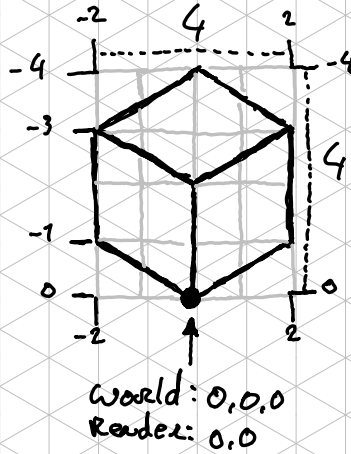
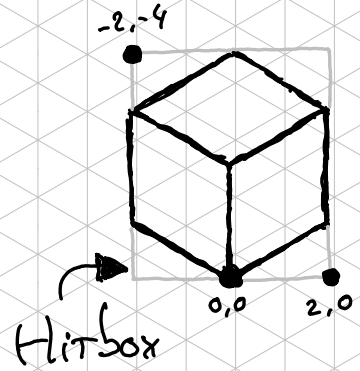


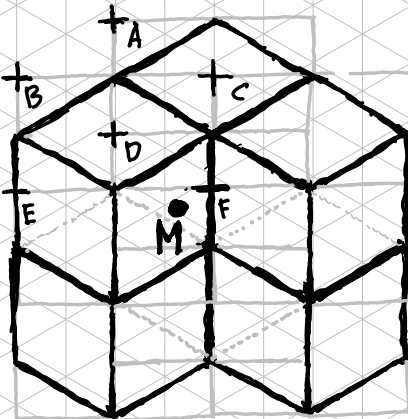
Mouse Detection



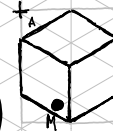
Reader Coordinates



6 Stacked Blocks
1 Hidden (D)
Overlap w/ 6 Hitboxes



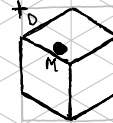
Point M falls into 4 Hitboxes:



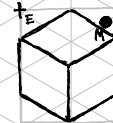
A: Hits West Face
1,1,1 : Render weight: -1



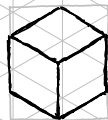
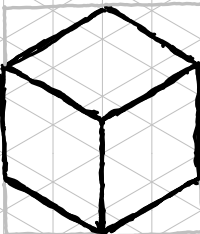
B: Hits South Face
0,1,1 : Render weight: 0



D: Hits TOP Face
1,1,0 : Render weight: -2

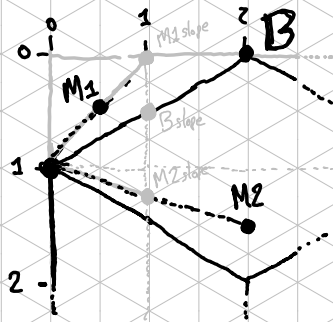
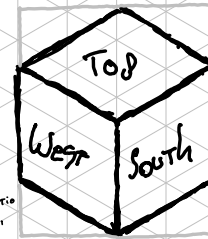


E: Miss
0,1,0 : Render weight: -1



Quick scan on Hitbox
For all matches do proper hit detection
The match w/ highest Render weight WINS

Proper Hit detection



How do we know M1 is outside but M2 is inside the cube? Look at the relative slopes of the points!

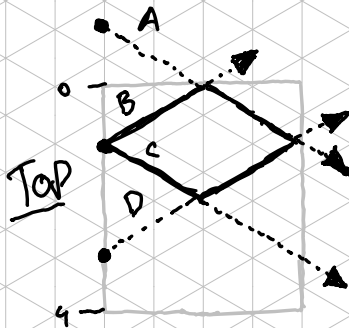
$$M1_{\text{slope}} = -1 < B_{\text{slope}}$$

$$B_{\text{slope}} = -0.5$$

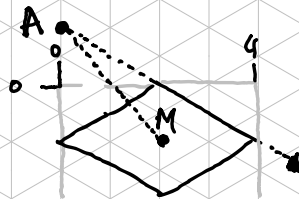
$$M2_{\text{slope}} = 0.25 > B_{\text{slope}}$$

For each line on each face
Pick start point on y-axis: Y_{offset}
Calculate the slope of the line pointing to the mouse pointer: M_{slope}
Compare the slope of the "face line" to the slope of the "mouse line".

$$\text{Slope} = (Y - Y_{\text{offset}}) / X$$

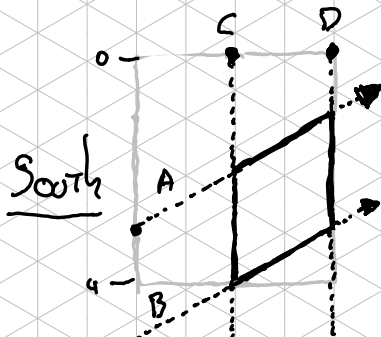


	Y _{offset}	Slope
A:	-1	> 0.5
B:	1	> -0.5
C:	1	< 0.5
D:	3	< -0.5

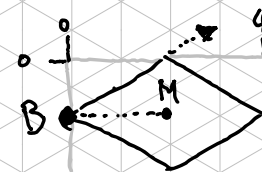


$$A_{\text{slope}} = 0.5$$

$$M_{\text{slope}} = (1 - (-1)) / 2 = 2 / 2 = 1$$

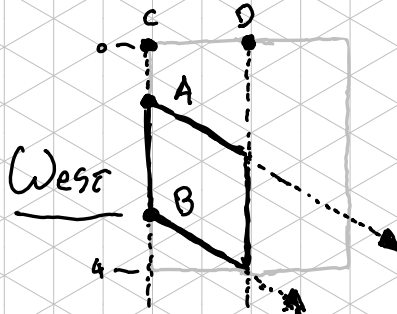


A	3	> -0.5
B	5	< -0.5
C	X	> 2
D	X	< 4



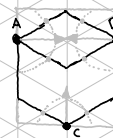
$$B_{\text{slope}} = -0.5$$

$$M_{\text{slope}} = (1 - 1) / 2 = 0$$



A	1	> 0.5
B	3	< 0.5
C	X	> 0
D	X	< 2

2/2



Only need to calc 3 slopes to get the same results (vs. 8 in V1)