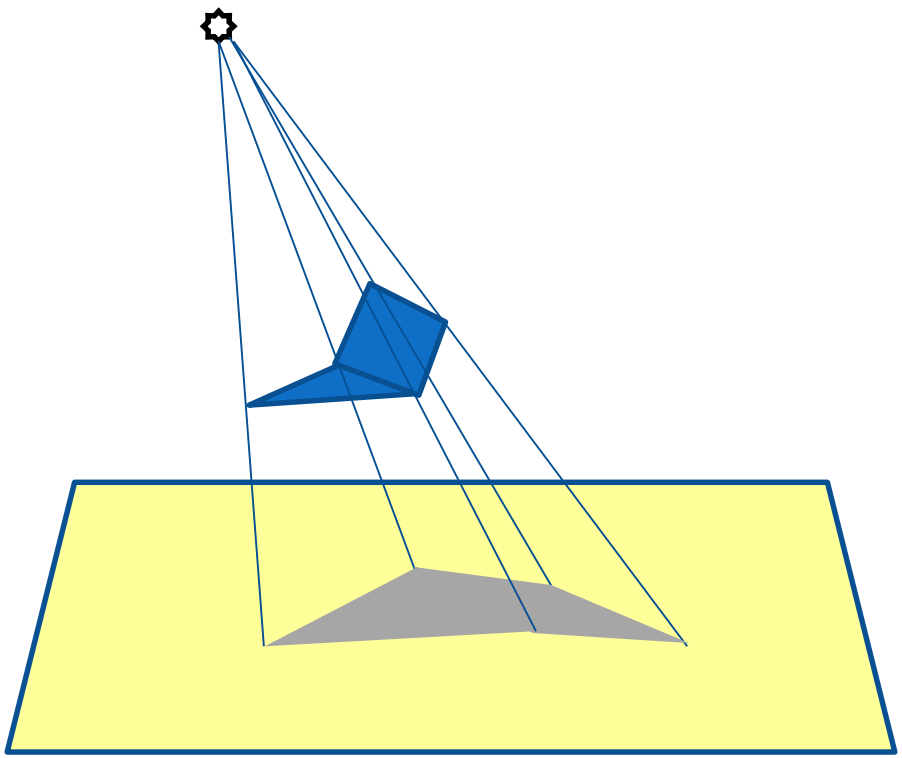
# Planar Shadows on Floor Plane ($y$=0)

Two-pass rendering method:

- Project all vertices of an object to the floor plane.
- Temporarily disable lighting
- Render the projected object using shadow colour
- Enable lighting
- Draw the object



# Planar Shadows on Floor Plane ($y$=0)

To project vertices to the floor plane:

Let the light's position be given by (gx, gy, gz)

Create a 16 element array as follows. This array represents the transformation matrix that projects vertices to the floor plane.

```
float shadowMat[16] =
{ gy,0,0,0, -gx,0,-gz,-1,  0,0,gy,0,  0,0,0,gy };
```

Apply this transformation to the object using

```
glMultMatrixf(shadowMat);
```

# Planar Shadows: Code

```
float shadowMat[16] = { gy,0,0,0, -gx,0,-gz,-1,
                        0,0,gy,0,  0,0,0,gy };
 glDisable(GL_LIGHTING);
 glPushMatrix();     //Draw Shadow Object
   glMultMatrixf(shadowMat);
   /* Object Transformations */
   glColor4f(0.2, 0.2, 0.2, 1.0);  //Shadow colour
   drawObject();
 glPopMatrix();

 glEnable(GL_LIGHTING);
 glPushMatrix();     //Draw Object
    /* Object Transformations */
    drawObject();
 glPopMatrix();
```