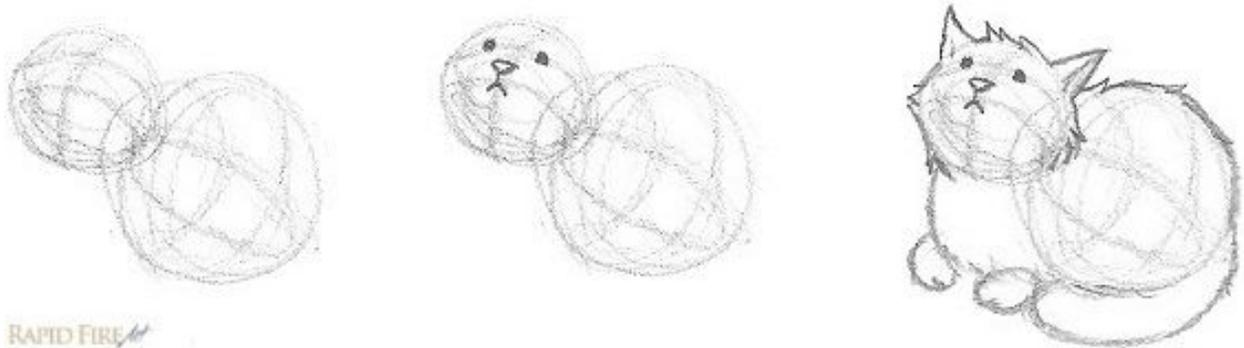


# Lesson 3: Going From 2D to 3D

By Darlene Nguyen - May 9, 2017

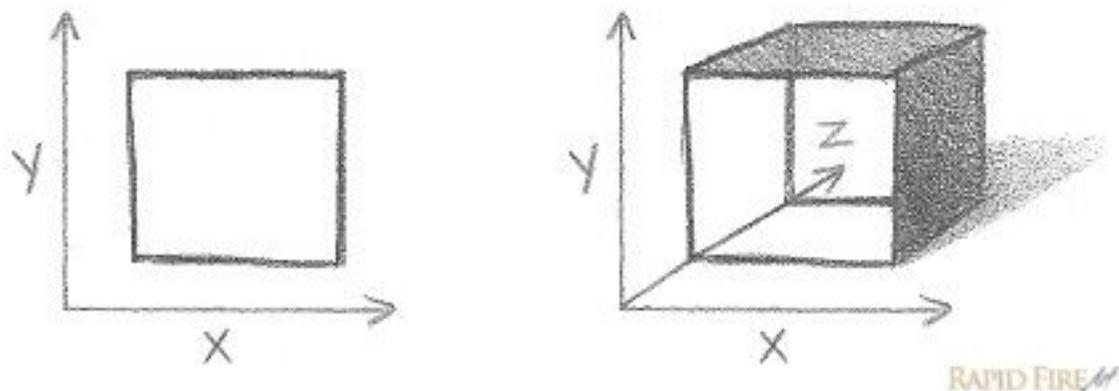


In this lesson, we're going to focus on how to give our sketches a 3 dimensional *quality*.

At the end of this lesson, we're going to revisit our homework assignments from the previous 2 lessons and apply the techniques from lesson 3. If you haven't read and applied what you learned in lesson 1 and 2, I encourage you to visit them before you read on.

[Lesson 1: How to Sketch](#)

[Lesson 2: Learn to See Things Differently](#)



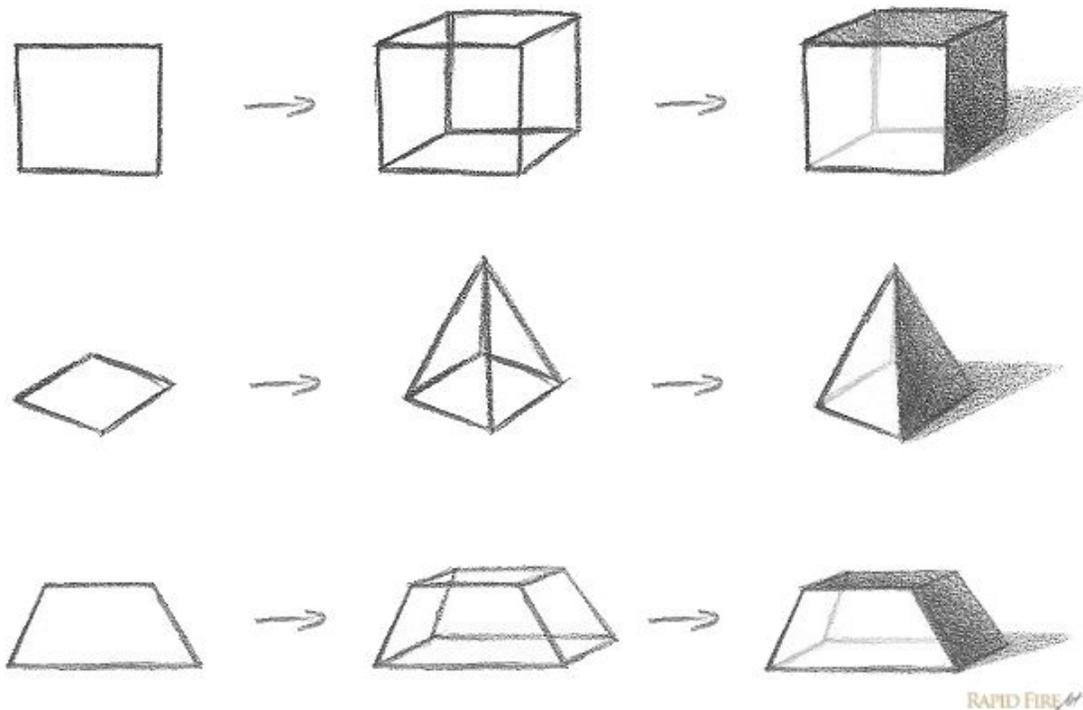
When drawing something realistically, we're depicting what a 3D object will look like on paper. In reality, the objects drawn are actually 2D because they have no physical depth. How in the world can we draw something that looks 3D, while in reality being flat on the page?

## What Makes Drawings Look 3D?

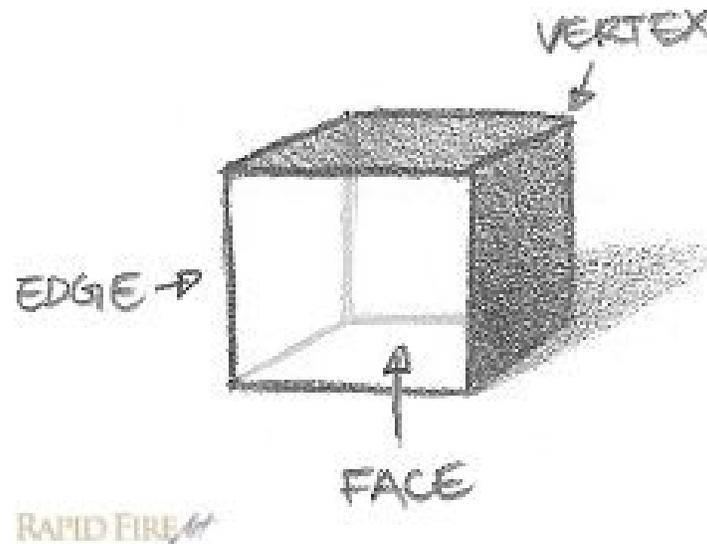
Many factors contribute to this. I'm only covering a few in this lesson and will sprinkle more in the following lessons.

### Planes

The image below shows you 2D objects being transformed into 3D. I added some shading for you to visualize it better.



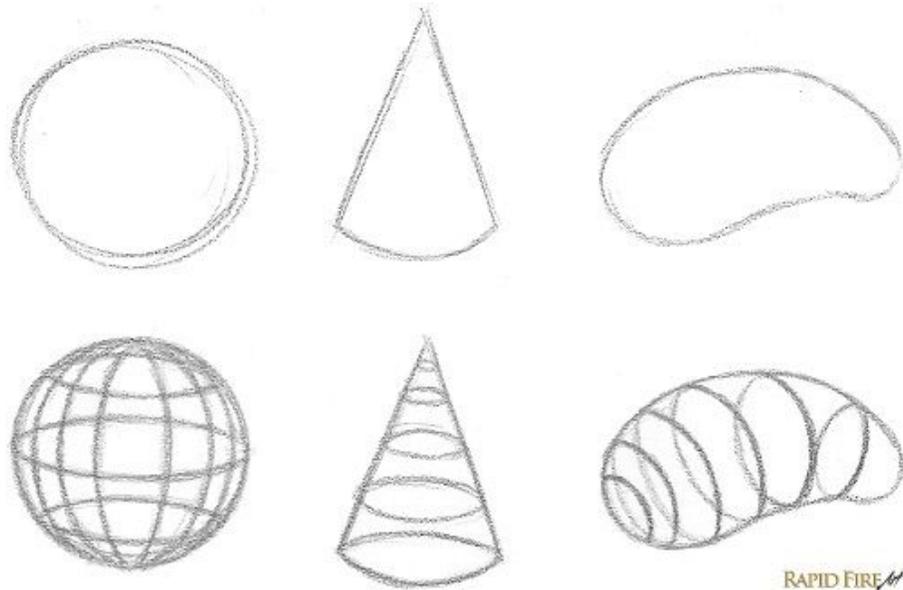
The reason why these objects look 3D is because I've given them additional faces. Each face is called a **plane** and each plane is facing a different direction. Multiple planes on one object give the illusion of depth. You can now imagine each object having volume.



It's easy to draw 3D objects when they have obvious **vertices** or **hard edges**, but what about weird shapes like circles, blobs, or even people? How do you define the planes/faces on a round object? That's where contour lines come in.

## Contour Lines

The first row of objects below appear completely flat. You could say they each have one face.



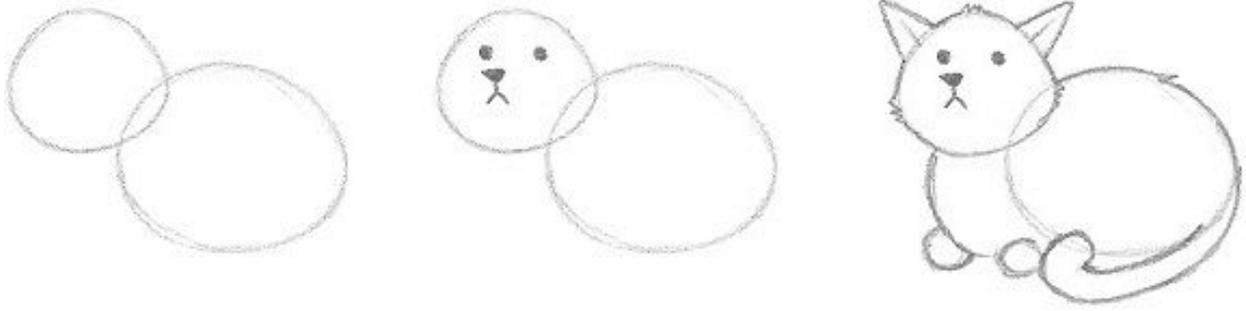
In the second row, the objects have lines wrapped around them which make you visualize their many sides. These lines are called **contour lines** because they follow the form of the object. Contour lines can run in any direction along the surface of an object to help you create the illusion of form, giving the object a more meaningful shape.

## When to Use Contour Lines

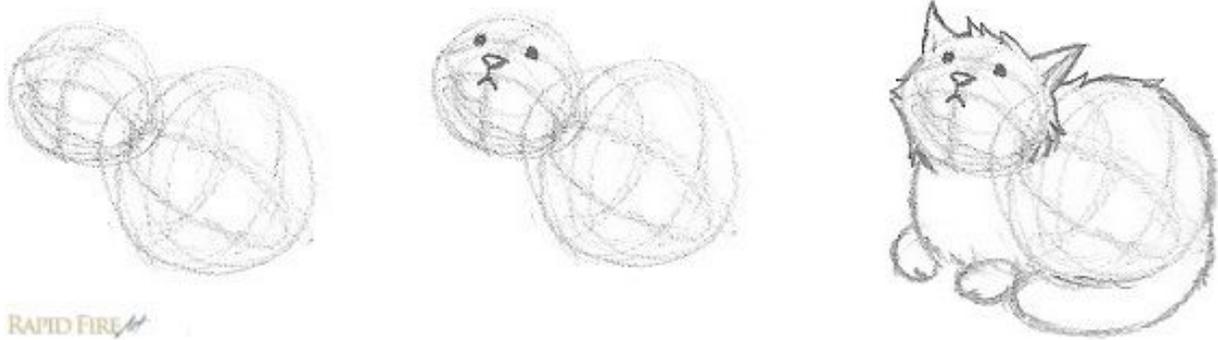
Here are some examples of when you can make use of contour lines.

### Drawing Faces:

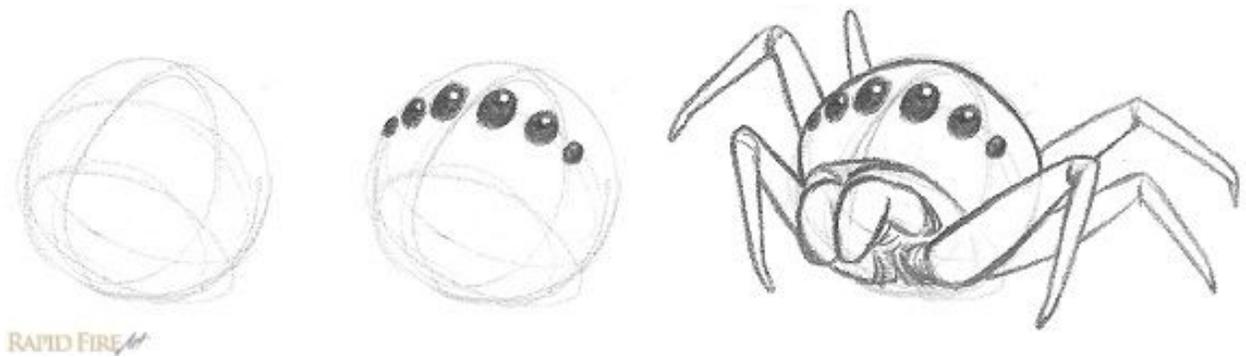
If you're drawing a character whose face is tilted, contour lines will act as guidelines to help you find out where to place features on the face, such as where to draw the eyes, nose and mouth. Notice how the eyes on the cat in the second row wrap around the face more naturally. The nose and mouth are also aligned properly down the center of the face compared to the first cat.



VERSUS



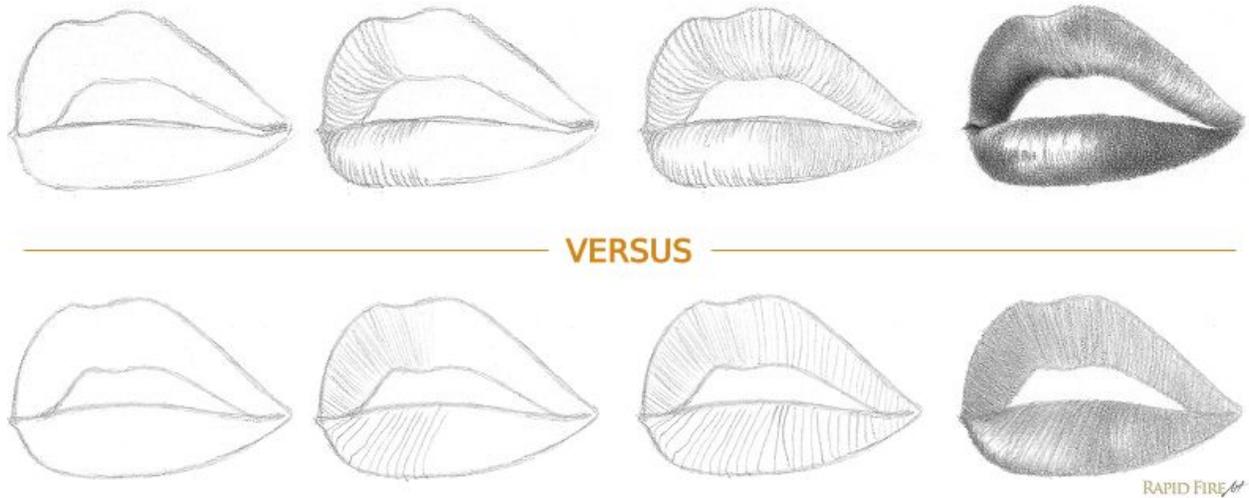
Here's a more obvious example – a creature with 6 eyes:



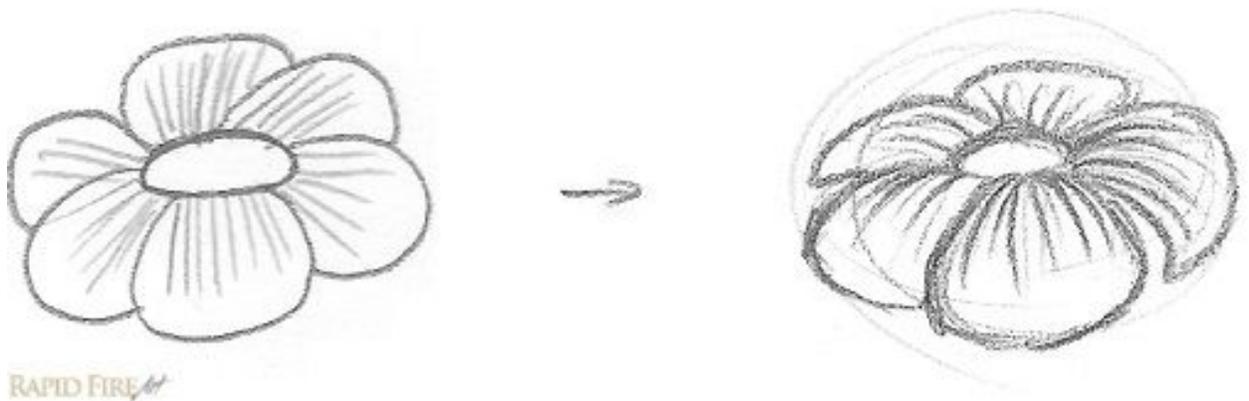
Use your imagination to think of where you can make use of this technique. Perhaps a belt around Santa's large stomach, a ring around a finger or a headband around someone's head.

## Defining Surfaces

Contour lines can be used to accentuate curves. Observe how the lines used in the examples below make a big difference in how the subject is perceived: Full lips versus flat lips. The more curved my lines are, the more plump the lips appear to be.



Here's an example of a flower. When you look at the flower on the right, the stripes of each petal are curved. The curves follow the shape of each petal.

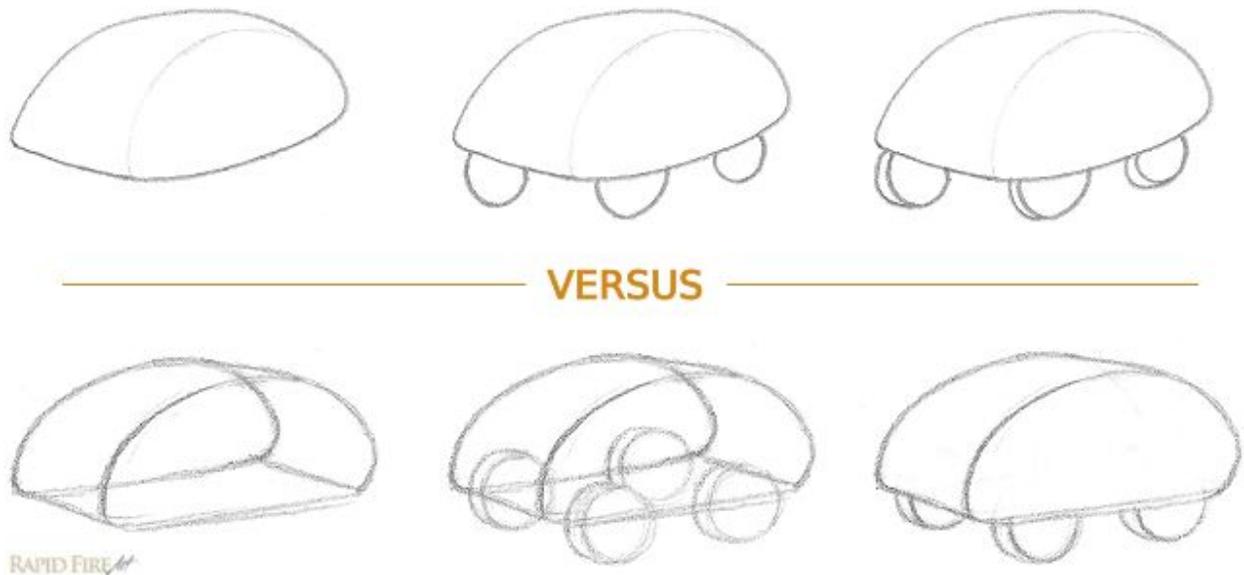


## When Should You Draw in 3D?

The short answer is: whenever possible.

First of all, whether you're drawing a transparent or opaque object, you'll want to approach it the same way. As a beginner, it's always a good idea to draw all sides of the object. This practice will help you improve accuracy, so you can draw objects that make more sense.

Using the toy car example below, drawing the entire object in 3D helps me know where to draw each wheel instead of *guessing* where they should go.



# How to Draw in 3D

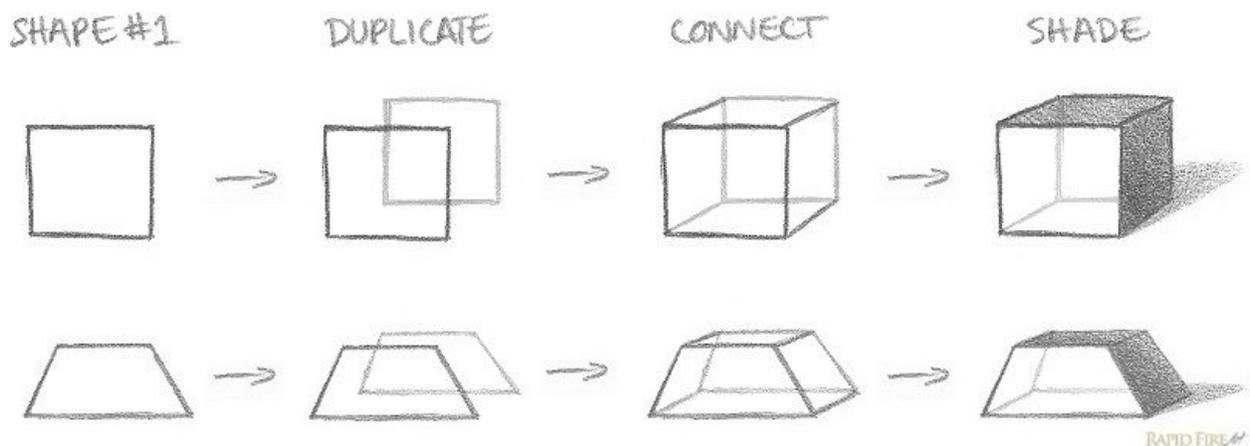
Since this lesson is an *introduction* to 3D, I want you to focus on only a few things to begin with.

## Drawing Objects with Vertices and Hard Edges

This is the quick and simple method because it doesn't account for perspective (something I will cover in lesson 6):

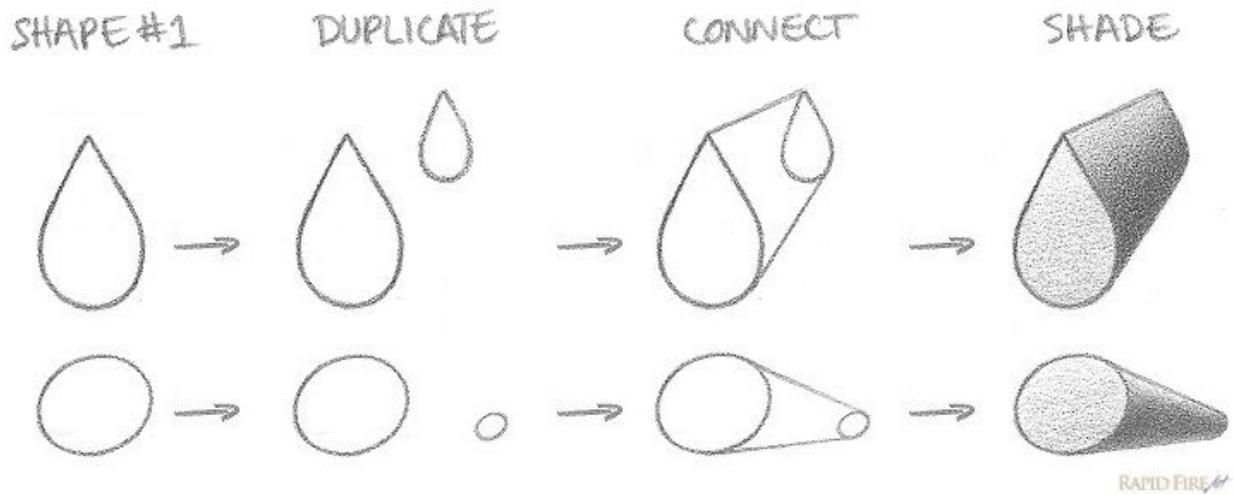
**Steps:** Draw a simple shape with corners, duplicate that shape, draw lines to connect the vertices together and then shade the object.

**Tip:** If you draw your second shape lighter than the first, it will appear further away.

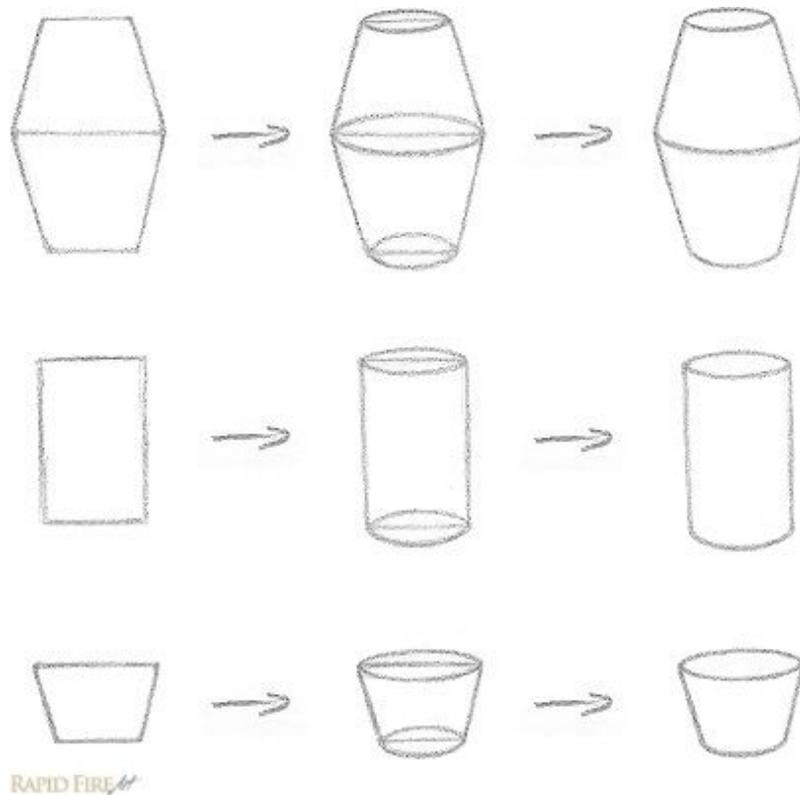


For shapes with round edges, draw your connecting lines at the outer-most edges. If you size your shapes differently like the example below, it will give your drawing an added layer of depth. However, as mentioned above, this

freehand method is quick but not very accurate compared to what we'll be learning in lesson 6.



For cylindrical shapes like cups, jars, pop cans and vases, you can use the method below: Draw your 2D object and then add ellipses to the top, bottom and/or sides.



By changing the diameter of your ellipses, you can tilt your cylindrical shape more or less, as illustrated in the example below:

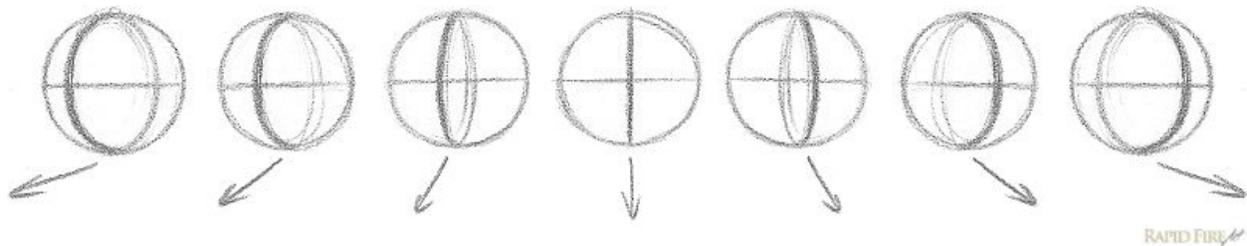


*A bowl drawn from different angles*

This idea can also be applied to drawing faces. You can change the direction you want your subject to face by changing the diameter of each ellipse or ring.

In the image below, assume that the sphere in the center is facing straight towards you. The point at which the 2 rings cross is the very front of the sphere.

As you look to the left, each sphere starts facing more towards the left side. The opposite applies to the right side. If you want a character to look up or down, you can apply the same idea to the horizontal ring.

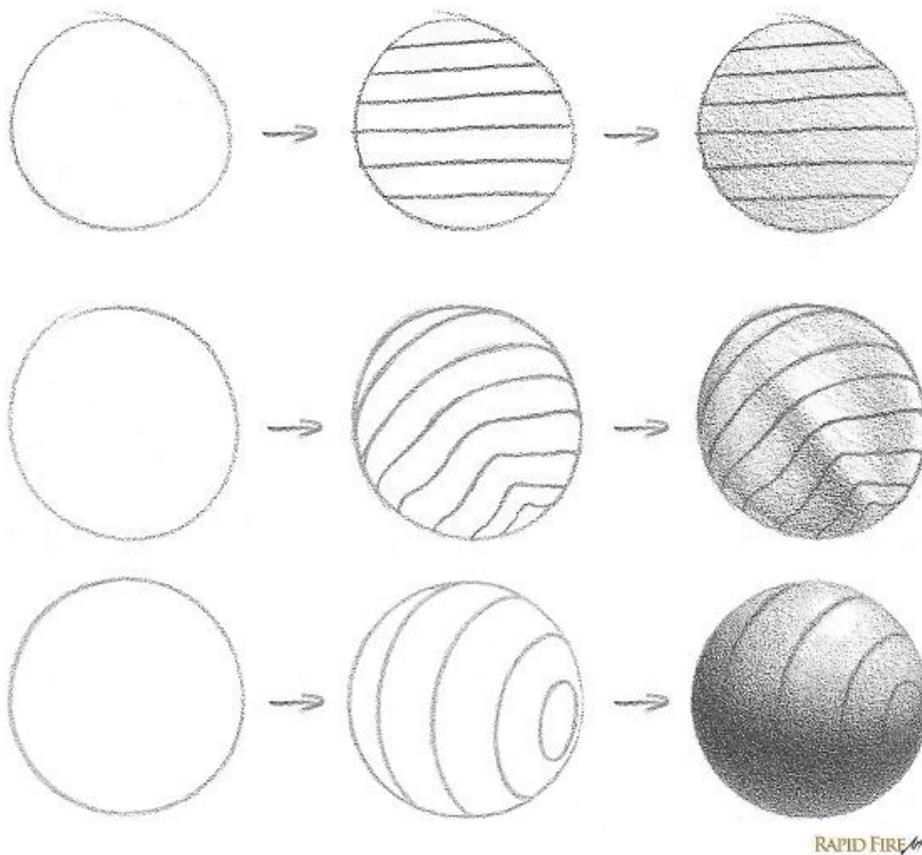


*Manipulate the vertical or horizontal ring to change the direction your character is facing.*

## Drawing Irregular Objects

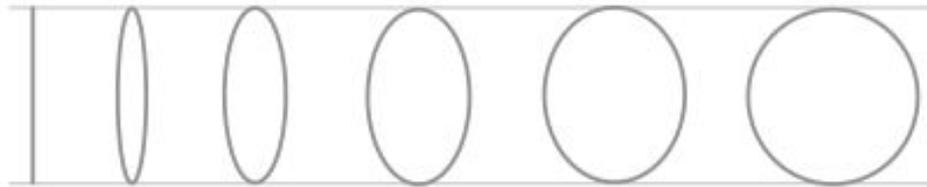
Contour lines help you turn irregular 2D shapes into 3D. You can influence the way a viewer perceives your drawing by manipulating its contour lines. However, this process comes with some practice. If your contour lines do not accurately represent the shape you are drawing, for example, a sphere, your viewer will not perceive a sphere.

Here's an example of how contour lines can manipulate your perception. I've shaded each object to better illustrate what I mean. Contour lines + shading make a powerful pair!



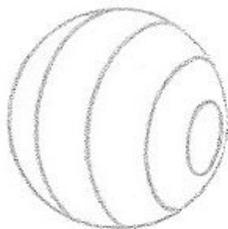
**Tip:** If your lines curve near the edge of your object, it makes the viewer think there is more on the other side, which magically lifts the object off the page.

A sphere, if observed from any side, has the outline of a circle shape. So if you want to draw a sphere, use various ellipses as contour lines.



A **series** of narrow rings will give you a pebble-like form, while a series of wide rings will give you a wider, rounder form. Here are some examples of what I mean. For each shape below, I'm showing you the front of the shape and the side view.

FRONT VIEW



SIDE VIEW



No matter what shape it is that you want to add contour lines to, always visualize it from different angles so you can create contour lines that best describe the form.

The ability to draw good contour lines takes a lot of visualization and practice. Once you understand it, it'll be one of the greatest tools in your toolkit!

RAPID FIRE

# Summary of the Above

In short:

- You can make things look 3D by indicating that your subject has multiple planes.
- Use contour lines for irregular objects like circles, blobs, etc.
- Always sketch in 3D. Your final drawings will look more accurate.
- To draw a 3D object with vertices: draw 1 shape, duplicate it, connect the vertices and then shade it.
- To draw irregular shapes such as spheres or blobs: use a series of contour rings.

## Your Homework for the Week

Your assignment for the week is to take a look at your drawings from lessons 1-2 and recreate as many drawings in 3D or incorporate contour lines in them if you haven't done that already. I'll be submitting my left-handed homework to [facebook](#). You're welcome to share your homework on there as well :)

A great way to **practice** drawing contour lines is to grab a newspaper, magazine or a few pictures off the internet and draw over them! If you want more examples, head over to Google Images and search for "object wireframe" or "animal wireframe" etc and study the images. You can use them as reference while you practice drawing contour lines. If you want to try a more **difficult** exercise, check out these cool pictures [here](#). Try

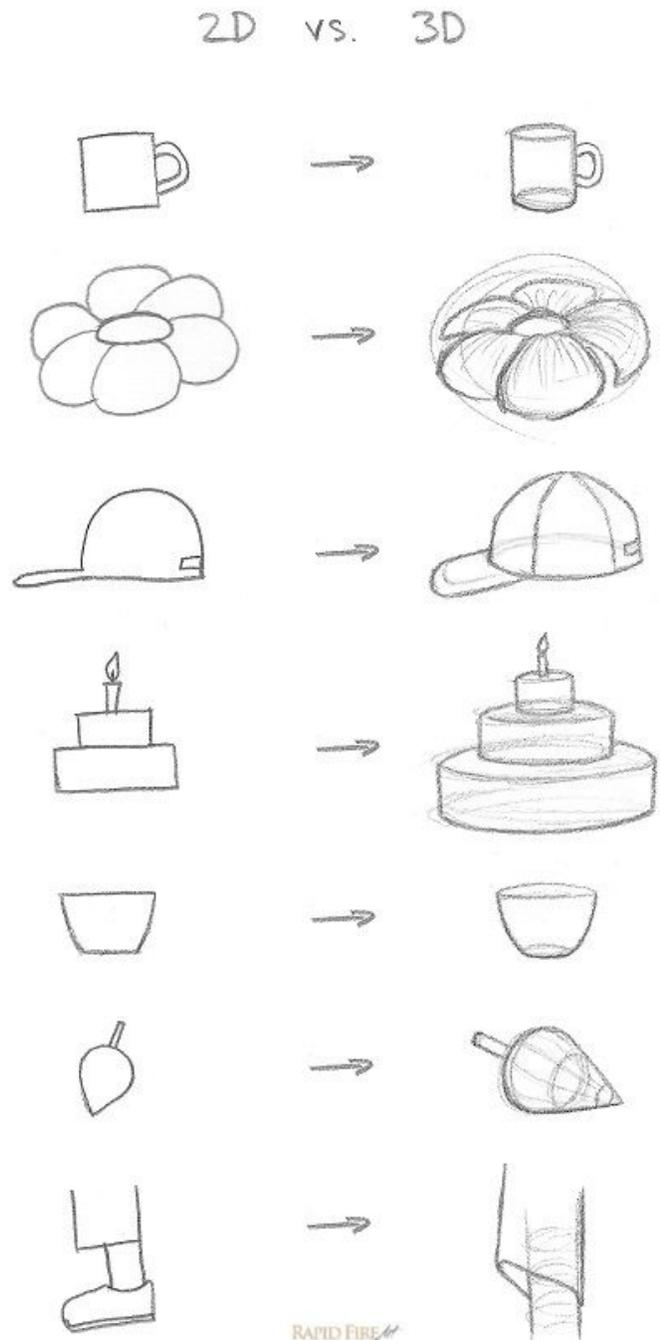
creating forms using only contour lines. Here's a simple tutorial you can use to draw a hand: <http://www.handimania.com/diy/3d-handprint.html>

**This week's challenge:** Turn 15 2D objects into 3D sketches. These objects can be anything from apples, chairs, milk cartons to light bulbs. Submit your drawings to the RFA Facebook page and I'll feature your artwork below! Each

transformation must have a 2D column and 3D column similar to the example on the right. Have fun!

[Click here for lesson 4](#)

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