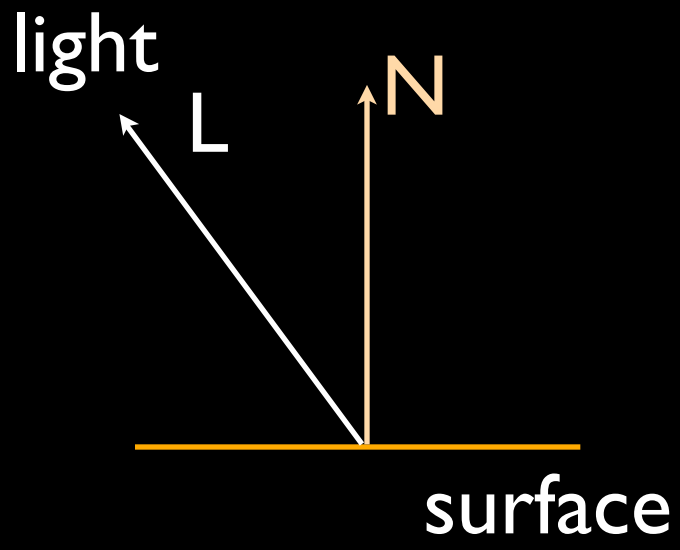
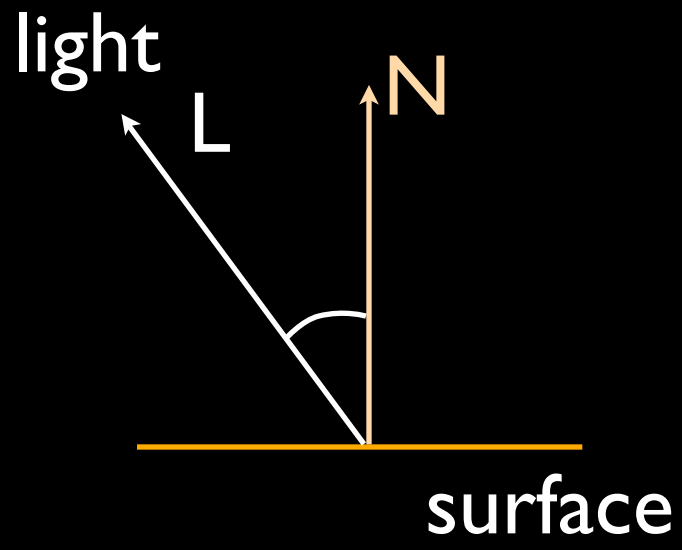
Lighting in GLSL:

a review

Lighting in GLSL

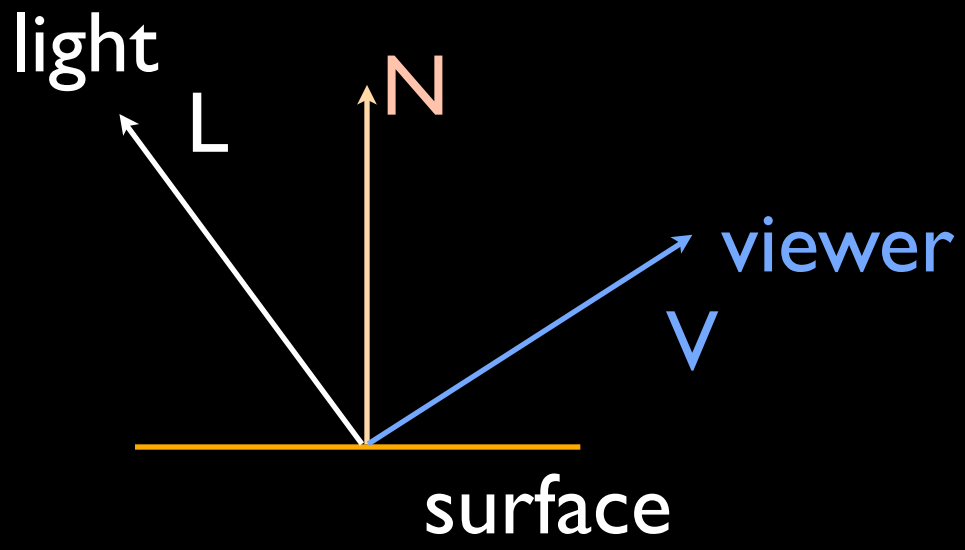


Lighting in GLSL



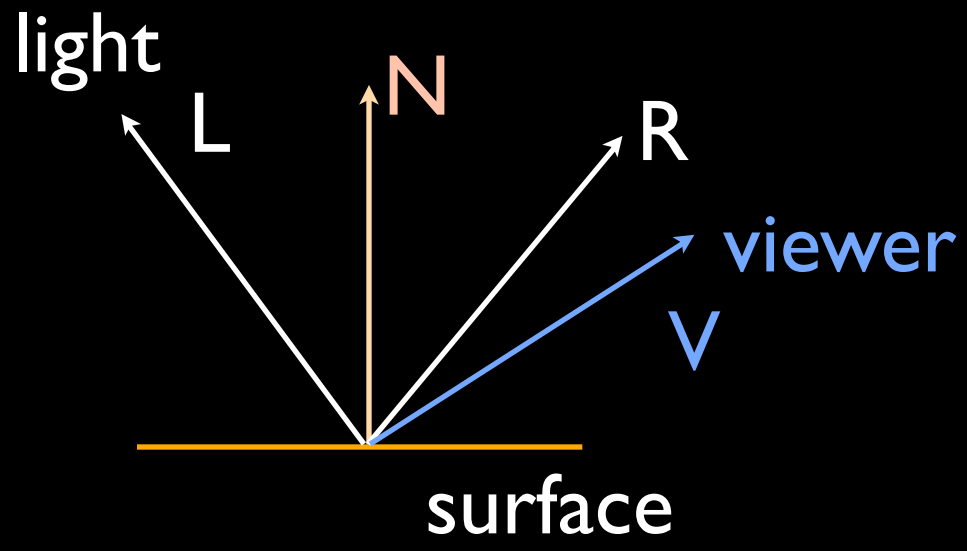
Diffuse: intensity = L dot N

Lighting in GLSL



Specular:

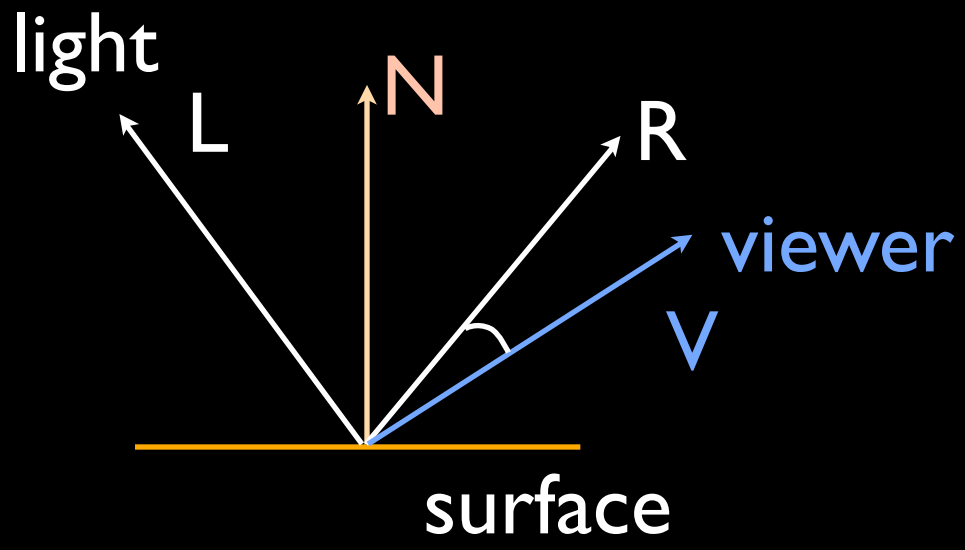
Lighting in GLSL



Specular:

Imagine a direction where light would be perfectly reflected (if the surface were a mirror); call it R.

Lighting in GLSL



Specular:

intensity = (V dot R)$^{\alpha}$

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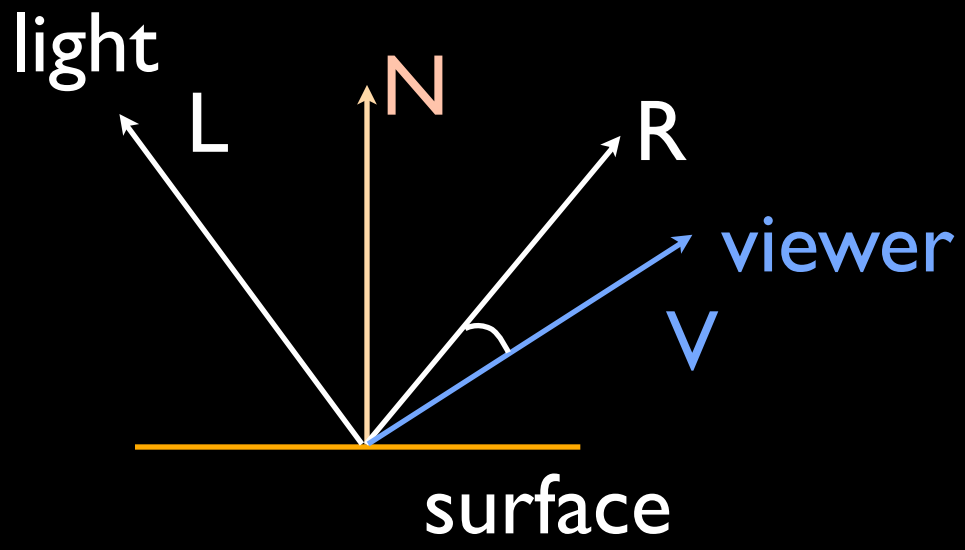
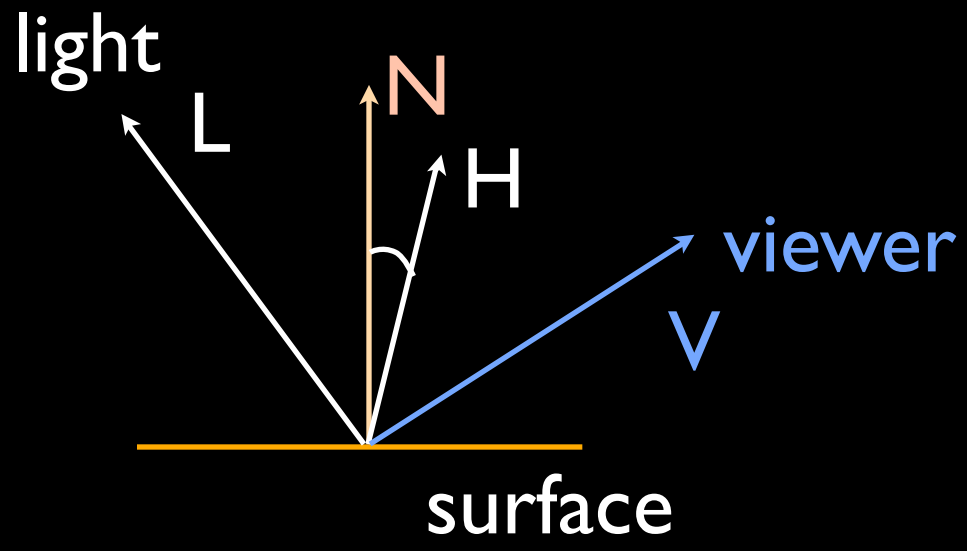


Specular:

Too costly to calculate R. Can we approximate?

Lighting in GLSL



Specular:

H = halfway vector between L and V

intensity = (N dot H)$^{\alpha}$

Lighting in GLSL

- The shader will compute those dot products.
- The shader will need:
  - Light position - a uniform
  - Camera position (for specular) - a uniform
  - Normals - a buffer - one per vertex

Lighting in GLSL

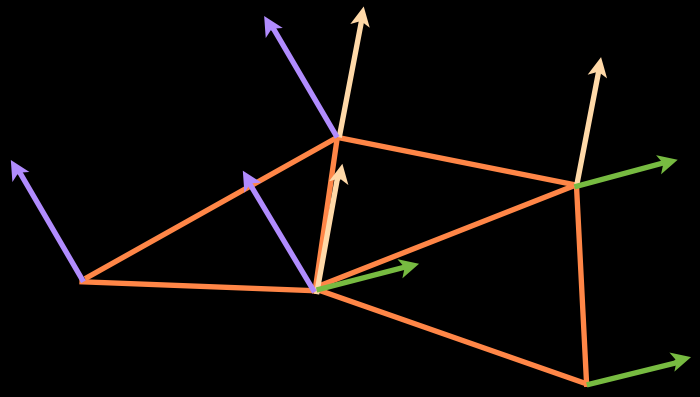
Flat shading vs. Smooth shading

Difference in how you compute the normals

Lighting in GLSL

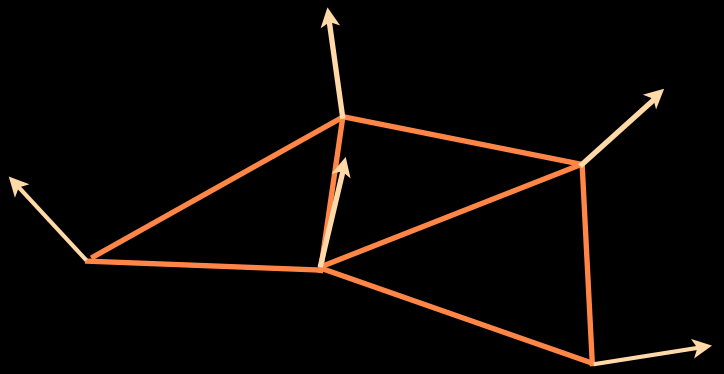
Flat shading vs. Smooth shading

Flat: a single normal is used across the face



Each triangle:
3 identical normals

Smooth: one normal at each vertex



Each triangle:
3 different normals