

# What's 3D?

## 2D

2D means 2 dimensional. A flat piece of paper is considered 2 dimensional. The paper's thickness is its 3rd dimension. Most printed art and TV screens are 2D.

## 3D

3D means 3 dimensional. All objects have 3 dimensions and exist in 3 dimensional space. The 3 dimensions of a box are often described as width, length and height. 3D printing is the result of many layers of 2D shapes printed on top of one another to build up a third dimension.

## X,Y and Z

Sometimes the 3 dimensions are described as X, Y and Z. On a piece of paper, X is usually left and right, Y is top to bottom and the Z dimension is the area above and below the paper.

## Cars vs. Airplanes

Driving a car is like moving around in 2D space. Flying a plane is in 3D space, because you can move up and down.

## Axis

An axis is an imaginary line about which something rotates around.

## Roll, Pitch and Yaw

An airplanes x, y and z are axes, around which movement is called roll, pitch and yaw.

## CG

CG stands for center-of-gravity. The CG of an airplane is the point where the 3 axes come together. The airplanes 3 axes move around the CG.

## Vertical

Vertical means something straight up and down. The vertical stabilizer on the tail of an airplane helps stabilize the airplane's yaw.

## Horizontal

Horizontal means something in line with the horizon of the earth. The horizontal stabilizer on the tail of an airplane helps stabilize the airplane's pitch. A level is a tool that shows if something is horizontal or vertical.

