# 2   School Bus

In the previous chapter, we created a model and painted it. This time we're doing something similar - building the basic shape of a bus and painting it using a picture. But we'll also be adding details to the model based on the picture itself.


A bus is a good example to use for this project, because it's pretty much just a long box with wheels. When you get good at doing this, you can try something more complicated, like a car or truck. This method works best on models that have straight edges, not curvy ones like a sports car.

Paint a Box

1.   Start a new file, and erase the person.

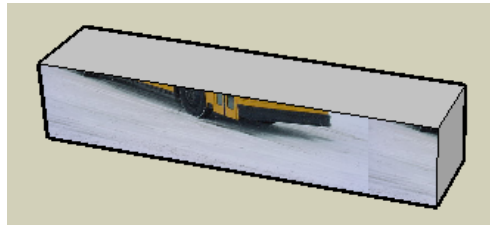2.   Start with a long rectangle, and pull it up to make a box like this.
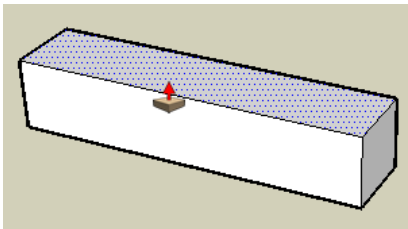
3.   **Use File / Import to find the "Bus.jpg" file, and again check Use as texture.**
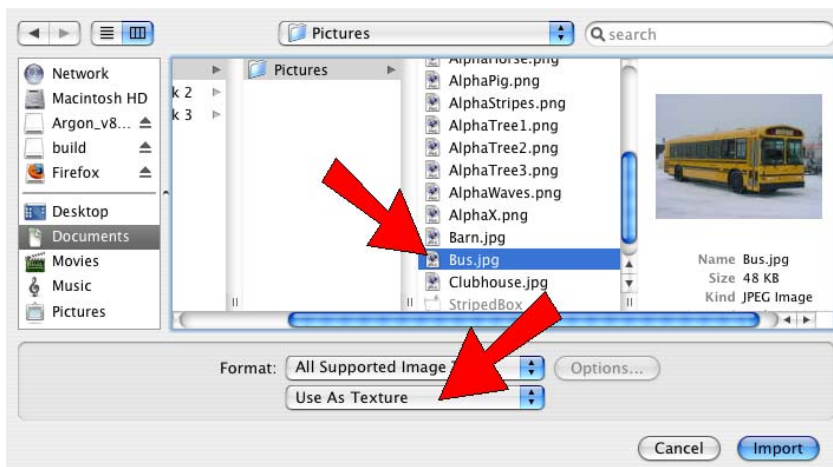
4. Paint the bus picture onto the side of the box.

    This is how the side of the box should look:

5. Position this picture. You should be using free pins, so if you see multi-colored pins, right-click and choose Fixed Pins. You could place the pins at four corners of the side of the bus, but I think it's actually easier to use the windows, because those corners are so easy to see. Plus you know that the windows make a perfect rectangle.
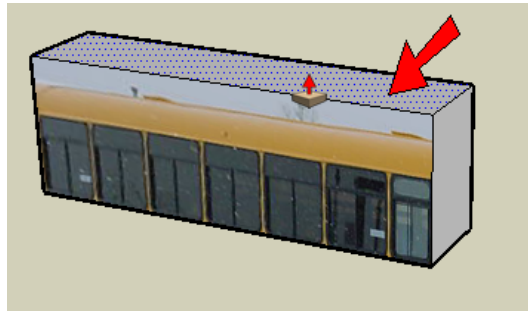

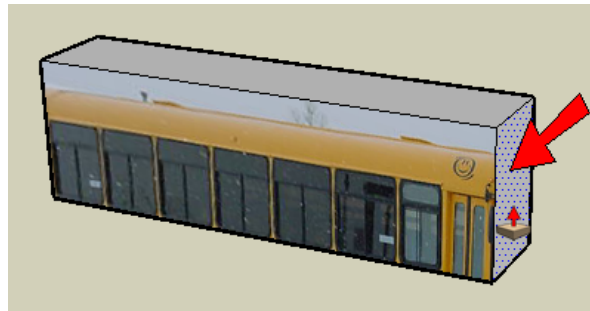6. Drag the corners of the windows to the corners of the box.

7. Right-click and choose Done, and you should see nothing but bus windows.

8. You need more than just windows on this bus, so use Push/Pull to pull up the top. End somewhere above the top of the bus picture.
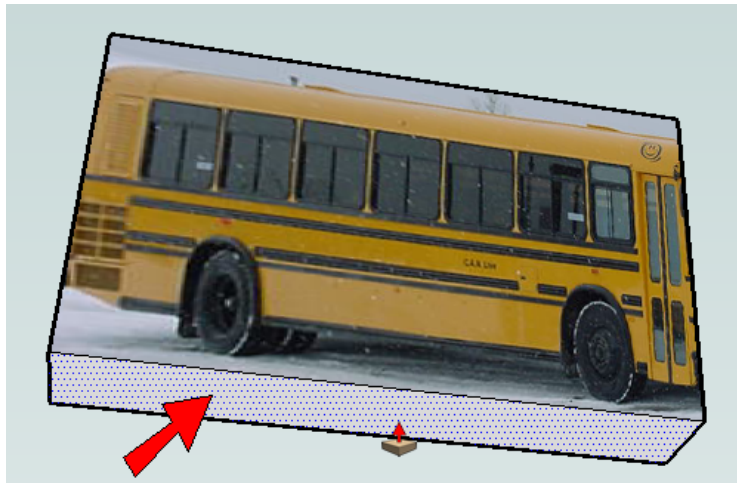

9. Push/Pull the front face until you see the whole bus door, which ends more or less at the front of the bus.
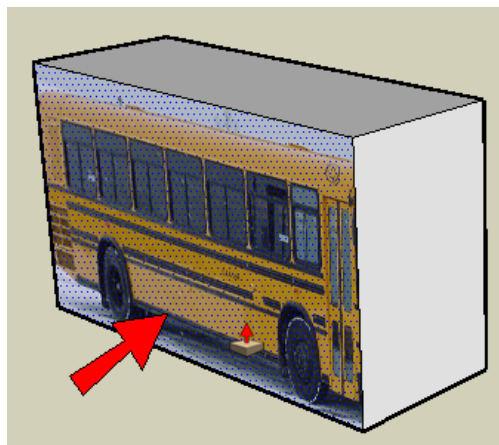

10. Push/Pull the back until you hit the back of the bus picture.

11. Finally, Push/Pull the bottom until it's below the bottom of the wheels.


12. The bus is too narrow now, so do one last Push/Pull on the side to make the bus wider.

Fix the Bus Model to Fit the Picture

If you read ModelMetricks Intermediate Series Book 2: Painting with Pictures, you made a penguin component by tracing all around a picture. This is what we'll do to make the rest of the bus.

1. Choose Window / Styles to open the Styles window. Click the Edit tab, and click the Edge icon. Then click on the color box at the bottom.
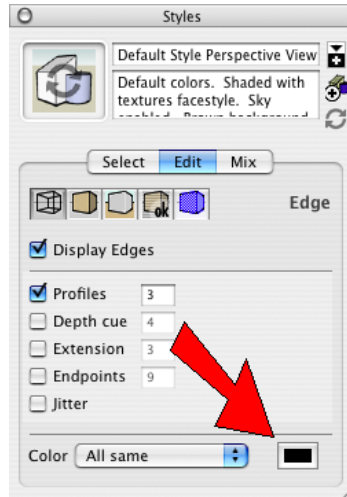
2. On the Colors window, pick a color that will stand out against the yellow and black colors of the bus. (I'm using magenta from the Crayons picker.)
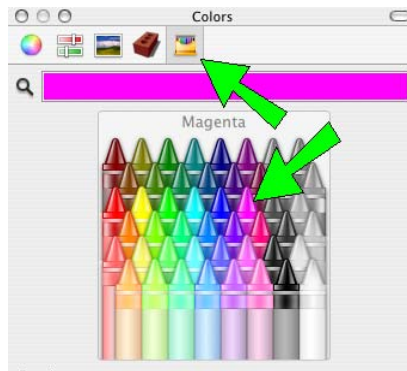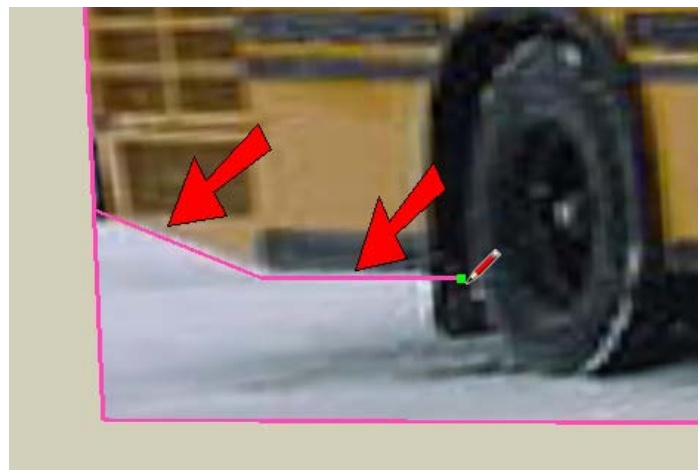
3.   The magenta color now appears in the Styles window. If the Colors window is still open, you need to click this color square again, otherwise every time you pick a new color, the edges will change. (If you closed the Colors window, you don't have to click this color square.)
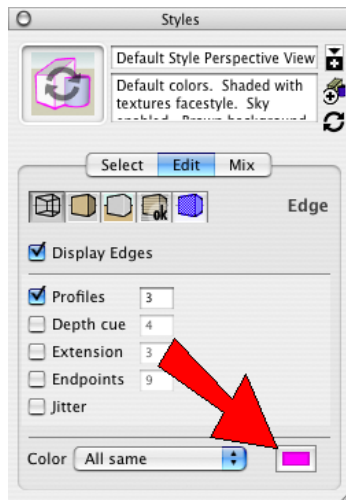
     Now all edges are magenta.
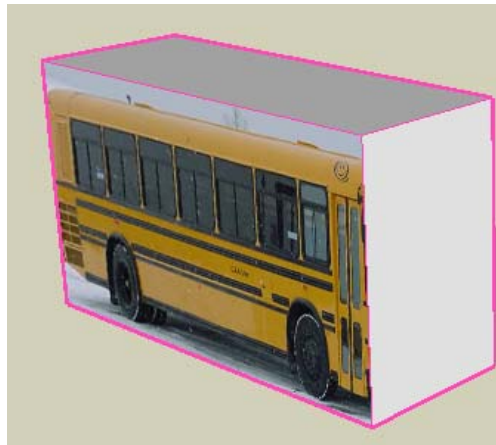
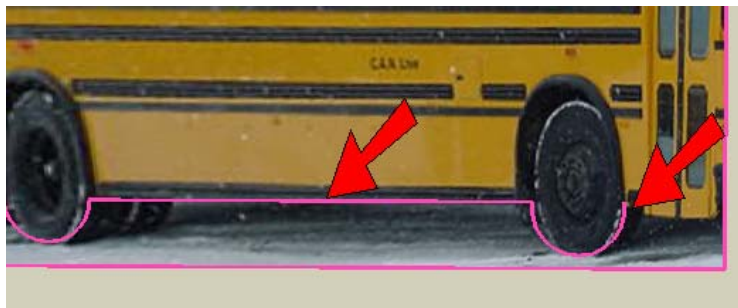4.   Zoom in on the side of the bus, and trace two lines along the back part.

 Remember, while tracing it can be easy for lines and arcs to "jump" off the face. Be sure you see the "On Face" popup before you click a start point or end point.
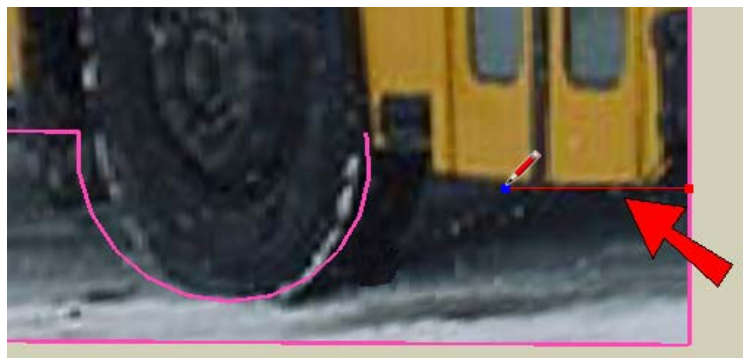
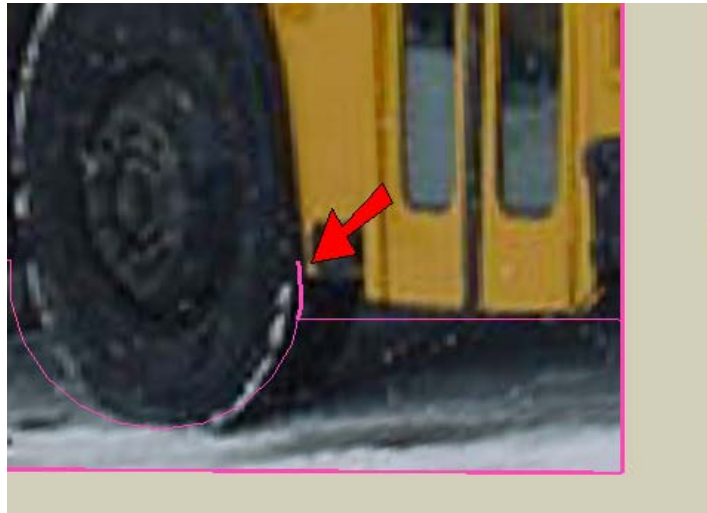5. **For the wheel, use Arc.**

6. Trace one long line between the wheels, and make another arc for the front wheel.
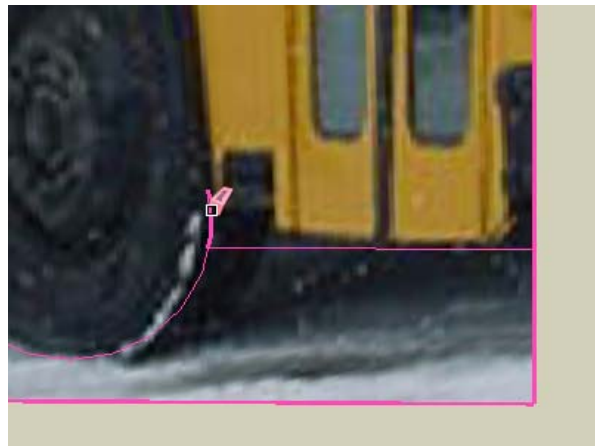

7. Start the next line at the front of the bus, just below the door. Make sure it's going straight back toward the wheel, in the red or green direction.
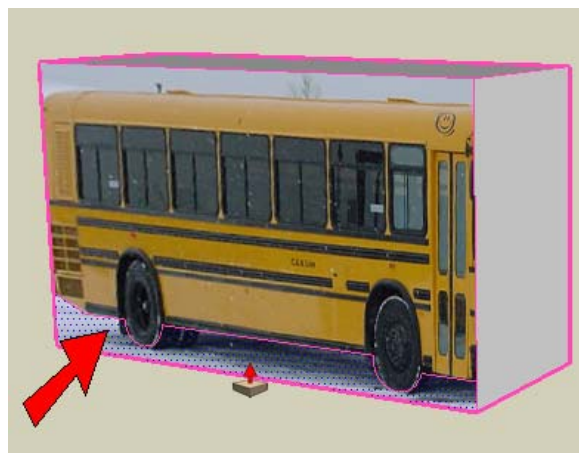
8.   Keep going with the line in the red or green direction, until it meets the arc of the wheel.

9.   You should have a little bit of arc sticking up past the line, so activate Eraser and click the extra edge to erase it.
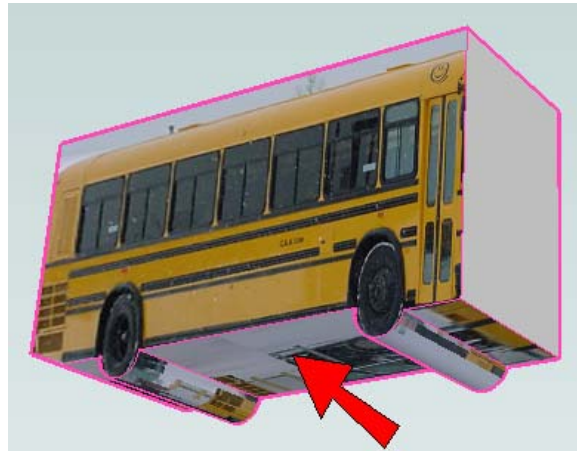

10. Now you should have one long face below the bus. Activate Push/Pull and start to push this face in.

11. Push this face all the way through to the other side.

This is how the bottom of the bus should look.

12. Paint all the faces on the bottom of the bus black (or whatever color you want to use).
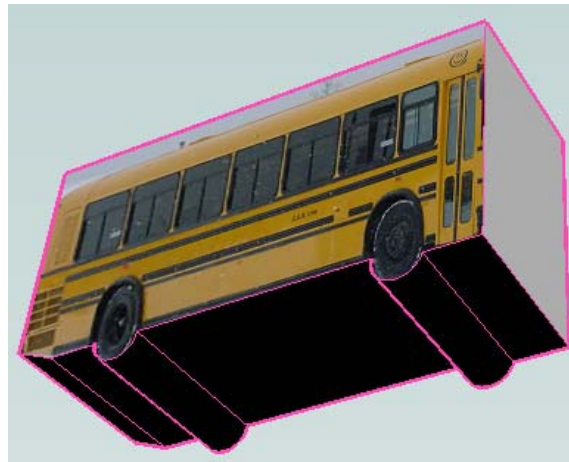
Paint the Other Faces

The rest of this chapter will be familiar - using the eyedropper to paint the other faces, then changing the model to fit the picture.

1. First we'll paint the front of the bus. Use the eyedropper on the side face.

2. Then paint the front of the bus.

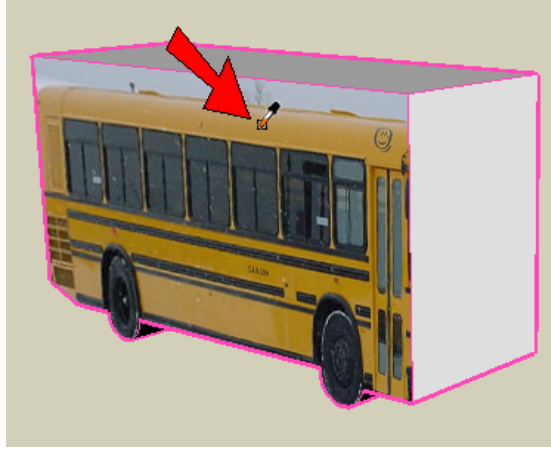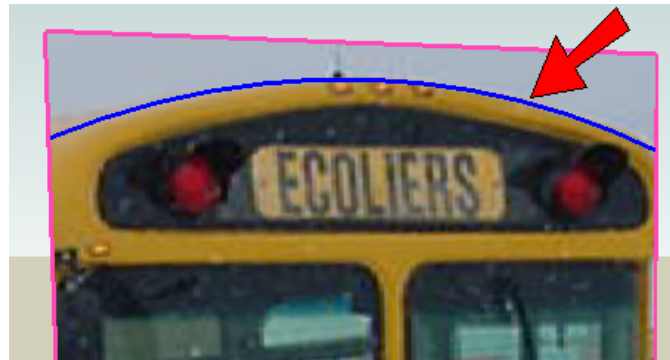3.   Only two pins need to be moved on the front face. You don't always need to move pins to the corners, sometimes you can drag pins along edges until the picture looks OK.

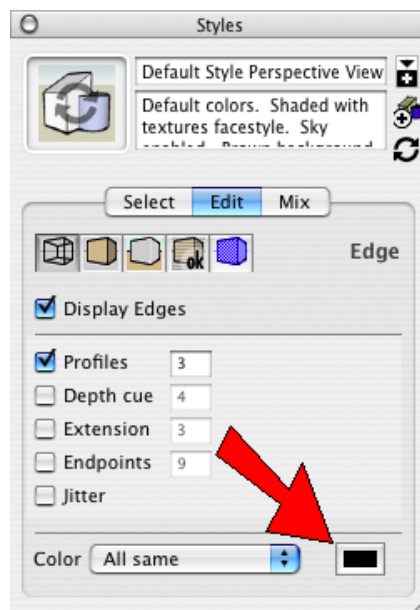4.   When you choose Done and look at the front head-on, the picture should look like this:

5.   Use an arc to trace the top of the bus.

6.   Then use Push/Pull to "shave off" the top of the bus.

7.   We're done tracing, so make the edges black again.

8.   Paint the top of the bus yellowish-orange to match the side and front. It's easiest to use any solid color, then edit that color to make it perfect.

Here's how to edit a material: First, paint the bus top any color you want. Then find that color in the "Colors **in Model" collection of the Colors window. Double-click on the thumbnail to open the Edit Material** window. Pick a new color, and the color in the model changes. Click Close when finished.

9.   Turn to face the other side - this side needs to be painted.
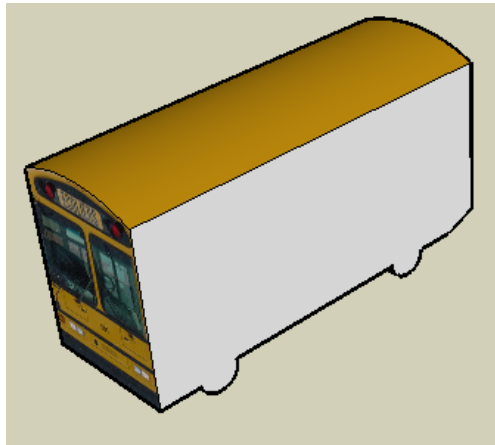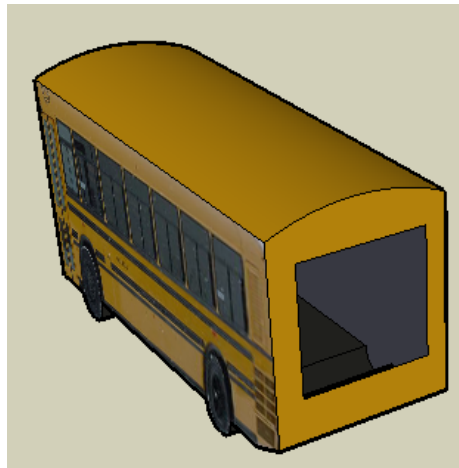

10. Use the eyedropper on the side that's already painted, then click the side that's blank. (If you look closely, the writing on this face is backwards. But we're going to cover up these letters later, so don't worry.)

11. Use the same yellow from the top to paint the back.
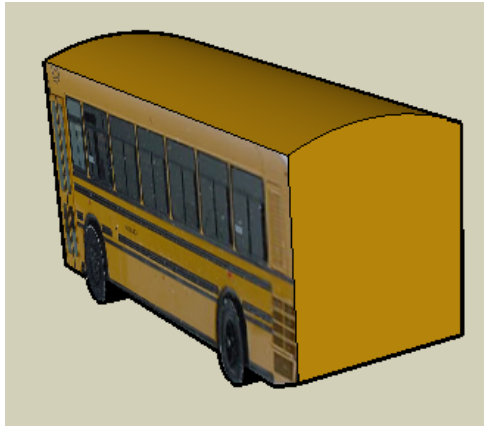
12. To make a window on the back, make a rectangle and paint it a dark color from the "Translucent" collection.

Add Words to the Bus

Now we can "personalize" the bus by adding words on the sides and back.

Cover Up the Letters Already There

Before we can add new words, we first need to cover up the letters that are part of the bus picture.

1. On either of the painted sides of the bus, zoom in and make a rectangle around the letters on the side.

2. Right-click on this small rectangle and start texture positioning. The four yellow pins should be at the corners of the rectangle. (If your pins are in different places, it doesn't matter.)


3. Don't click or drag any pins, but instead click and drag the picture itself (the cursor should look like a hand). Move the picture to the right or left until the rectangle has only yellow inside it.
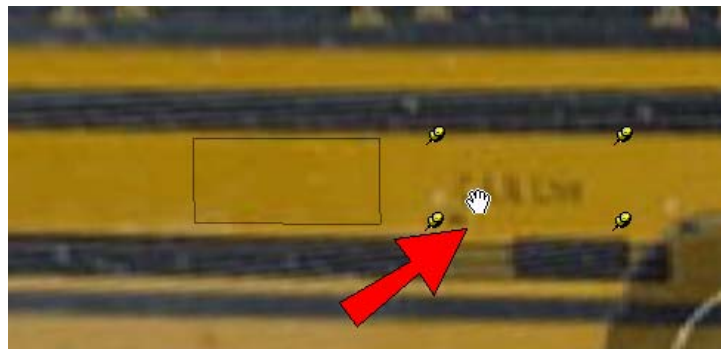
4.   When you choose Done, the rectangle should be plain yellow, and the letters are gone.
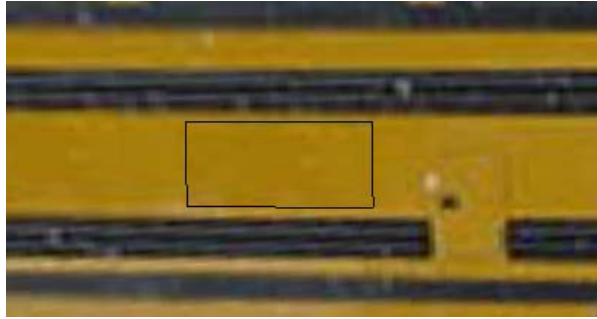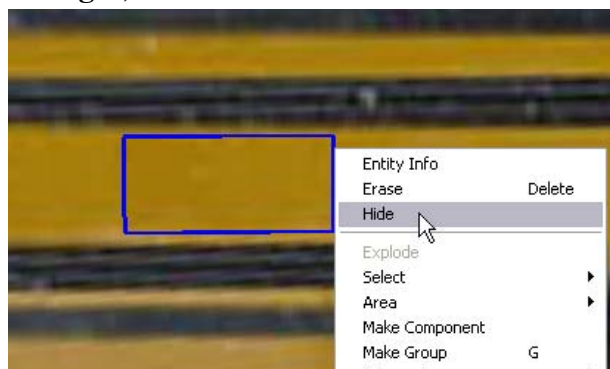

5.   Now we need to hide the edges of the rectangle. First, activate Select and double-click the rectangle to select its face and edges.
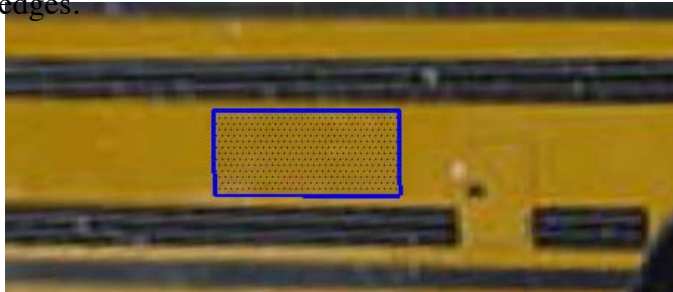
6.   Then press Shift and click the face. This leaves only the edges selected.

7.   **Right-click on one of the edges, and choose Hide.**

Now the rectangle should blend in with the rest of the face. You can probably still see where it is, but only when you're looking closely.

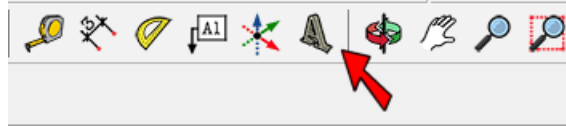8.   Zoom out, and now you shouldn't be able to see that rectangle at all.

9.   Orbit to the other side of the bus and do the same thing to cover up the letters.

Add Words

1. **Now we're ready to add our own words to the bus. Activate 3D Text from the icon, or choose Tools** / 3D Text from the main menu.

To display this toolbar, choose View / Tool Palettes / Large Tool Set.

2. This opens the Place 3D Text window. Make sure Filled is checked, so that the letters will be filled in. Also, make sure Extruded is checked and enter 1 inch next to it. This means that the words will stick out just a little bit from the side of the bus.
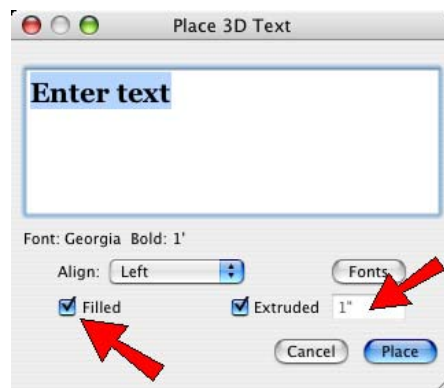
3. To change the words, use your mouse to highlight "Enter text" and press the Delete or Backspace key. Type the name of your school, or team, or whatever you want.
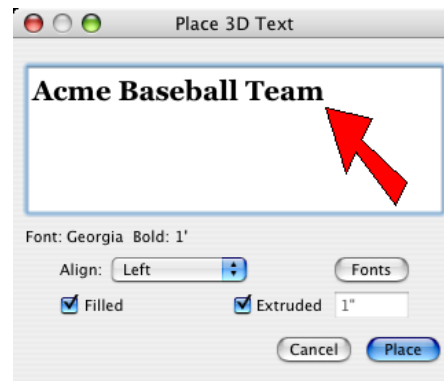
4.   To change the font, click the Fonts button.

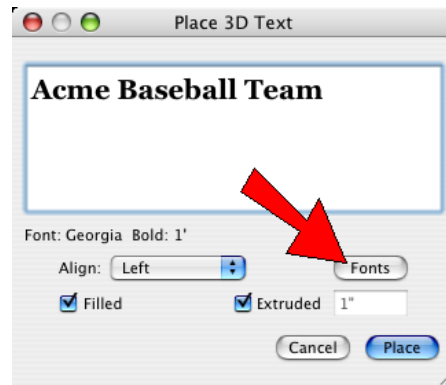5.   This opens a window that lists of all the fonts on your computer. Your list might not include the **"Trebuchet Bold" font I'm using here, but pick something you like. I'm using 1' for the Height (which** is the same as 12 inches), but the height doesn't matter because we can change it later.
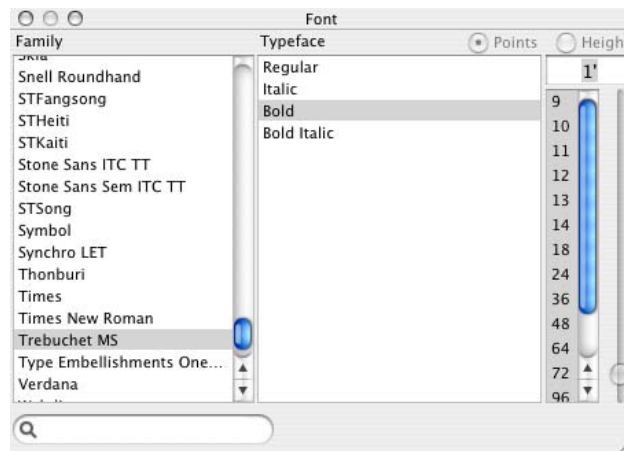
6.   Close the Fonts window. The font you picked appears in the Place 3D Text window.

7. **When you're done, click the Place button.**
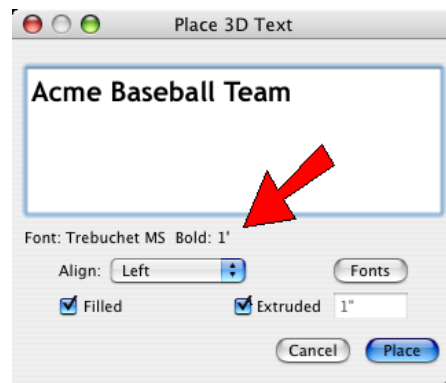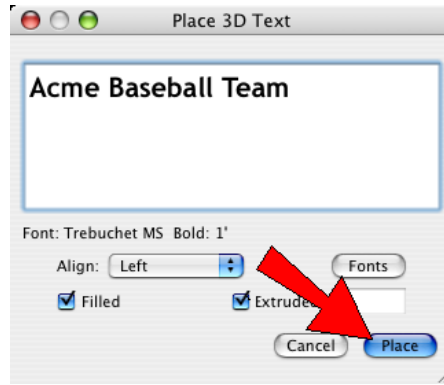

8. Click the side of the bus, between the black stripes, to place the text there. The text will have a blue box around it, which means it's a component and it's selected.

9. If your text looks too big or too small, you can change it. The text should still be selected, so activate **Scale.**

10. You should see green boxes (drag handles) all around the text. Click one of the corner boxes.

11. Drag the handle in or out to change the size of the letters.

12. When the text is the right size, activate Move and place it where you want it.

13. Pick a color and click the text to paint it. I'm using dark gray, but you might want a color that stands out more.

14. To move the text to the other side of the bus, select it again and activate Move. Press Option for copying, and click anywhere on the bus face.
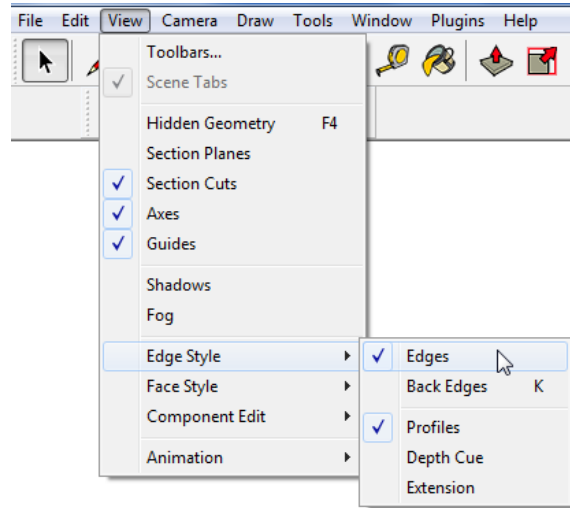

15. Orbit to the other side and click the face to place the copied text. (You might have to use Move again to adjust it.)

16. Orbit to the back of the bus and add another line here. Use Scale if you want to change the size.
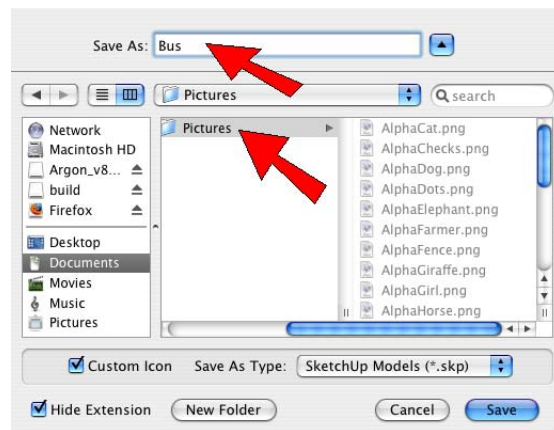
17. To make the bus look more realistic, choose View / Edge Style from the main menu, and choose both Edges and Profiles (if profiles are on) to turn them off.

This is how your bus should look now:

18. Save your model, again placing it in the same folder where you saved your pictures and the striped box model.

Chapter Review

Here's what we've learned in Chapter 2:

- Instead of using texture positioning on a whole picture (like the entire

side of the bus), place the pins
  in an easier place, like the corners of windows. Then you can use
  Push/Pull to make the model bigger,
  so that you can see the whole picture.

- Sometimes when you want to fit a model to a picture, you need to trace

around parts you want to
  remove. Use Line and Arc to do the tracing. It's also helpful to use the
  Styles window to change the
  edge color.

- To select edges around a face, activate Select and double-click the face.

Then press Shift and click the
  face again to unselect it. This leaves just the edges selected.

- **To hide something, right-click on it and choose Hide. Or you can**

  select it, and choose Edit / Hide
  from the main menu.

- After you use 3D Text to place words in your model, you can use the

Scale tool to change the size of
  the letters.