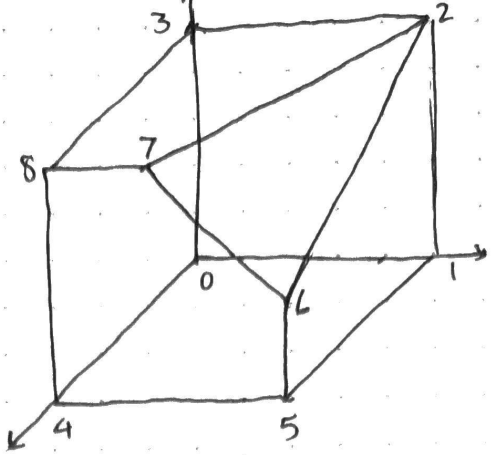
If 2 indices are shared, append the odd one out

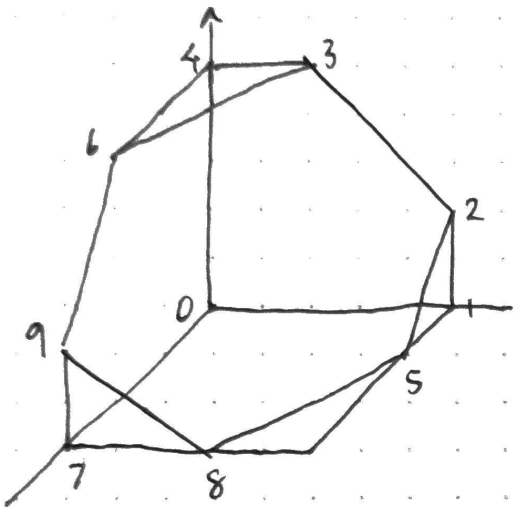


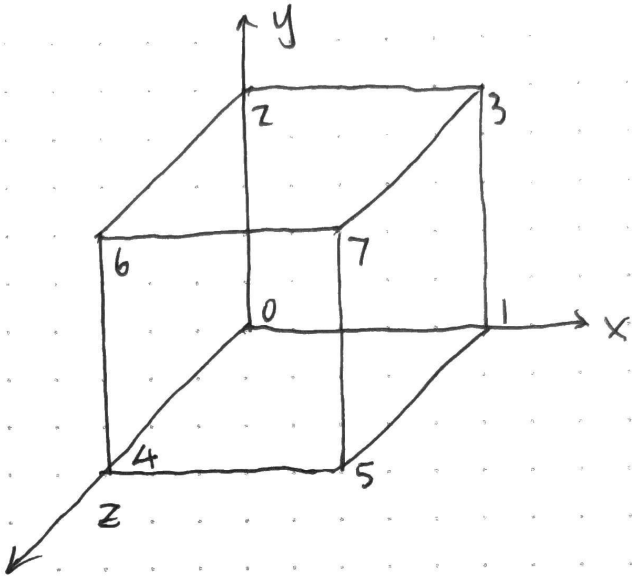
Hypothesis: adjacent triangles are adjacent in list

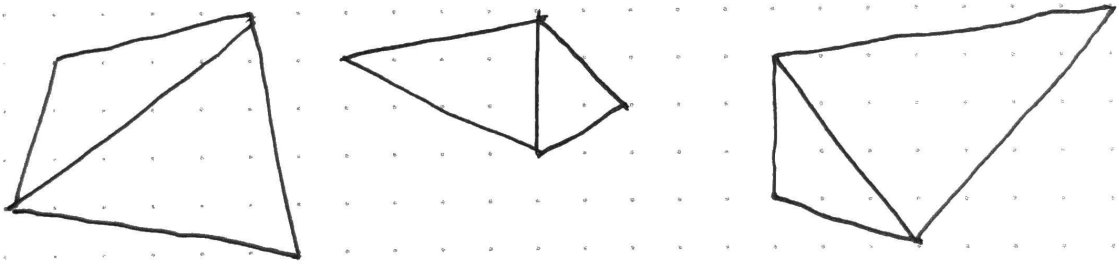
- Check if odd one out is coplanar?
- If odd point is in first plane
- Would have to find plane
- Find where there's 2 common points in a row



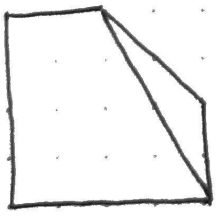








Merging triples: done



- There are always 2 consec. common points
- Insert new points between them

Music

- Get frames/ms
- Get frames/beat
- BPM depends on playback speed
- OGBPM, framerate are knowns
- Say 1 frame/ms
  - How many frames/ms?
    - 44.1 kHz = 44.1 # frames/ms
    - How many frames/beat?

$$\frac{\text{beats}}{\text{min}} \cdot \frac{\text{min}}{\text{s}} = \frac{\text{beats}}{\text{s}}$$

$$\frac{\text{frames}}{\text{ms}} \cdot \frac{\text{ms}}{\text{beat}} = \text{frames/beat}$$

Convert # frame to beats

$$\text{frame} \cdot \frac{1\,\text{sec}}{44k\,\text{frames}} = \text{seconds into song}$$

Cube speed = pixels/beat
- Calculated w/ distance to zone, beats to time
  - Fix distance, in pixels, and speed
    - Solve for spawn beat

$$\frac{\text{Num beats till strike}}{\text{Distance}} \text{ is flipped}$$

$$z = \left(\frac{\text{desiredBeat} - \text{currentBeat}}{\text{Max Prespawn Beats}}\right) \cdot \text{max } z$$

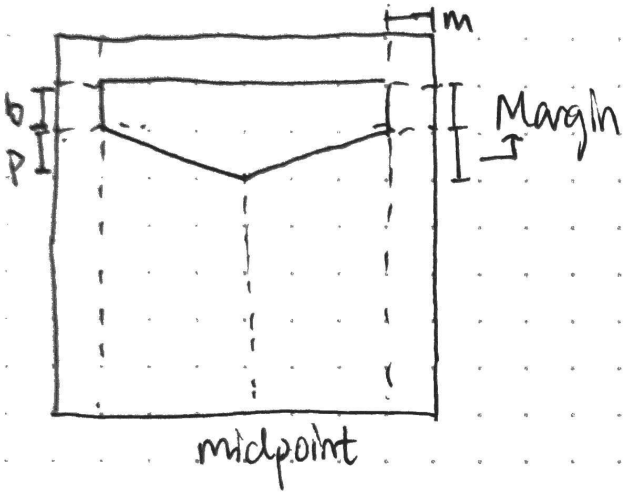
$$\text{Prespawn Beats} = \frac{\text{max } z}{\text{speed (pixels/beat)}}$$

- Still need to approximate velocity

- Scoring
  - How centered slice is
    - Compare center of masses/volume
  - Timing of slice

- Angular Slicing
  - Get the actual slice strike
  - Trig angle
  - Have angle threshold

Draw Directions

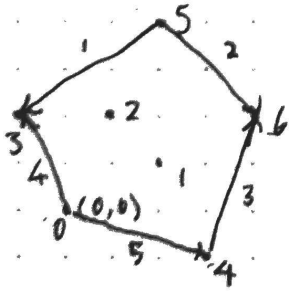


Starting song midway

beats in ⇒ seconds/beat = seconds in

× frames/second = frames in

Convex 2D



Need reorder/redir formula