# Lighting the Sphere.

Although we have not covered it in lectures yet, simple lighting effects can be set up with out much difficulty.

The sphere below is illuminated by a light source a short distance away along the y axis (by convention the x-axis is red, y-axis green etc)

The amount of light reflected from the sphere depends only on the angle between the surface normal (Yellow line) and the direction to the position of the light. Specifically the light intensity L, is given by $L = rCos\phi$ or $L = r(\hat{l} . \hat{p})$

where ϕ is the angle between the two vectors. This is easy to calculate.
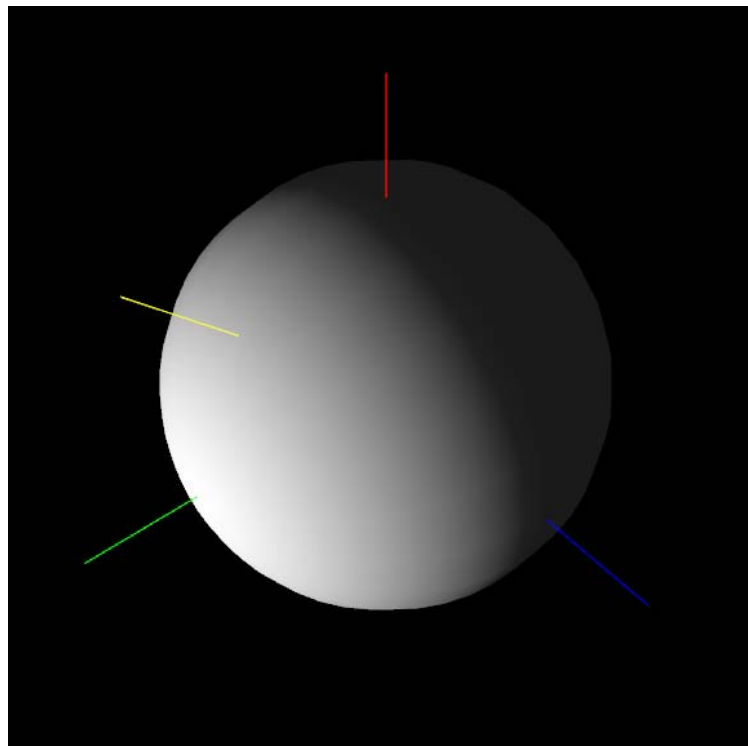
Work it out for the 3 colour components. Just remember to normalise the vectors before taking the dot product.