1. Use the program Lecture 8 Demo 1.cpp in this and the following exercises. Remove the geometric transformations that are there and replace them with the following. Beginning at the origin, translate to $(2,0,0)$ and draw a shiny red sphere. Then translate from there to $(-2,0,0)$ and draw a shiny green sphere. Then translate from there to $(0,0,-2)$ and draw a shiny blue sphere.

2. Draw the same scene as in the previous exercise, but this time use `glPushMatrix()` before and `glPopMatrix()` after drawing each sphere. Thus, each displacement will be from the origin to the new drawing. For example, to draw the first sphere, write

```cpp
glPushMatrix();
glTranslatef(2.0, 0.0, 0.0);
glColor3f(1.0, 0.0, 0.0);
glutSolidSphere(1.0, 40, 40);
glPopMatrix();
```

3. Draw a red ellipsoid centered at $(2,0,0)$ and stretched in the $y$ direction by a factor of 2. Then draw a green ellipsoid centered at $(-2,0,0)$ and stretched in the $x$ direction by a factor of 2. Use `glPushMatrix()` and `glPopMatrix()` as appropriate. (An ellipsoid is a sphere that has been scaled in one or more directions. These ellipsoids should be scaled by a factor of 2 in the stated direction.)

4. In the previous exercise, keep the calls to `glPushMatrix()`, but remove one of the calls to `glPopMatrix()`. Run the program. What happens? Why?