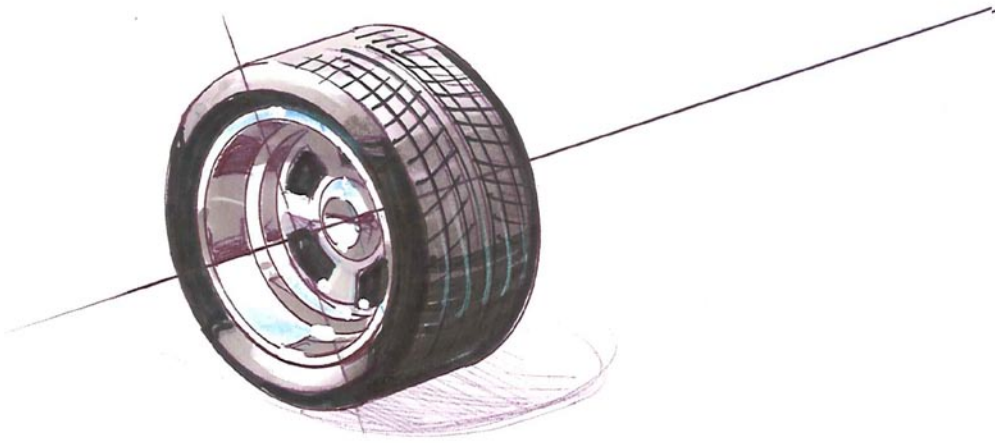
Wheel Magic Tutorial

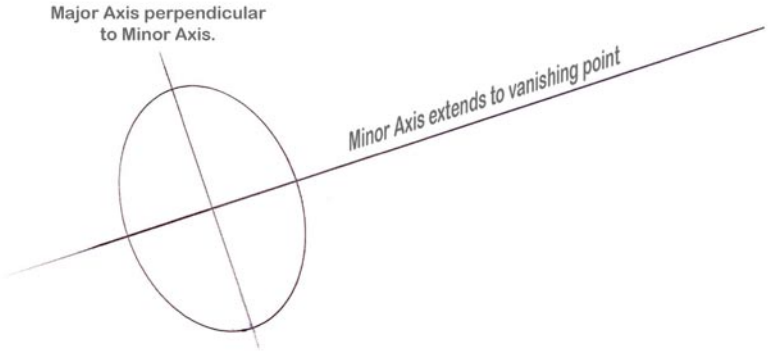


Wheel Tutorial

Following on from the theory of ellipses covered in How To Draw Cars Fast and Easy, we are going to do a quick tutorial on drawing a wheel. I have kept the wheel separate from a car so we can see what is going on without the distraction of the car.

Step 1

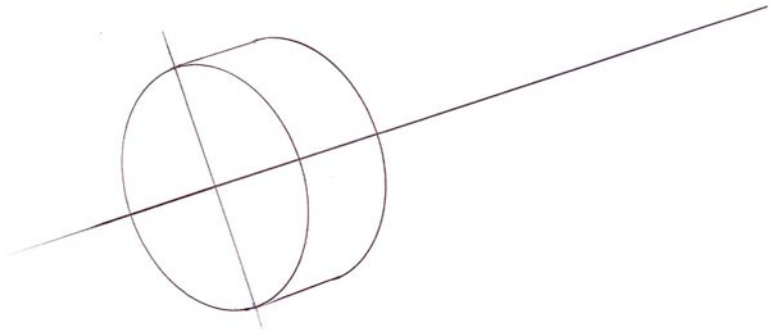
I have started off by drawing in the minor axis, which goes out to a vanishing point; and then drawing in the major axis, which is perpendicular to the minor axis. I have chosen to draw in a 45-degree ellipse using an ellipse guide.



Step 1

Step 2

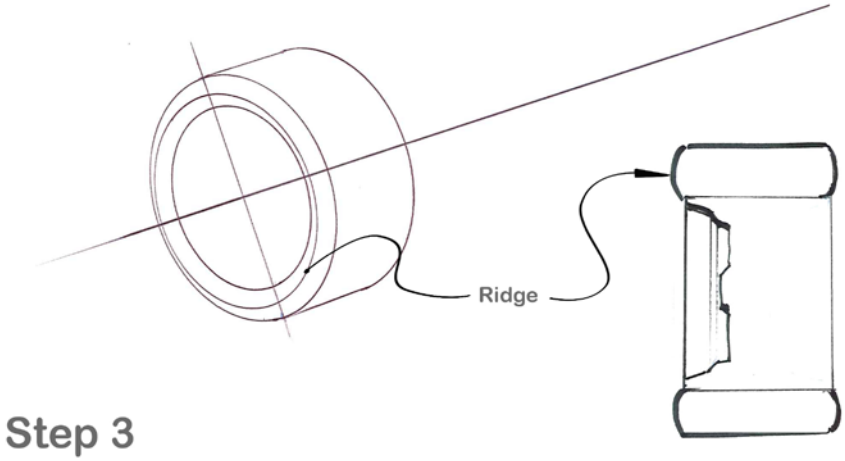
You can get the same ellipse and draw the back side of the wheel by sliding the center point of the ellipse along that minor axis, still keeping the major axis perpendicular, and drawing half the ellipse out the back. Next, join the two with lines to give thickness to the tires.



Step 2

Step 3

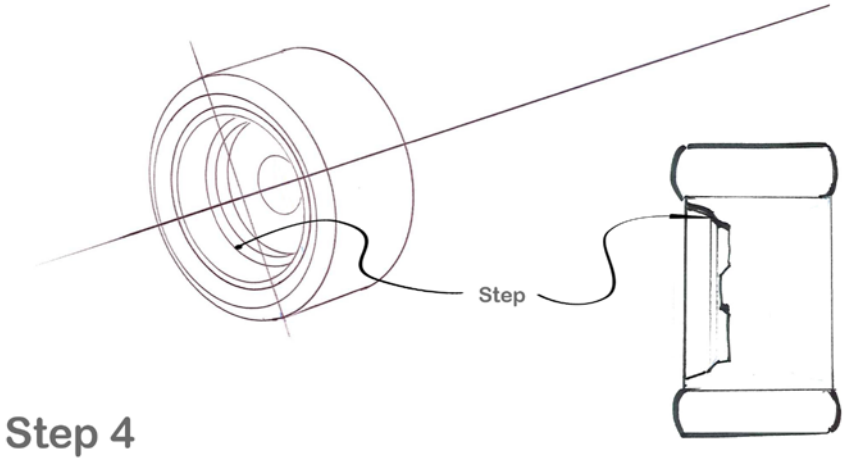
If you look at tires, particularly at their the sidewall, they have a gentle curve going through them. This is because they are filled with air and the air pushes out the sidewalls. To indicate that shape through the sidewall, what I do is draw a smaller ellipse indicating the rim on the same axis as the outside of the tire. So, where you have got that major axis drawn in, draw a smaller ellipse on that same axis. Then, to indicate the bulging ridge going around the outside of the rim, I draw a bigger ellipse off-center to the rim ellipse back towards the outside of the tire, and that begins to indicate – in a very graphical way – the shape through the side of the tire. When you come to render the tire later, you can use those circles as a guide for highlights.



Step 3

Step 4

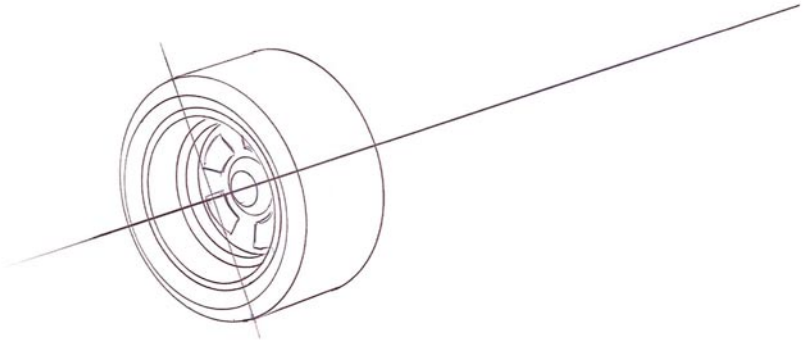
We are now beginning to draw in some of the ellipses for the rim and giving the impression that it is quite a deep-dish rim. The starting point is inside the circle that we drew for the rim in Step 3. We draw a smaller ellipse again on the same axis that we have drawn in there as a guide, and that indicates the lip of the rim. Then to get the deep-dish look, we choose a slightly smaller ellipse again – the next size down – and draw that way off-center to that major axis back along the minor axis. Now, most rims have a step halfway inside them to add strength. To indicate that step, I draw two ellipses – the outside one slightly larger, and the inside one slightly smaller – but on the same axis too. I indicate that step, and then when it gets to the very back of the rim, I choose a slightly smaller ellipse again and then draw that slightly off-center again along that minor axis. Once you have drawn that last ellipse in, it is a good thing to mark its center. You can then choose a smaller ellipse on that center line to indicate the hub in the back of the rim.



Step 4

Step 5

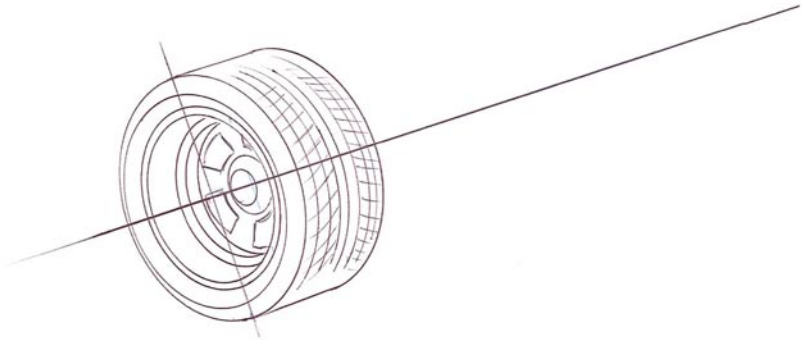
Here, you can choose the rim design you want to have. I have chosen a simple 5-spoke, traditional, hot rod type rim, and the common thing I do is just eyeball five equal spokes around it. However, when you are drawing from this angle, the spokes closest to the viewer are hidden by the tire. Although it is good to get as close as you can, if you do not get it perfect, it does not matter because you cannot quite see where the mistakes begin to happen, as they are hidden. I have lightly sketched in the openings for the rim and I have drawn a smaller ellipse in the hub, slightly offset back towards the outside of the tire. That gives an indication that the hub has a kind of chamfer around it and it is 'sitting proud' at the back of the rim.



Step 5

Step 6

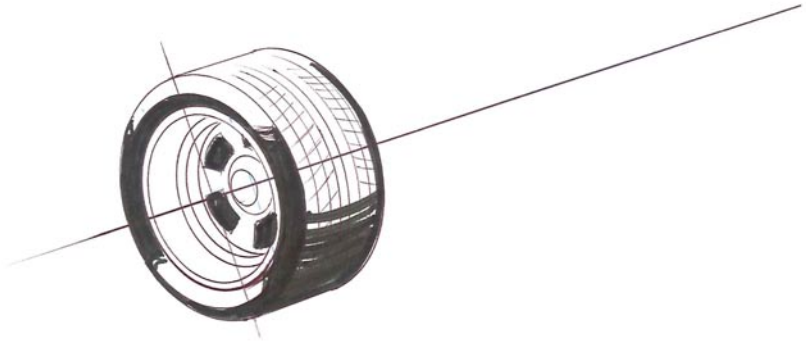
To draw in the tread, you just get the original ellipse that you used in Step 1 to draw the outside of the tire, and you can draw semi-ellipses across the flat face of the tire. Sketch simple lines back across the other way to indicate the cross pattern in the tread. You can see that the lines going across – the ones closest to the minor axis – are spread the farthest apart, and as they start to wrap around over the top of the tire, they begin to get a little closer together. Again, as they wrap around underneath the tire, they get a little bit closer together. That helps to give the illusion of a curved surface.



Step 6

Step 7

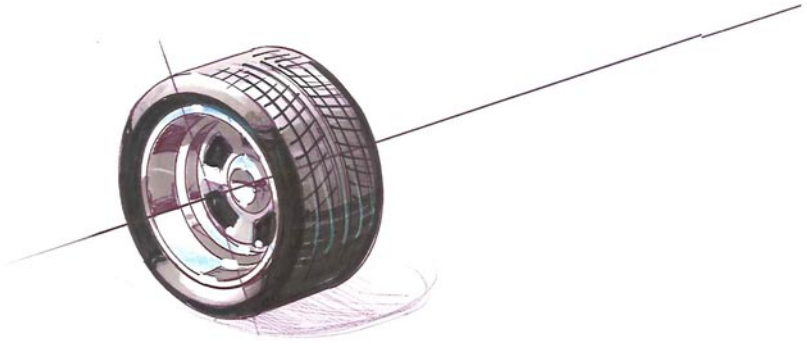
I have begun to color it in, and you can see that at the top of the tire, there is a highlight going across it. Similarly, at the bottom of the tire, there is a highlight closest to the rim. These help to indicate the shape in the sidewall of the tire, I use those lines that I drew in Step 3 as guides for where those highlights go. On the flat surface of the tire, as it wraps underneath away from the viewer, a heavy shadow begins to appear. I do that nice and heavy and black, but I where it wraps over the top, I leave it white for the moment.



Step 7

Step 8

The rendering is quite loose but I have developed it further; this is where having a variety of gray markers comes into play. Just above the base of the tire tread, I have put in a dark cool gray 11 to blend in to the black; as I go up, I lighten up the grays to create a highlight across the top of the tire. In the side wall, I have used some grays to soften the highlights there a little bit. In the rim, I have indicated the chrome, which we will deal with a bit briefly here.



Step 8

Essentially, for rendering the rim, a big shadow is cast across its back surface because it is in shade, so I do that first. Afterwards, to indicate chrome, the simplest way is to draw a heavy black line through the center of the rim as it goes in along the minor axis. Above that, color in with a darker gray – a cool gray 9, and perhaps a few bits of cool gray 11 – this indicates that that top section of the rim is reflecting the ground tones. Then, below that horizon line you drew in, shade in some blue sky tones so that it's as though that area is reflecting the sky.

Now, there is a whole bunch of theories for chrome about rendering convex and concave curves, but essentially, as it goes it in, it is like a concave curve. Concaves always reflect ground tones above the horizon line, and sky tones below that horizon line.

You can see the back surface of the rim, though, has a little bit of a convex shape to it, so the bottom half of the rim reflects the darker ground tones and then the top half of the rim at the back reflects the sky tones.

And then you can take it as far as you like. I put in a few little white highlights and reflections here and there using liquid paper, just to add a little bit of sparkle to the chrome, and that's it!