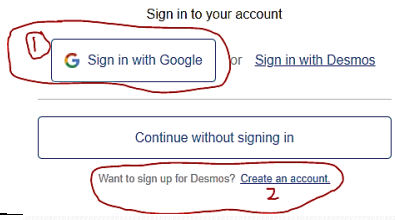
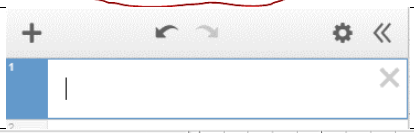
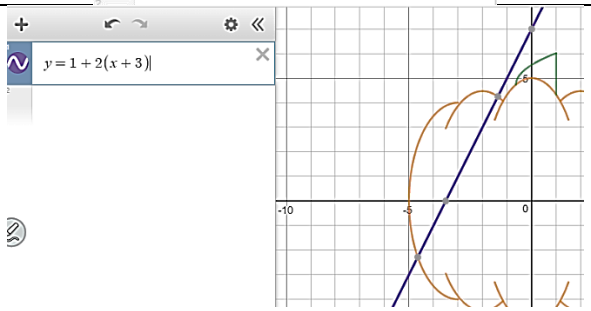
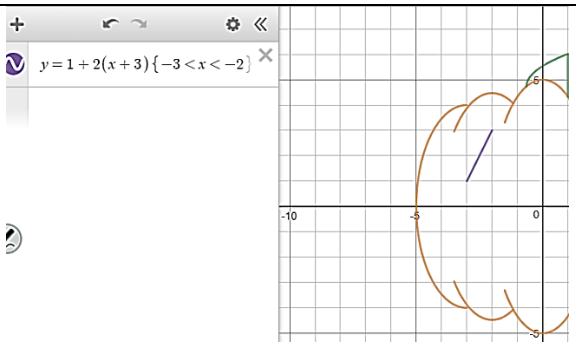
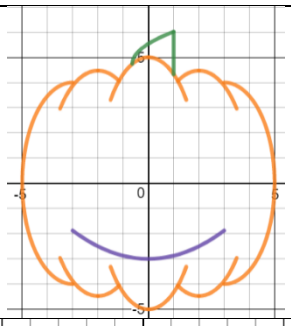
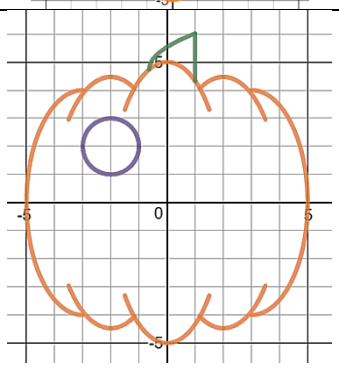
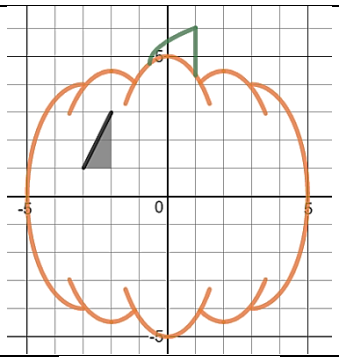
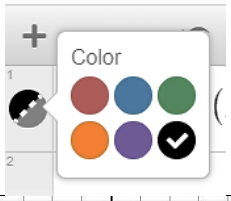
Pumpkin Carving Directions

DO NOT WRITE ON THIS SHEET

Today, you are going to carve a virtual pumpkin using mathematics. So, it's all the fun of carving without the mess of pumpkin guts! You will need a Chromebook or your own laptop.

1. Go to https://student.desmos.com/ and type in the code: _____.	
2. So that you can come back to your work if you don't finish, either 1) sign in with a Google account (if you have one) or 2) choose the "create an account" option and quickly create your own Desmos account.	
3. On the left-hand side, click in cell 1 and type whatever equation you would like. To see an example, follow step 3.	
4. Perhaps I want to start by doing a cut for a triangular eye. I type in the following equation: I've done a modified point-slope, but you can also do slope-intercept. Example: $y = 1 + 2(x + 3)$	
5. You saw that it graphs the entire line, but I only want a part of it, so I need to restrict the domain (x-values). To do this, using curly brackets, type in after the equation the portion of the line that you want. In this case I only want the portion between -3 and -2 on the x-axis, so I add {-3 < x < -2}. Example: $y = 1 + 2(x + 3)\ \{-3 < x < -2\}$	
6. Repeat this process over and over to make a bunch of straight-line cuts and carve your pattern. If you want to add curved cuts, circles/ellipses, or shading, see boxes 6-8.	

MORE STEPS ON THE BACK SIDE

7. To add a curve cut, you can use a parabola. The vertex equation for a parabola is $y = a(x-h)^2 + k$. Pick values for a, h, and k to make a cut. You will see *h* and *k* affect the vertex of the curve and *a* affects the steepness/direction. Example: $y = \frac{1}{8}(x-0)^2 - 3\,\{-3 < x < 3\}$	
8. To add a circular/ellipse cut, you can use a circle/ellipse. The equation for this is $r = a(x-h)^2 + c(y-k)^2$. Pick values for a, c, r, h, and k to make a cut. You will see *h* and *k* affect the center of the shape, *r* affects the radius length, and *a* and *c* affect horizontal and vertical compactness. Example: $1 = 1(x+2)^2 + 1(y-2)^2$	
9. If you want to do any shading, feel free to use an inequality. In order to control the shading, you will have to also restrict the range, not just the domain. Example: $y \leq 1 + 2(x+3)\{-3 < x < -2\}\{1 < y < 3\}$	
10. You can alter the color of any of your cuts by clicking and holding the color for the corresponding cell. It will then let you choose.	
11. When you are all done, your work is automatically saved. Happy Halloween!