

Count the Faces (areas), Points, and Lines. Can you find a rule that associates all three for all figures. Hint: Add the Faces and Points.

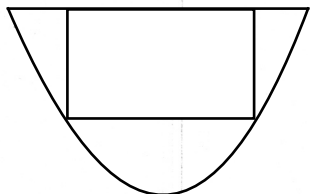
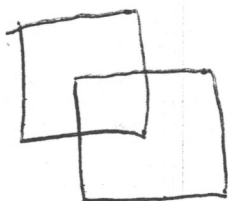
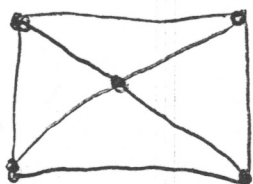
Picture

Faces

Points




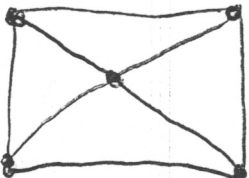
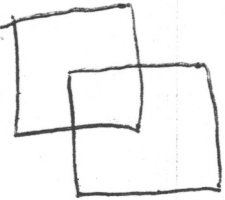
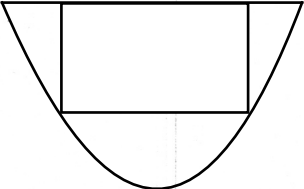
Lines

$F + P$



Cube

(try some of your own)

Picture	Faces 	Points 	Lines 	F + P
	5	5	8	10
	4	10	12	14
	5	6	9	11
Cube	6	8	12	14
$F + P = L + 2$				
<p>Note: This example counts the rest of the plane (infinite face) as a face. This is done so that the 3D figures will have the same rule. For less advanced students, do not count the infinite face and the 2D rule will be $F + P = L + 1$.</p> <p>Questions:</p> <p>1. Why does this rule work? When you start a figure with one point, the left side is 2 because there is the infinite face and the point and the right side is zero, so the right side needs 2 extra to catch up. From now on, each new line either adds a new point or it joins to an existing point and adds a new Face (area), so the sides always stay balanced. Try to add something to make them unbalanced.</p> <p>2. Why are the 2D figures really the same as the 3D figures?</p>				