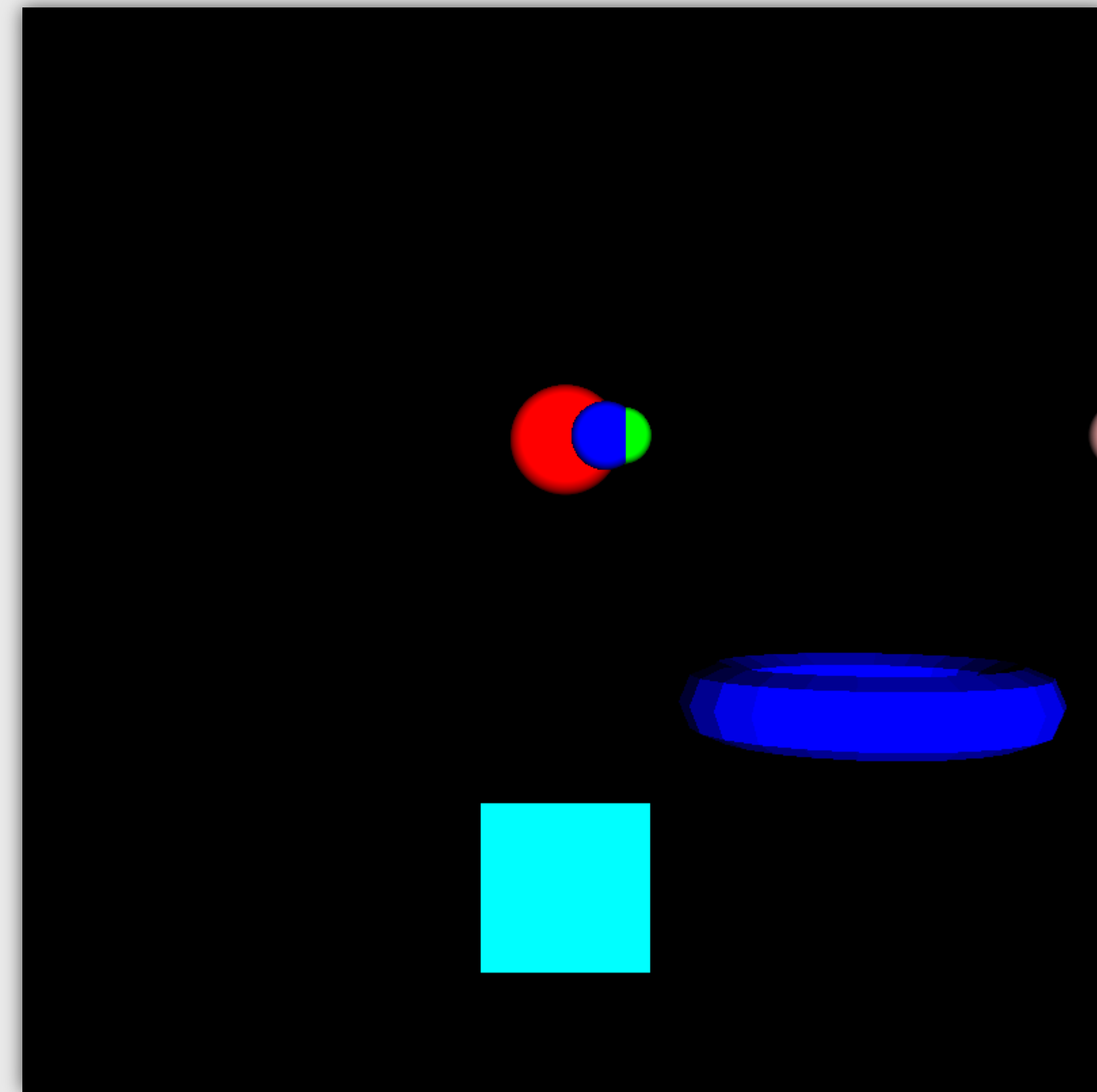
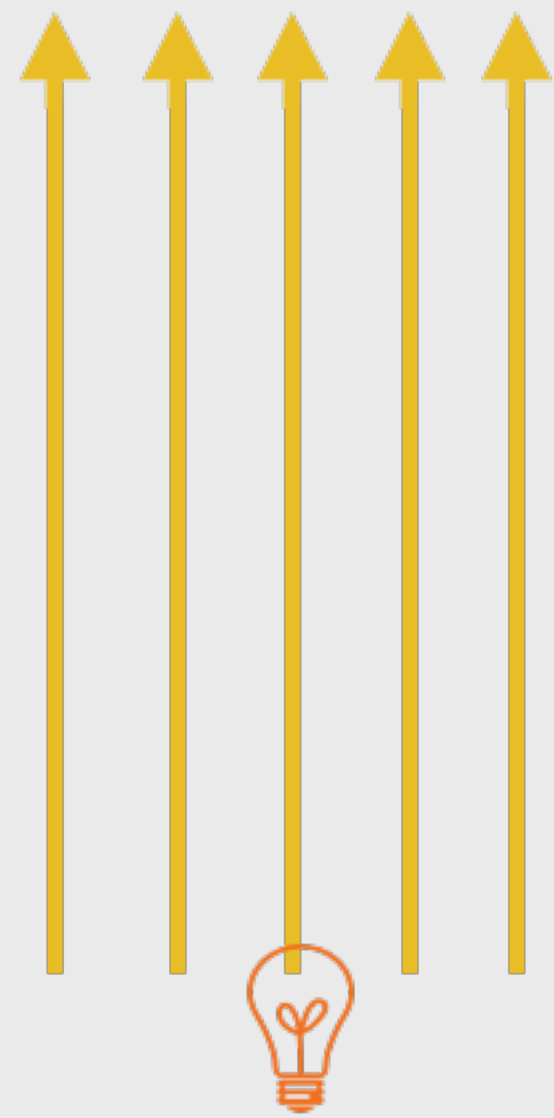


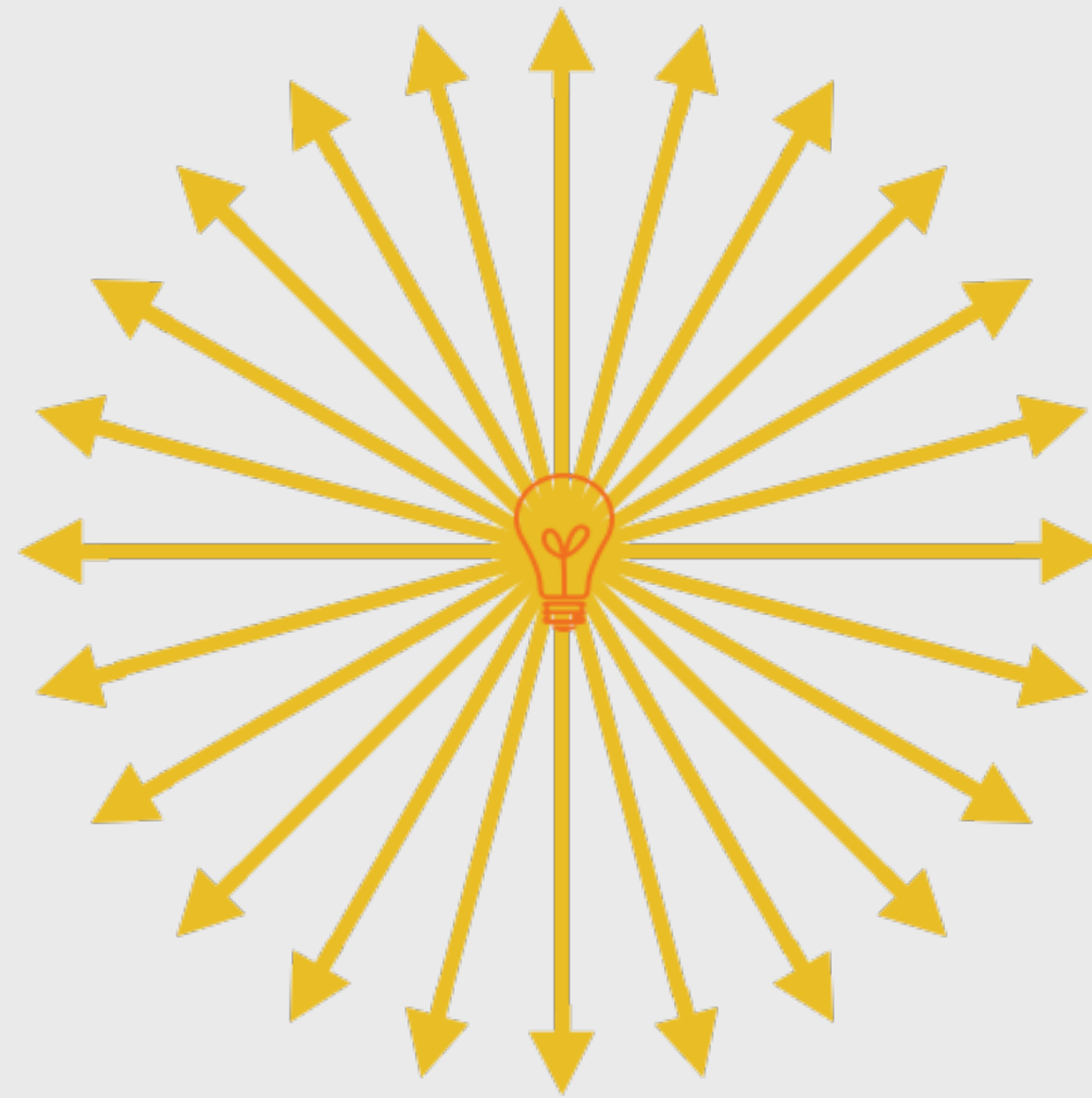
# LIGHTS



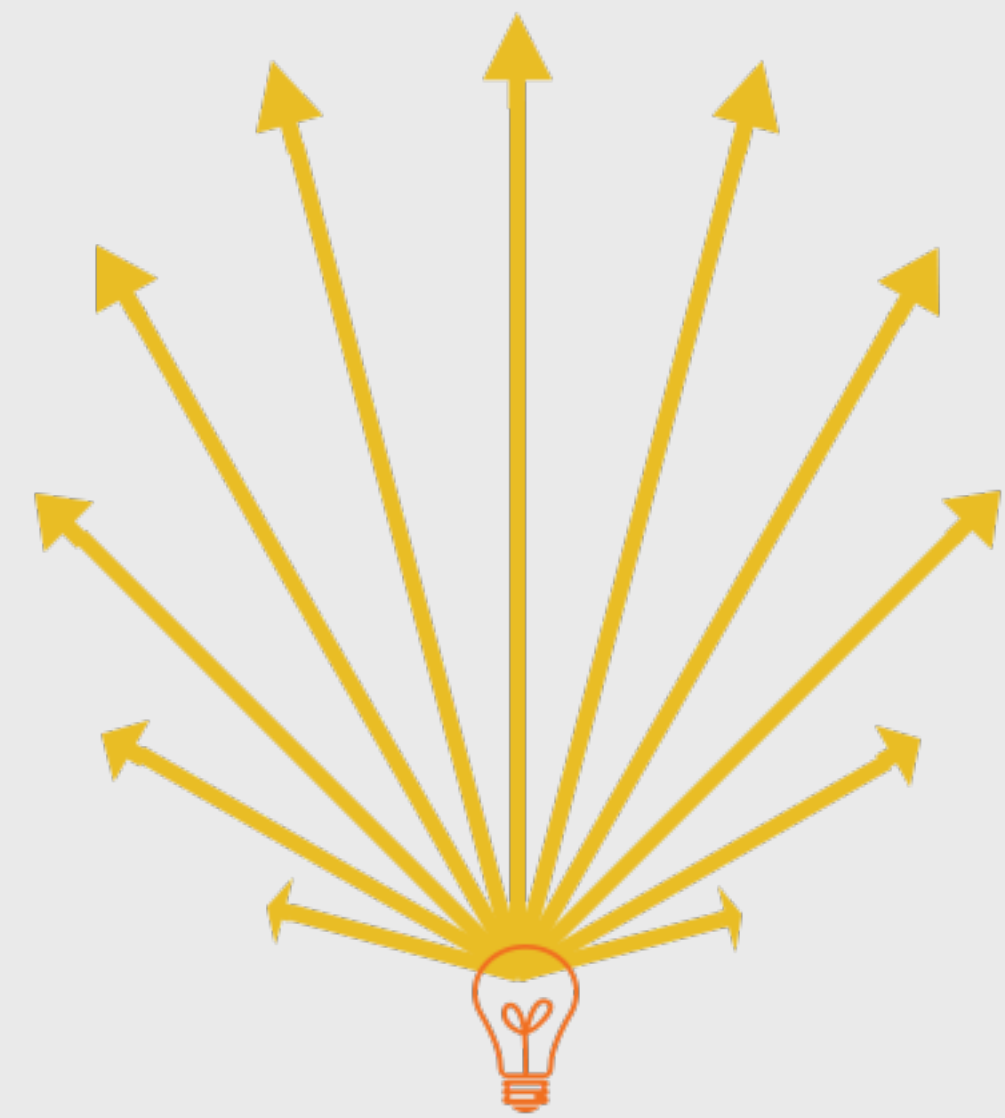
# LIGHTS



Directional



Point



Spot



# SHADING



Lights

Interaction with the objects

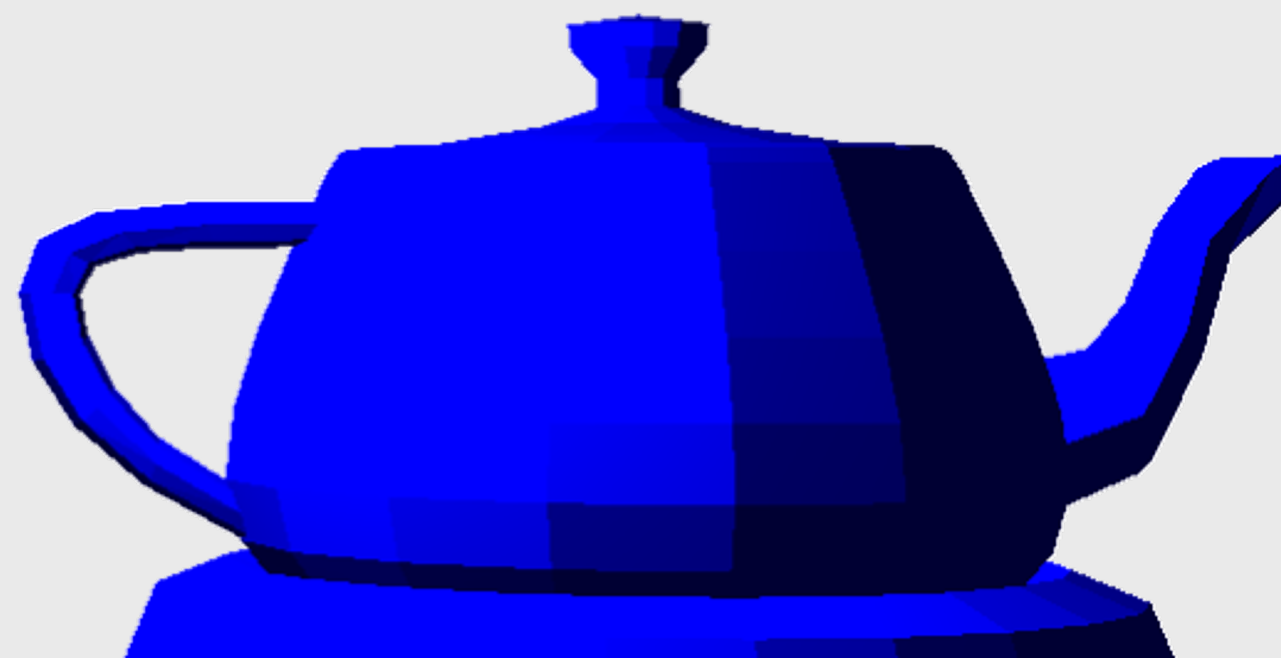
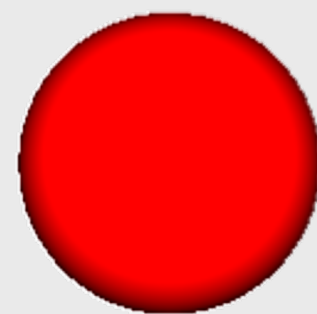




# FLAT SHADING

Calculate the light for each polygon

Use Lambertian surfaces

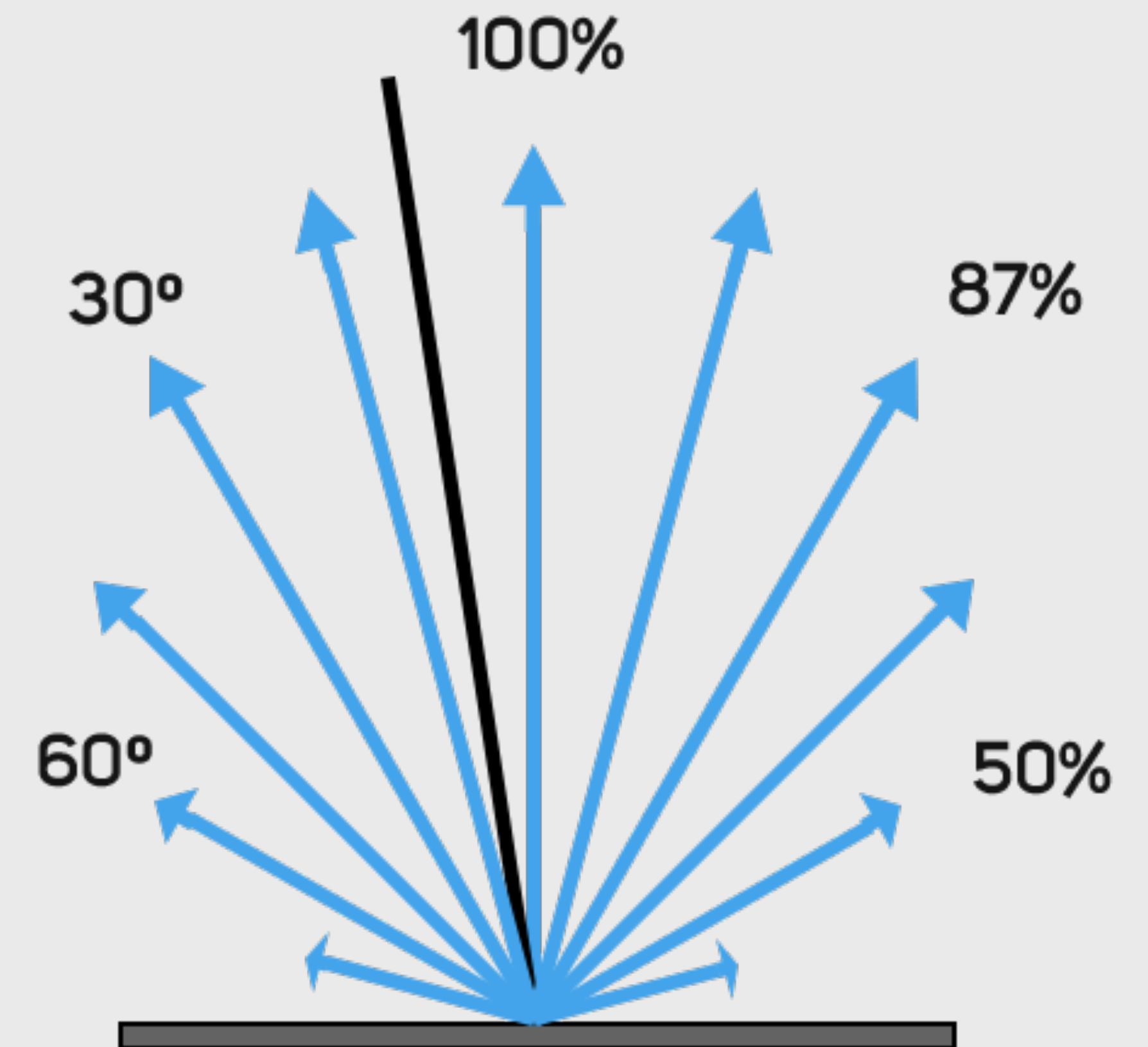


# LAMBERTIAN SURFACE

$$\cos \theta = N \cdot L$$

N = Object normal

L = Light direction



# LAMBERTIAN SURFACE

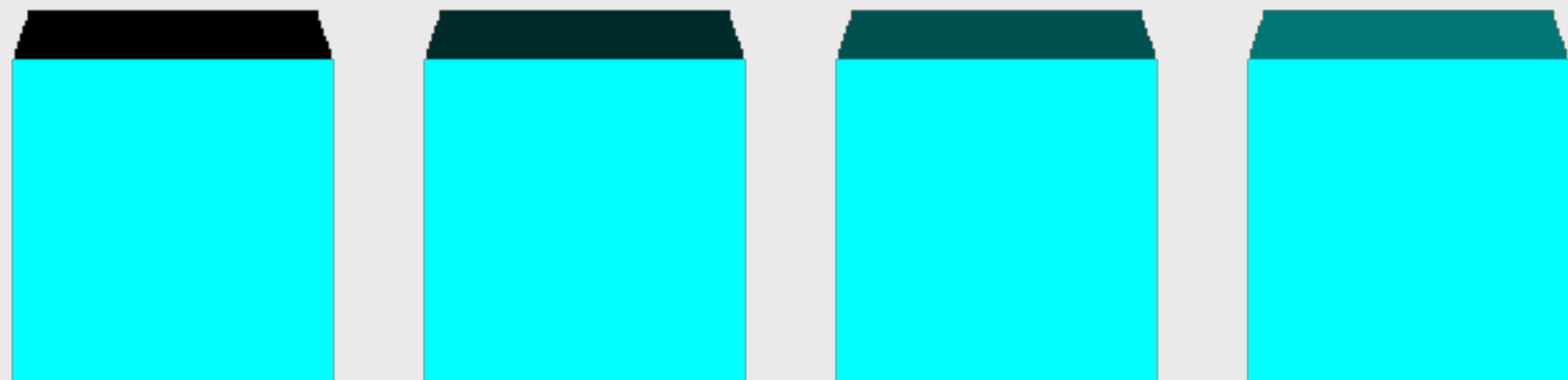
Considering a directional light

$(0.0, 0.0, 1.0)$

$(0.0, -0.1, 1.0)$

$(0.0, -0.2, 1.0)$

$(0.0, -0.3, 1.0)$



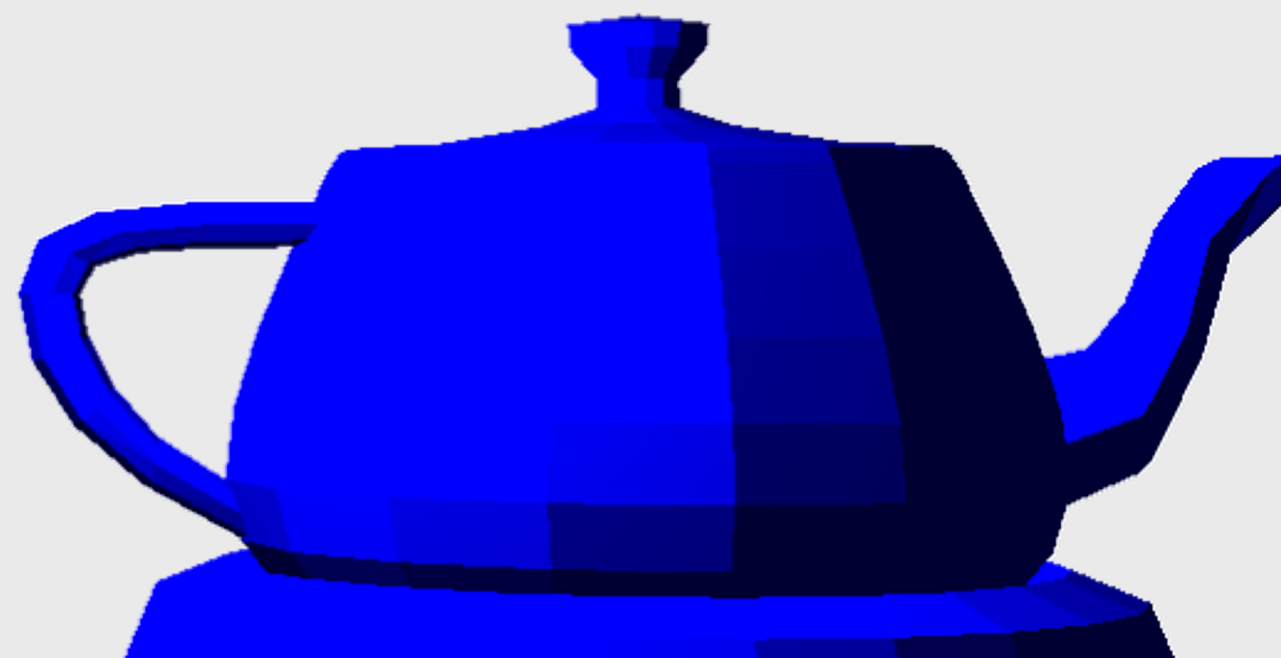
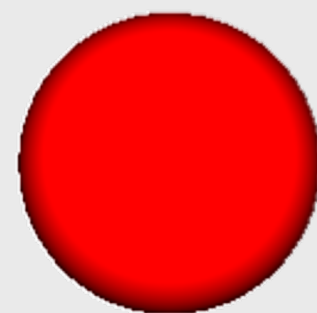
# FLAT SHADING

$$\text{Diffuse} = L_c \times O_c \times L_i \times N \cdot L$$

$L_c$  = Light color

$O_c$  = Object color

$L_i$  = Light intensity





# CALCULATE NORMAL TRIANGLE

$$V = v1 - v0$$

$$W = v2 - v0$$

Normalize[V x W]

