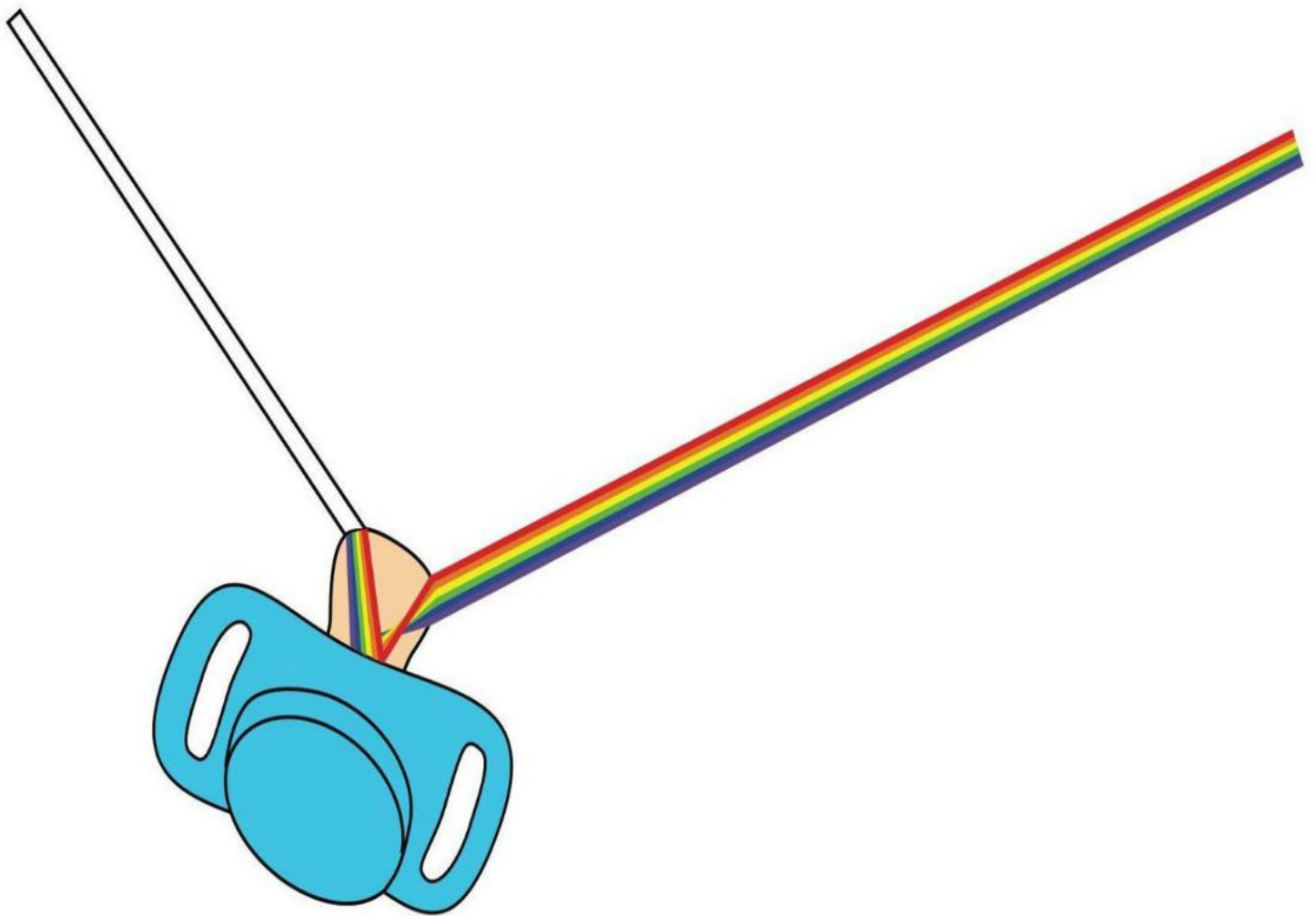


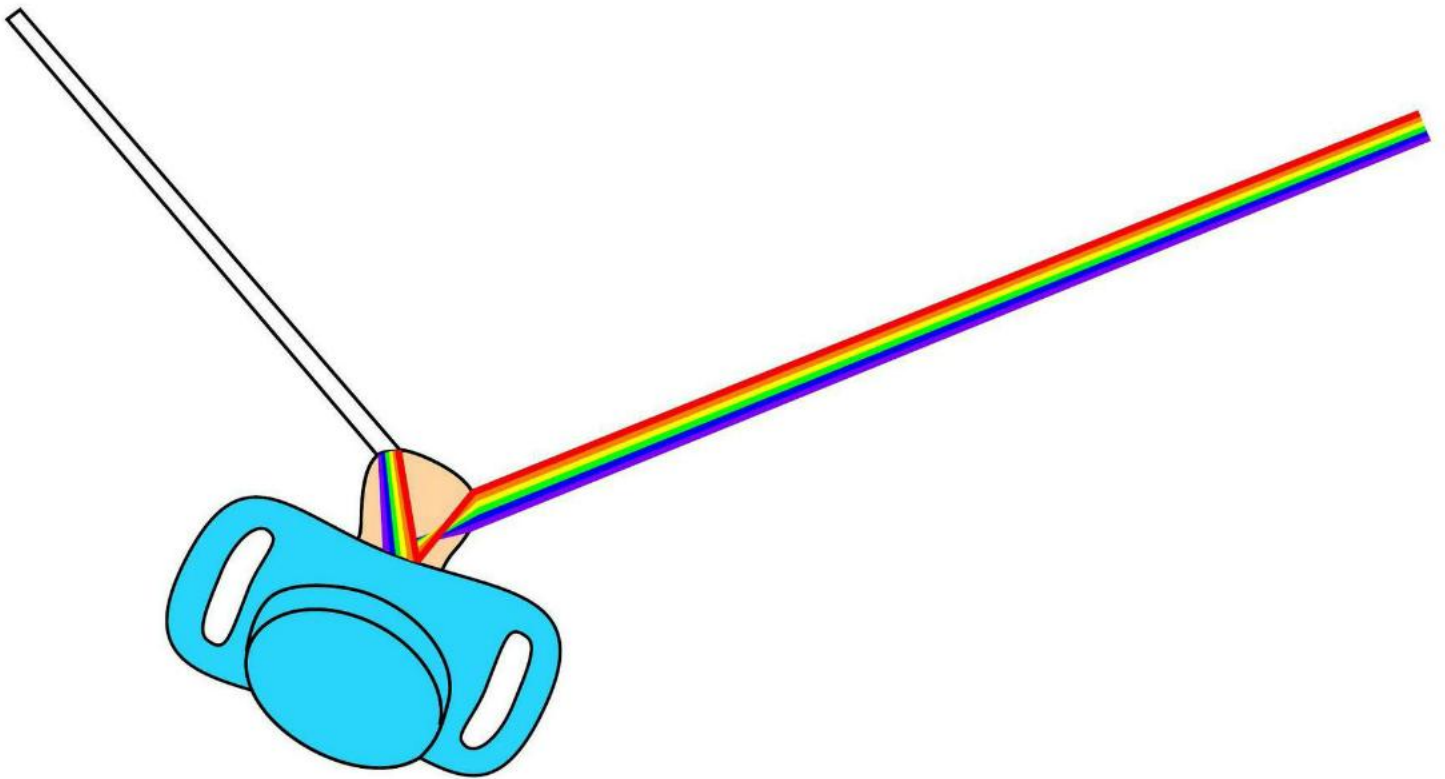
# Optical Physics

光学物理  
**for Babies**

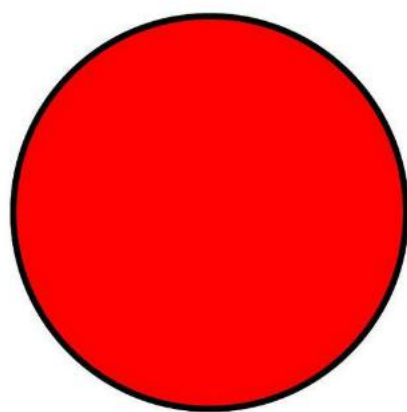


**by Chris Ferrie**

# Optical Physics for Babies

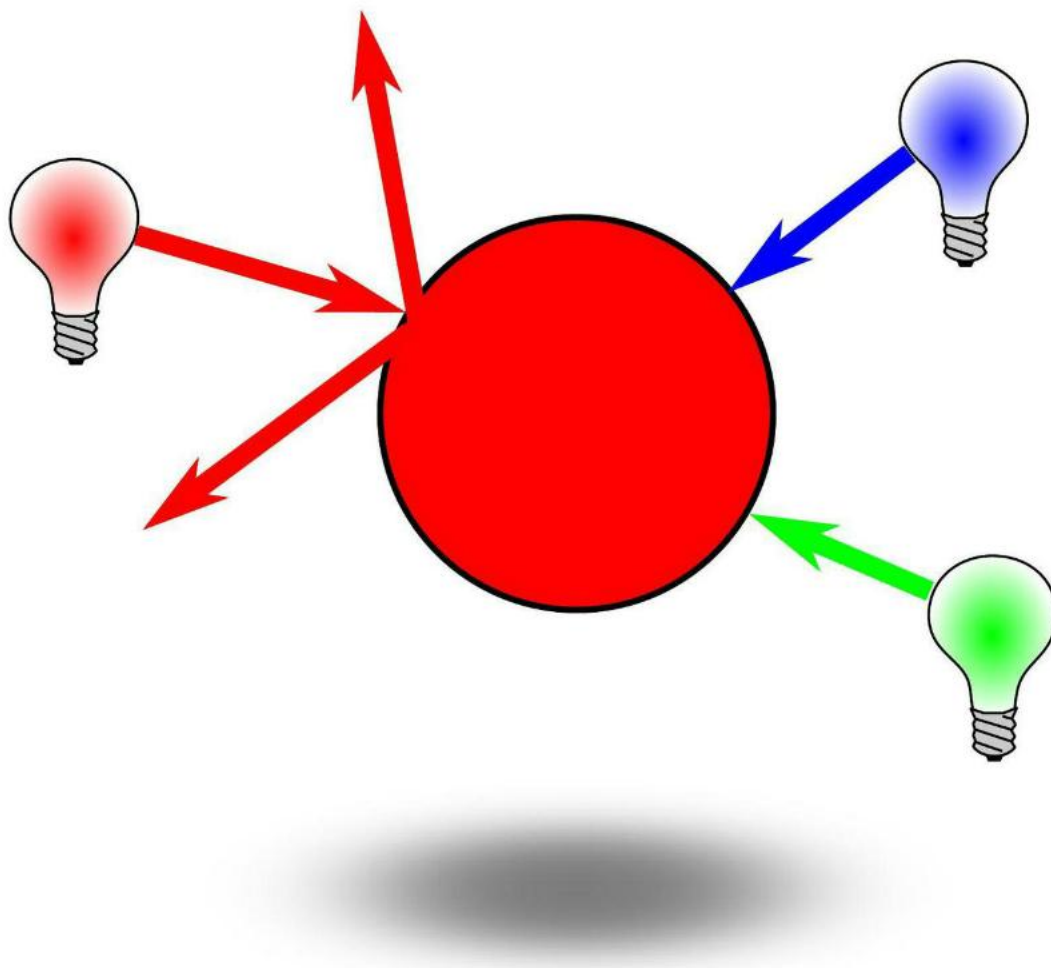


by Chris Ferrie



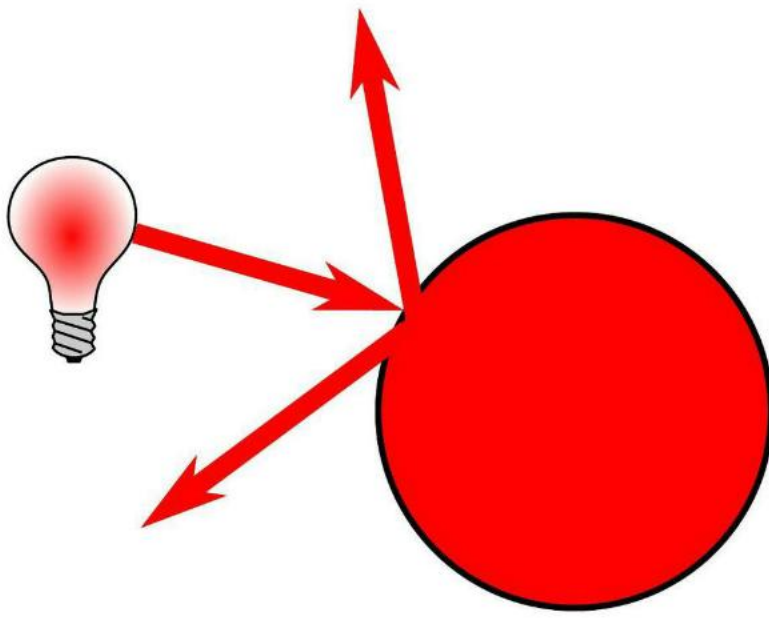
**This is a ball.**

这是一个球



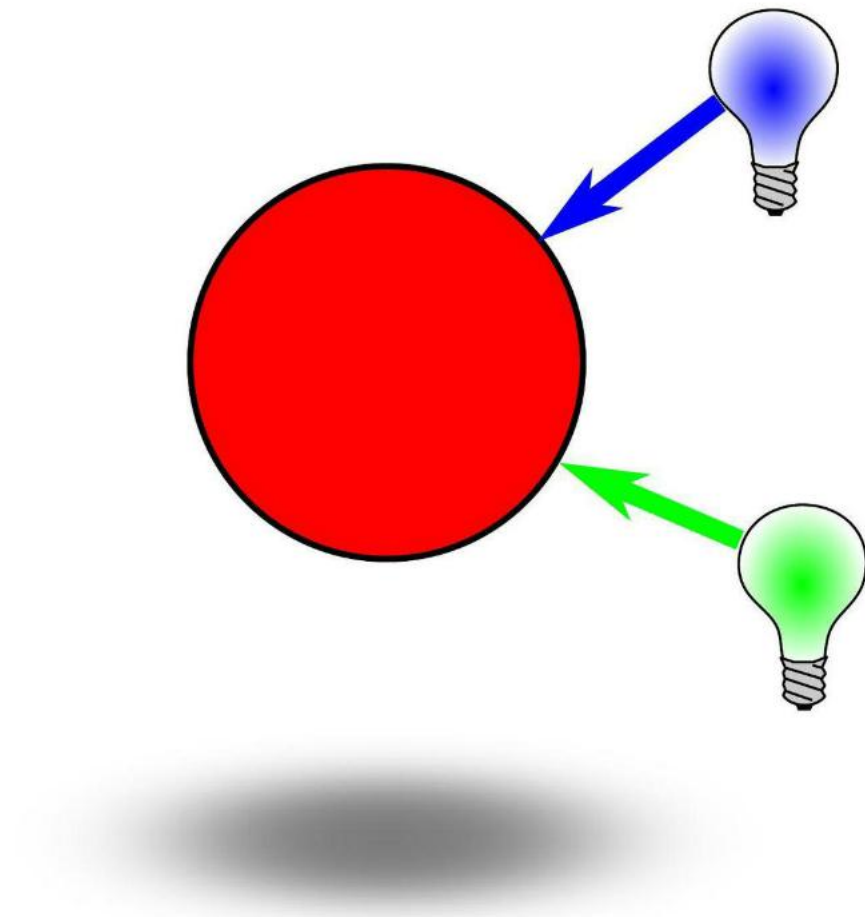
**This ball is red.**

这个球是红色的



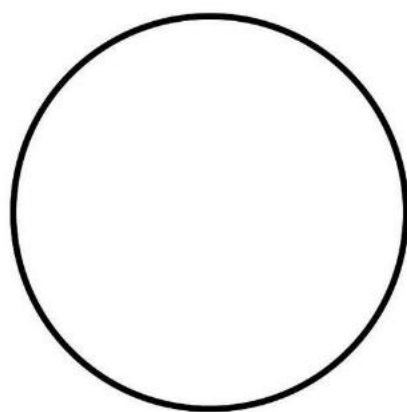
**It reflects *red* light.**

它反射红色的光



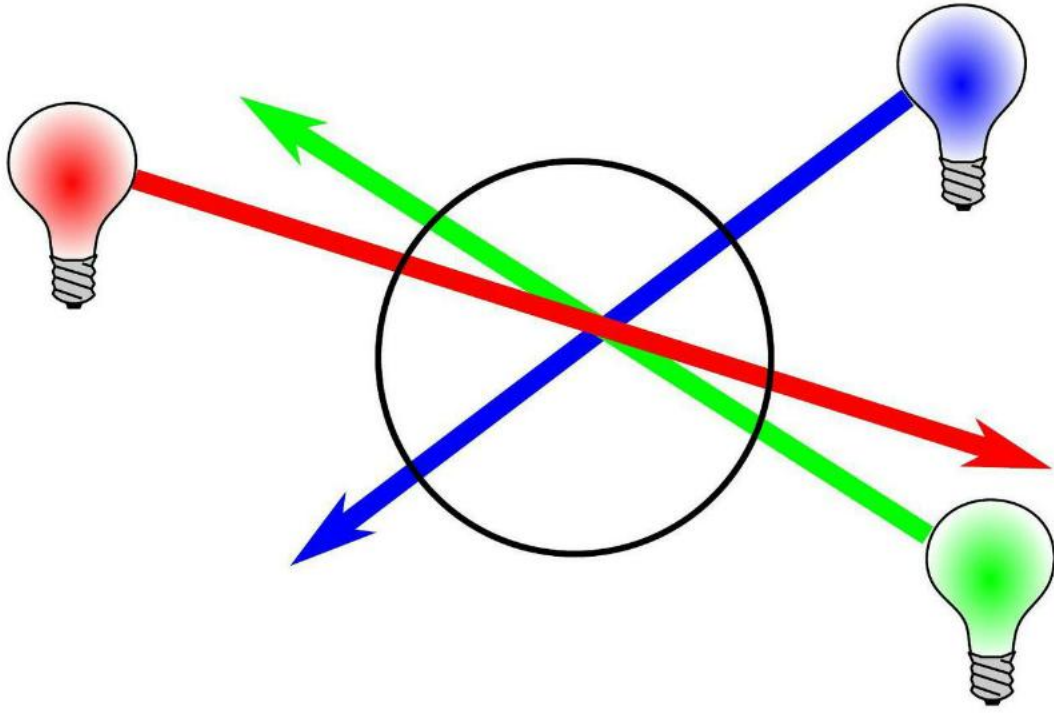
**It absorbs blue  
and green light.**

它吸收了蓝色和绿色的光



**This is a clear ball.**

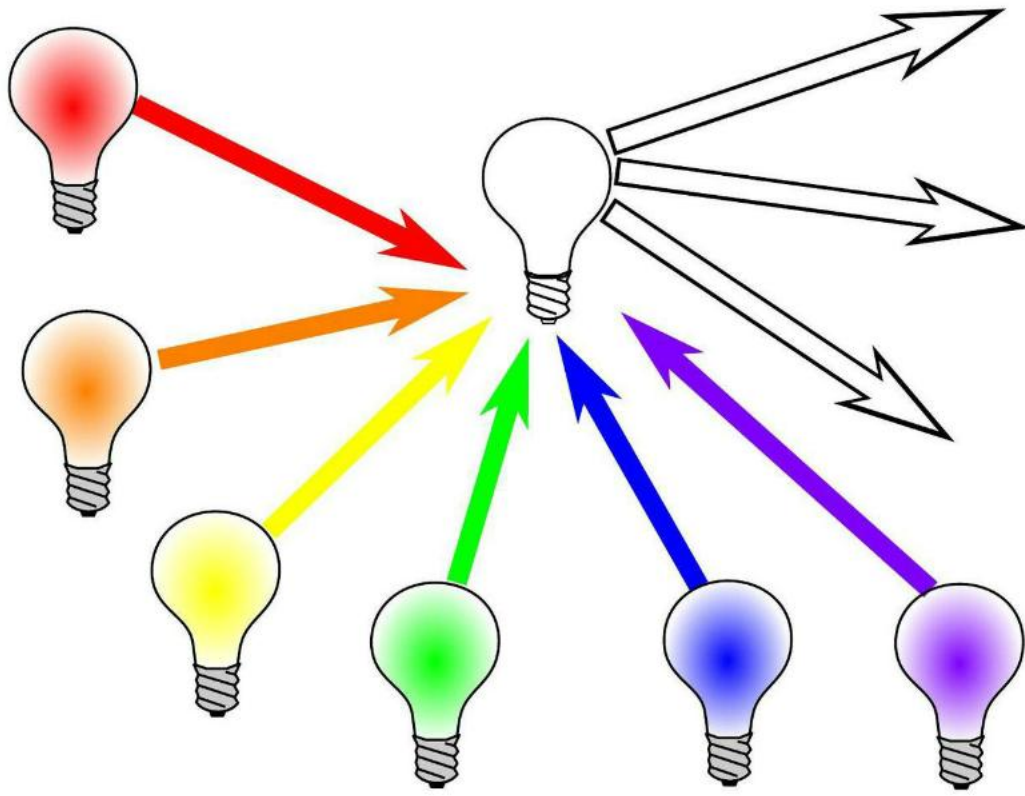
这是一个空的球



**All colors pass  
through it.**

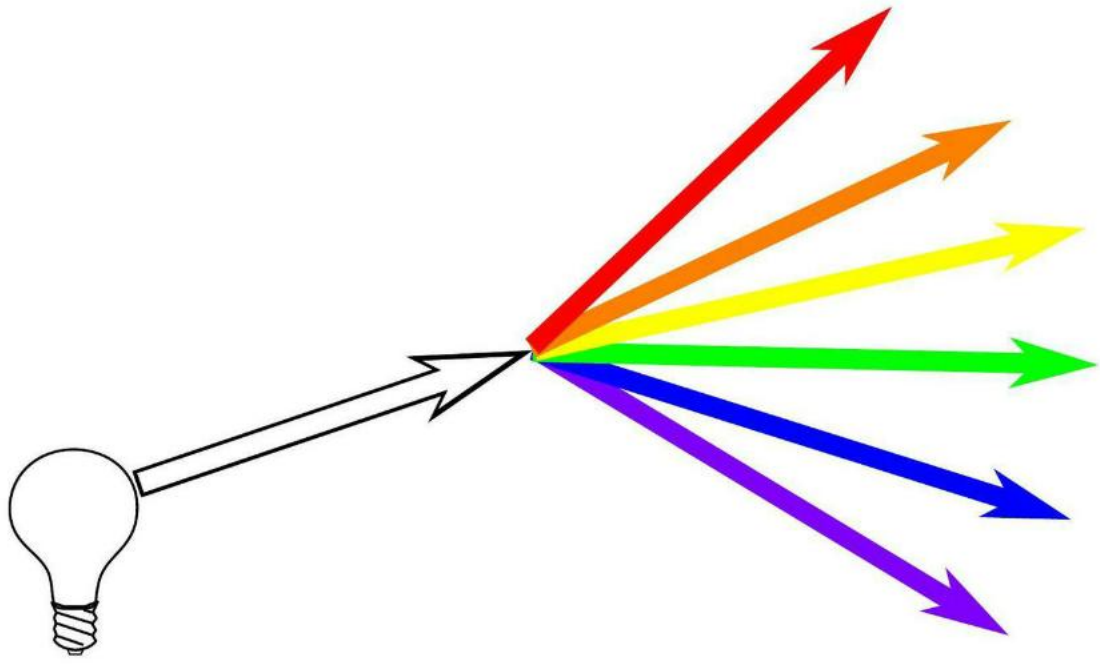
所有的颜色都能穿过它





**All the colors  
combine to make  
white light.**

所有的颜色相结合产生白色的光



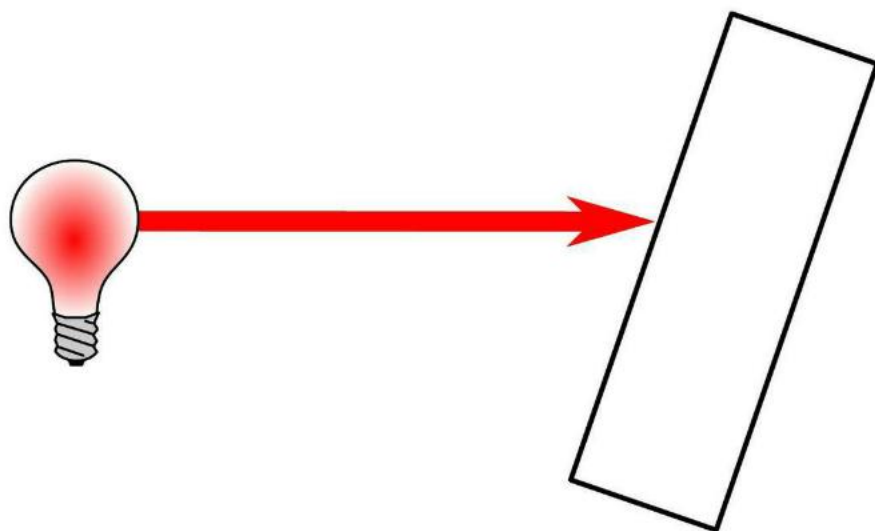
**And white light  
contains all the  
colors.**

并且白色的光包含所有颜色



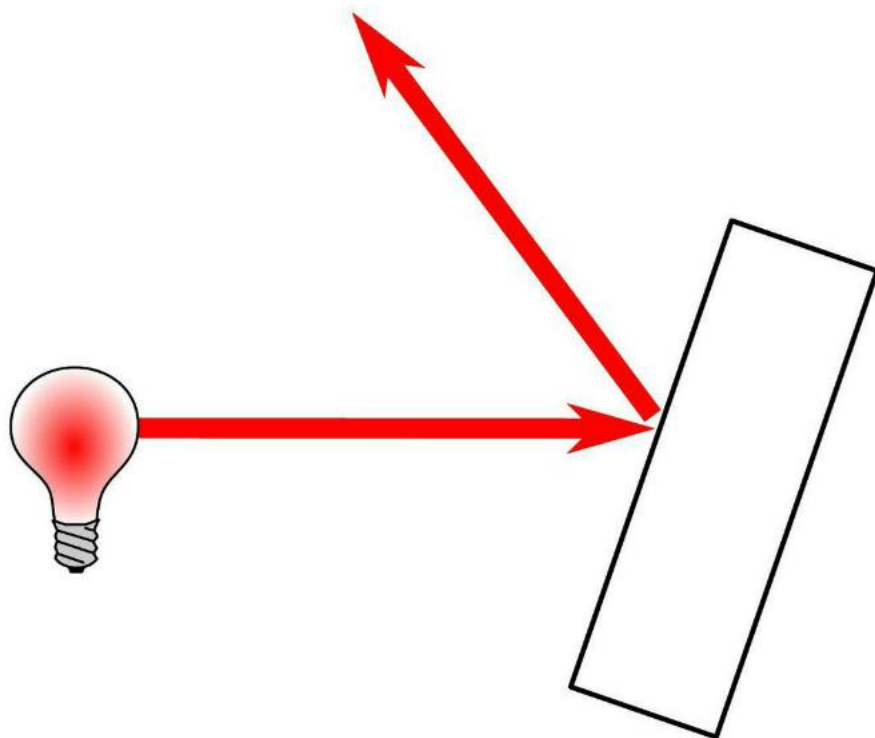
# Light travels in a straight line...

光以直线传播



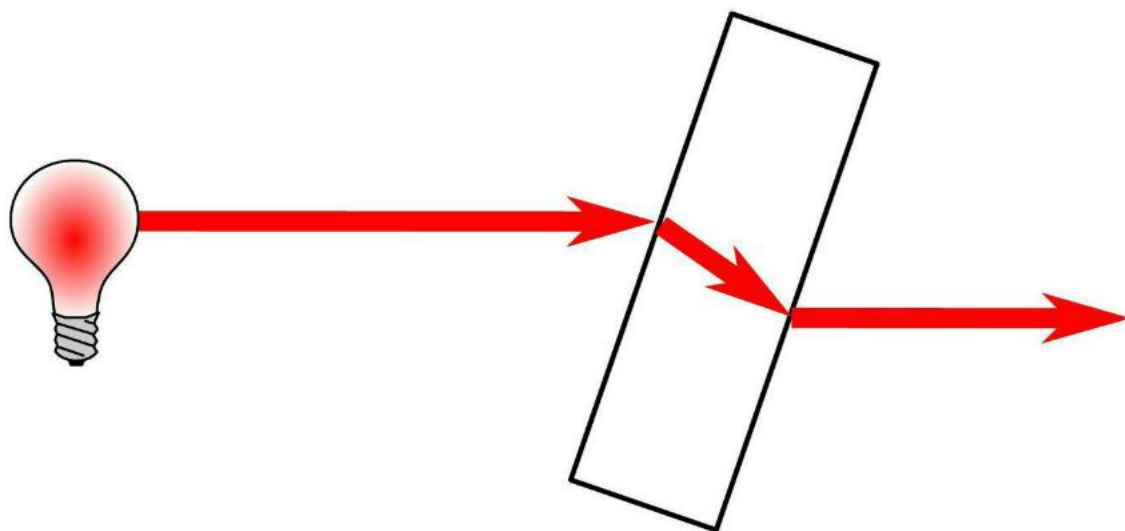
**until it hits  
something.**

直到它遇到了障碍



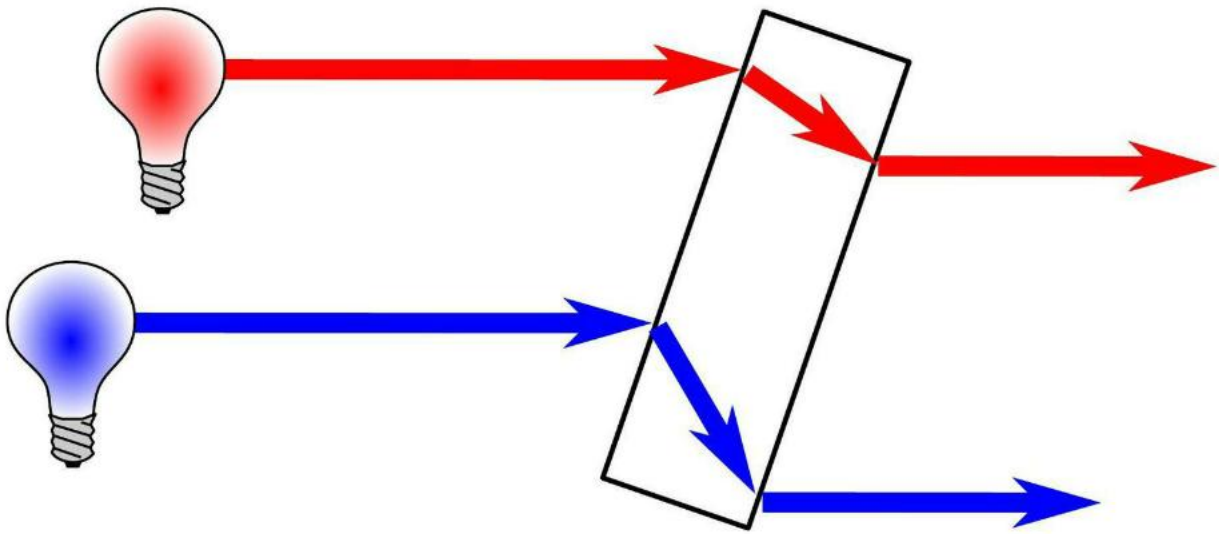
**It can be reflected,**

它可以被反射



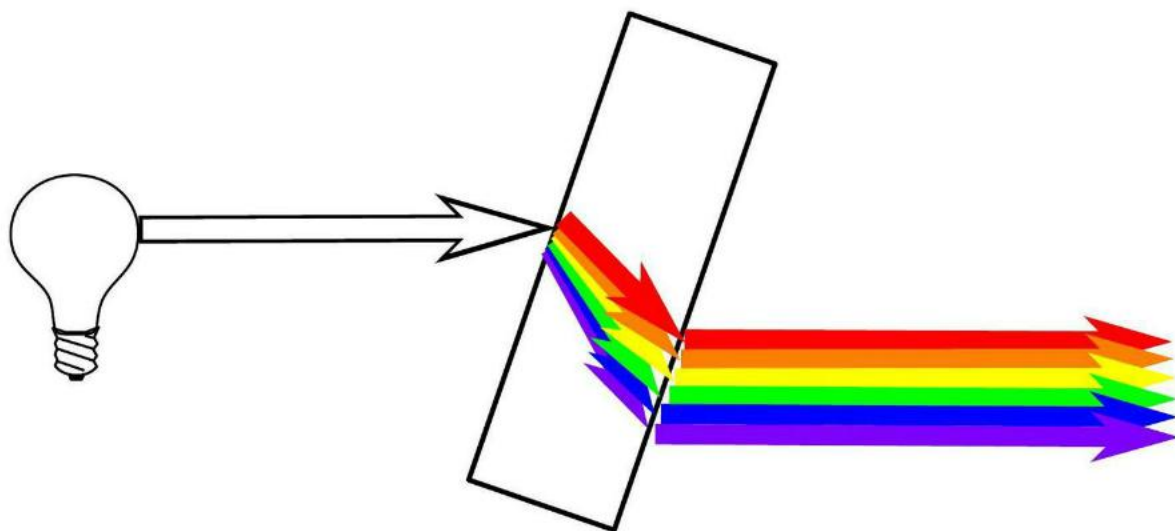
**or refracted.**

或者折射



**Red** is refracted  
less than **blue**.

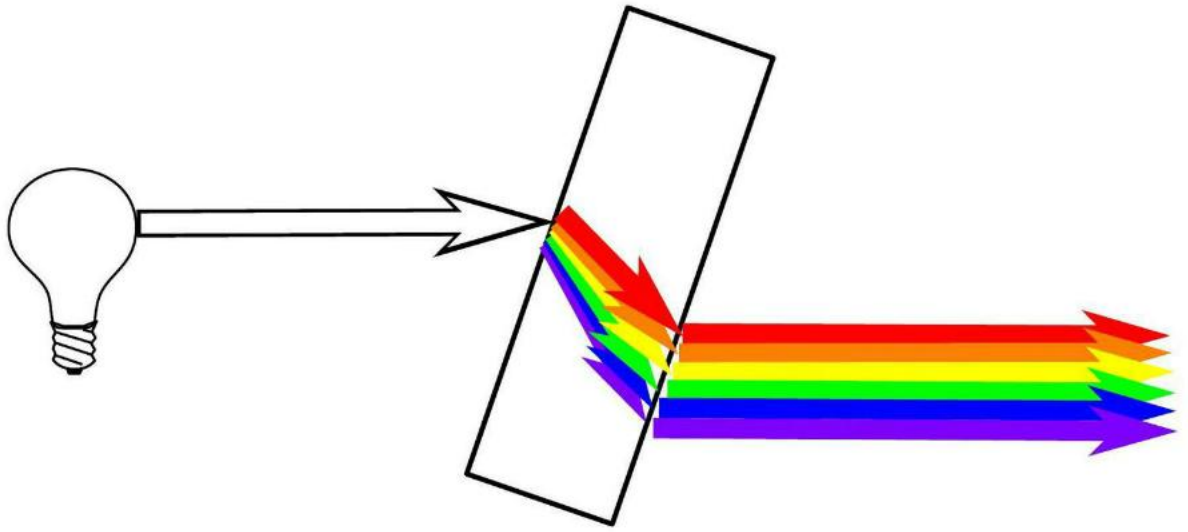
红色的光折射的角度小于蓝色的光



**This is how white  
light turns into  
the colors.**

这就白色的光变成彩虹的原因





**We call this  
dispersion.**

我们把这个叫做分散

# Least refracted to

少的折射到多的折射:

# most refracted:

Red

红

Orange

橙

Yellow

黄

Green

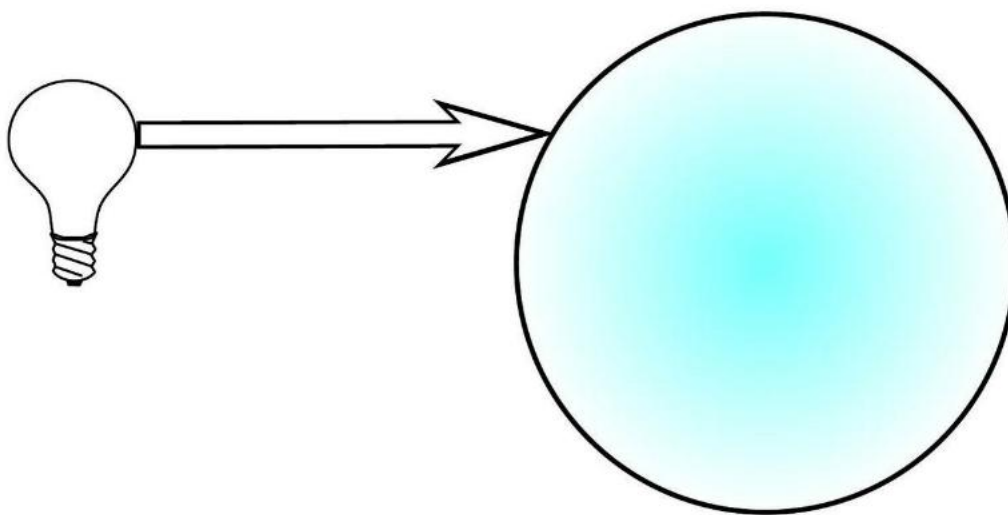
绿

Blue

蓝

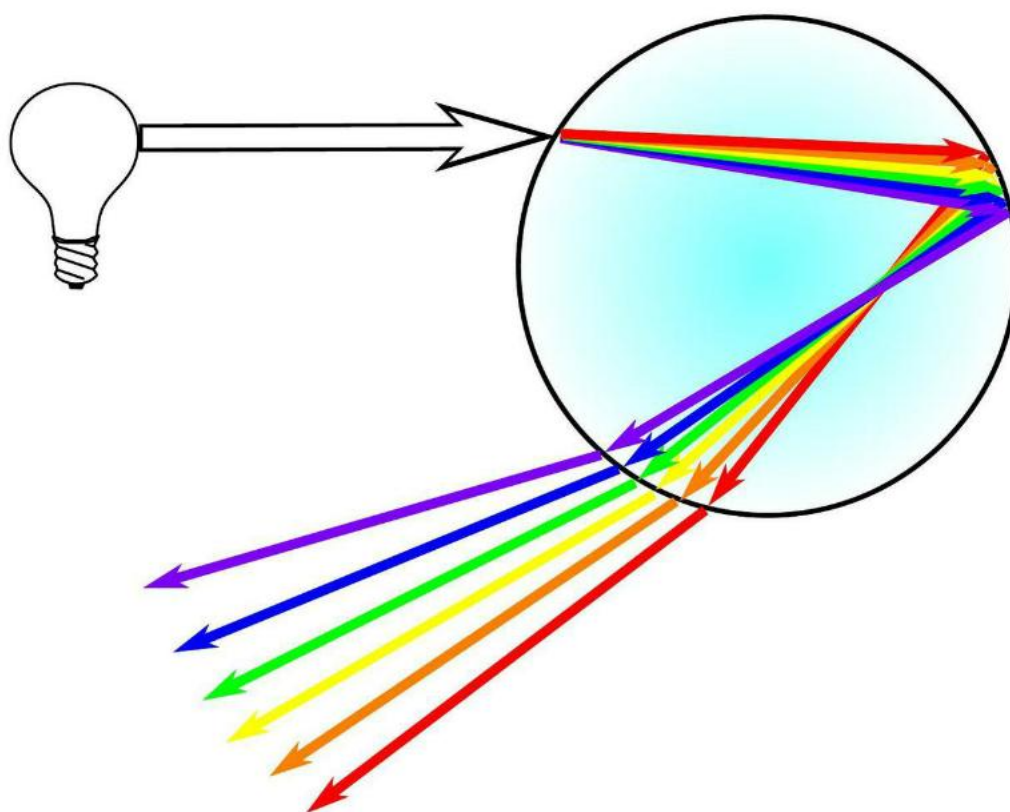
Violet

紫



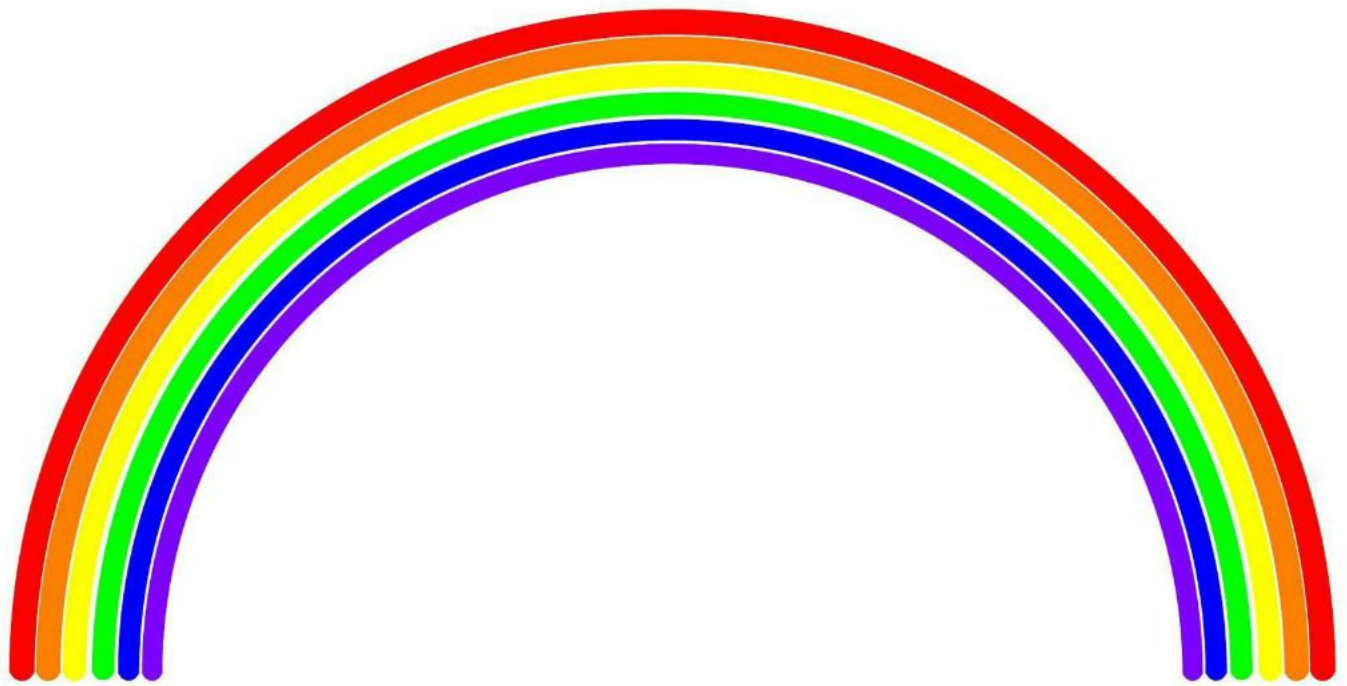
**If white light  
hits a rain drop...**

如果白色的光遇到了一个雨滴。。。。



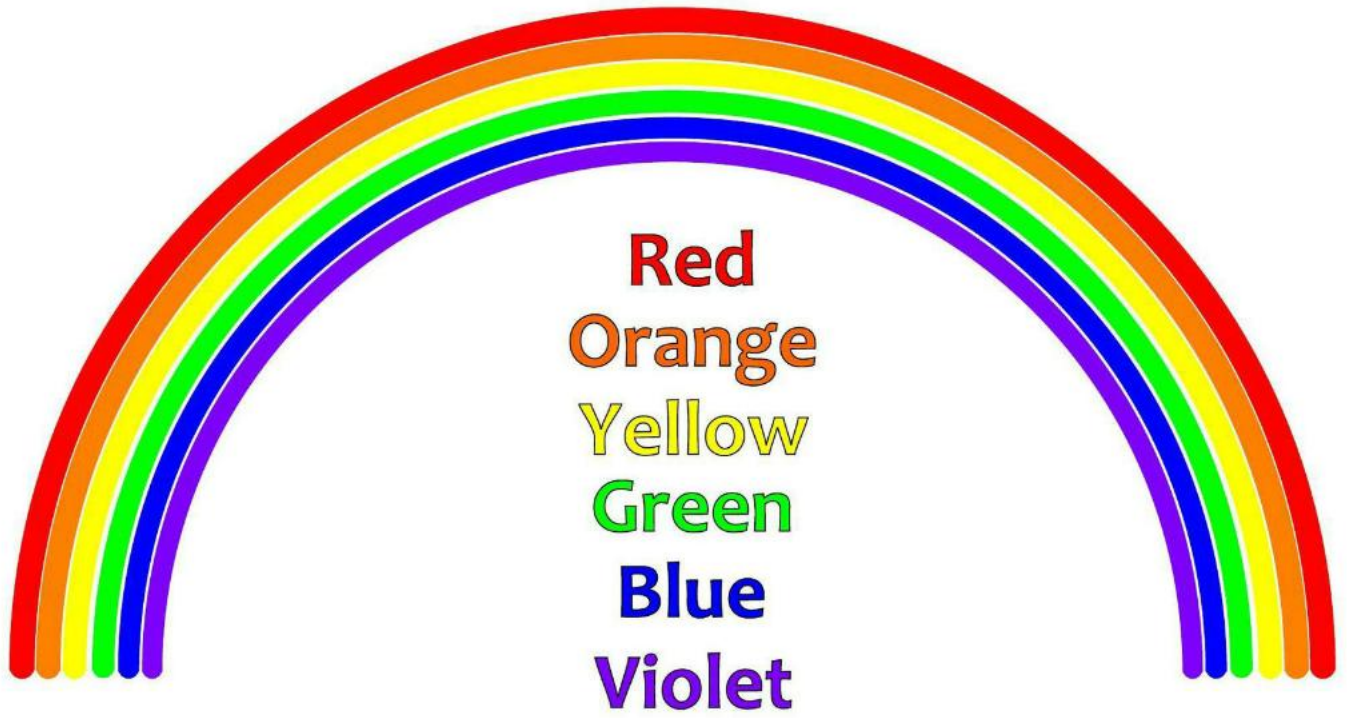
out comes a  
**rainbow!**

就出现了彩虹！



**On a sunny and  
rainy day, it looks  
like this.**

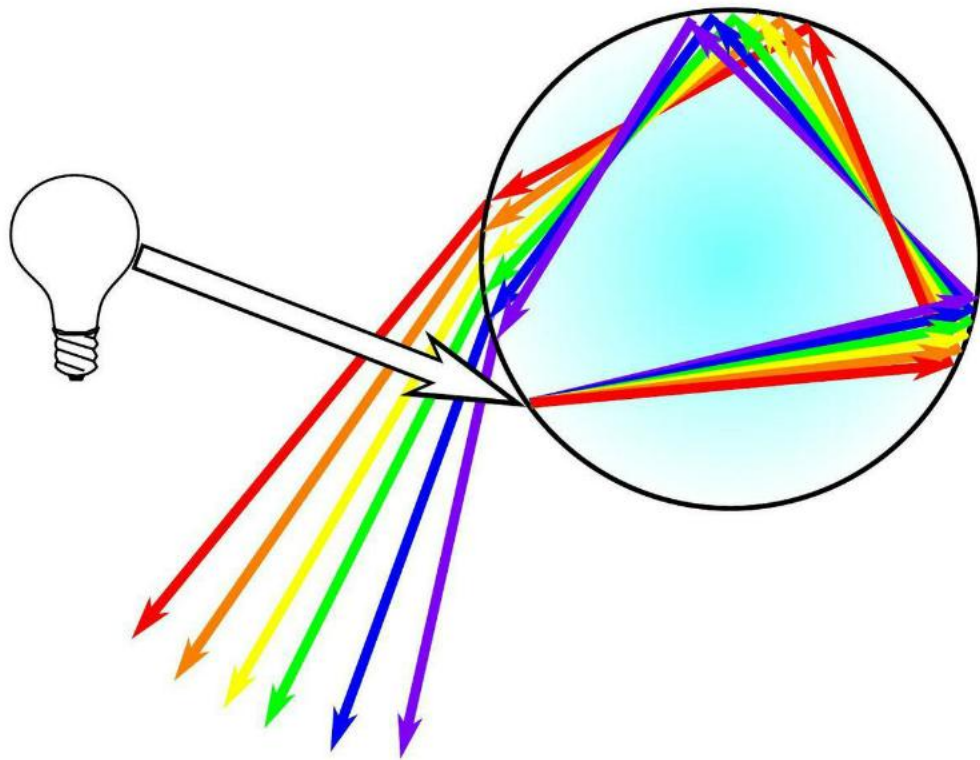
在一个阳光明媚的雨天，它看起来像这样



# Remember the refraction order!

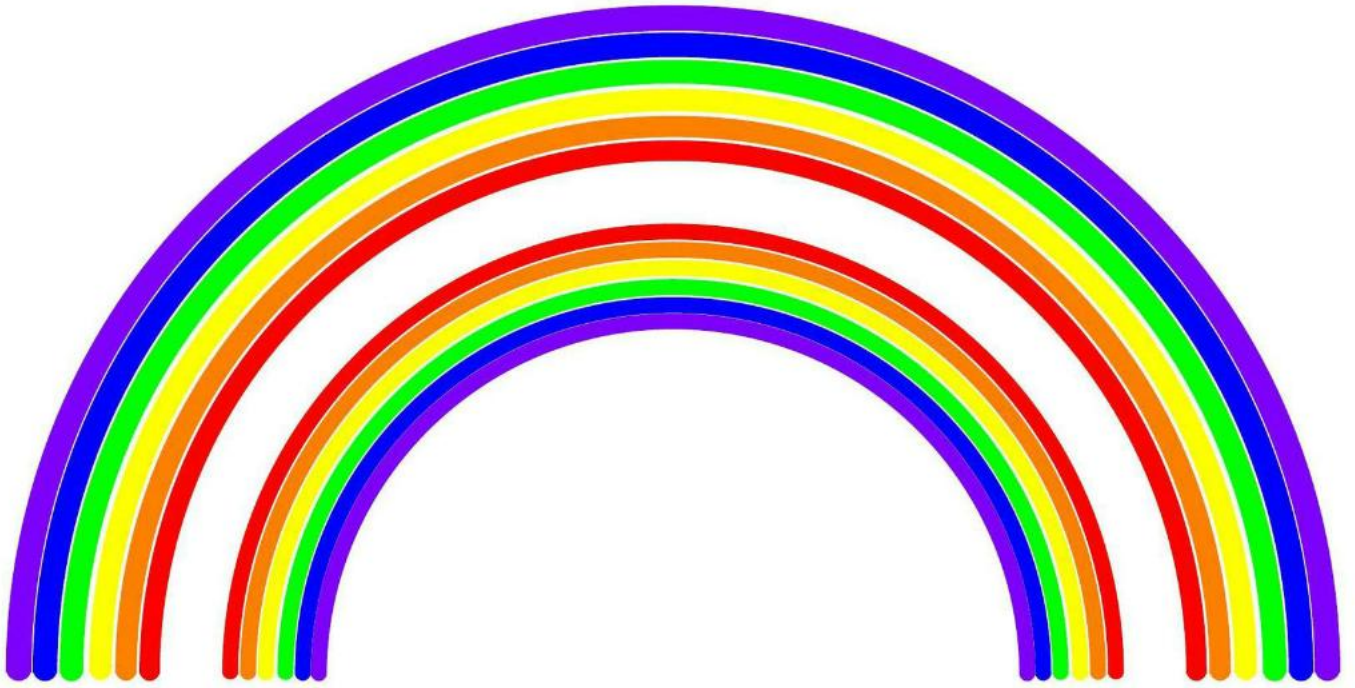
记住折射的顺序！





**The light can be  
reflected two times  
inside the rain drop.**

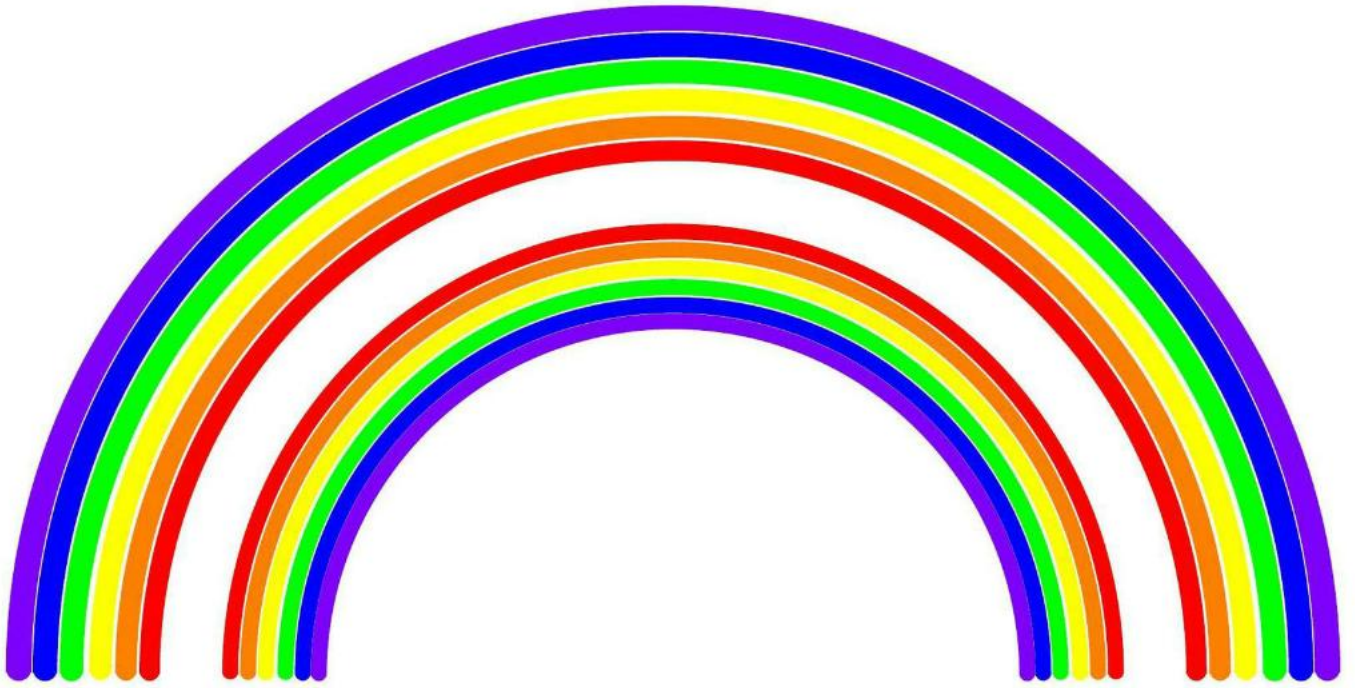
光在雨滴里面折射了两次



**This makes a  
second rainbow!**

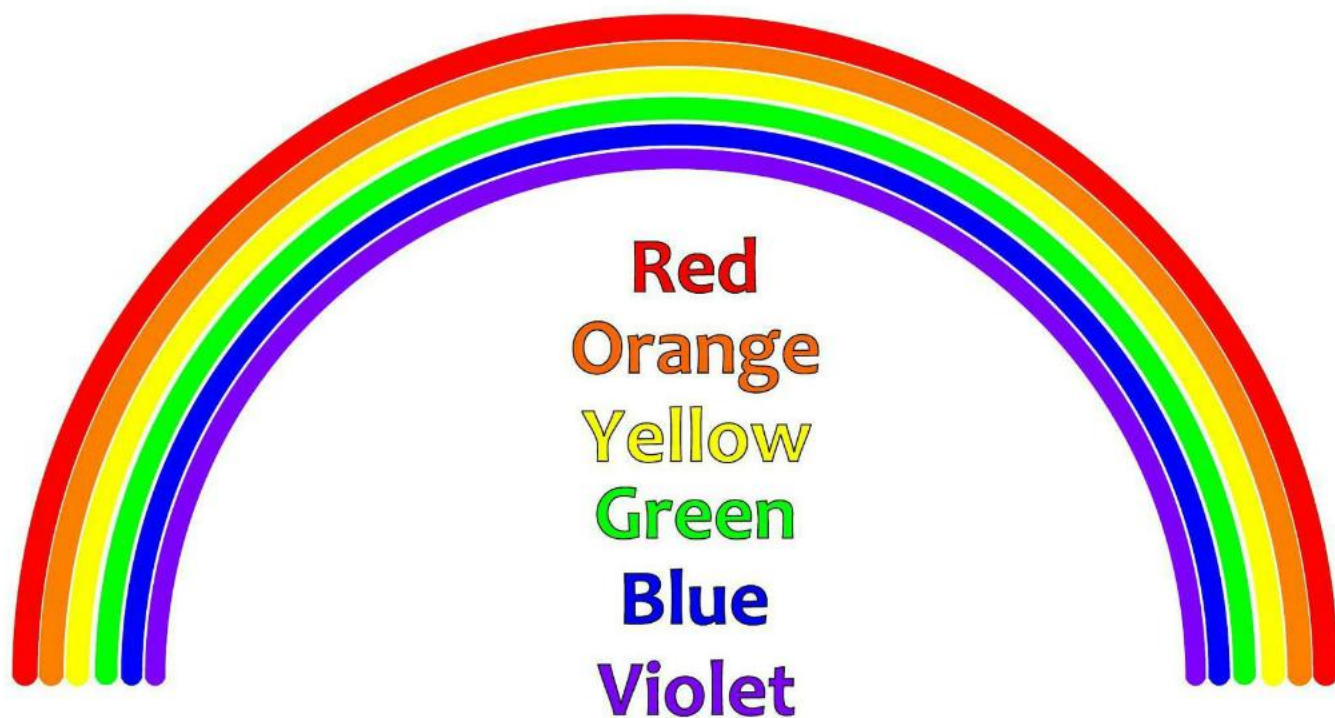
这产生了第二个彩虹！





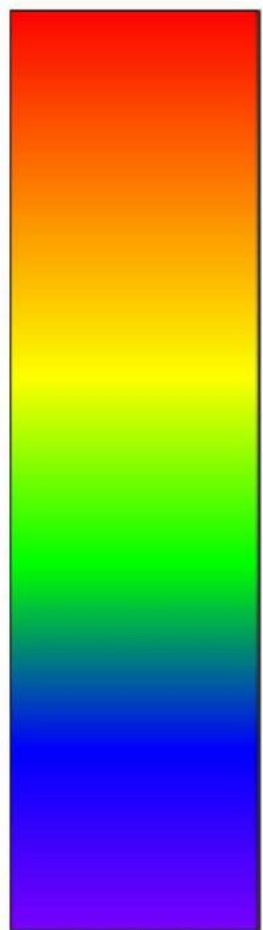
**But the order of  
the color is  
reversed.**

但是颜色的顺序是相反的



**There are also more  
colors than these.**

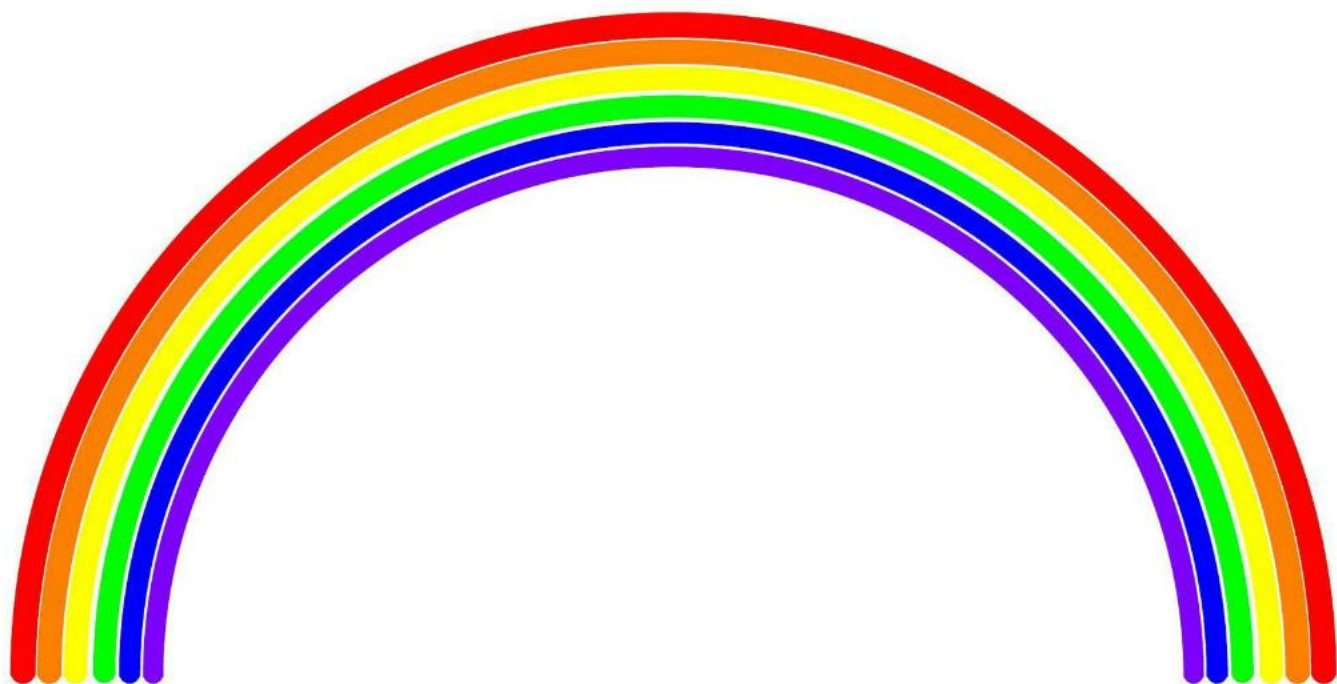
还有比这个更多的颜色



Red  
Orange  
Yellow  
Green  
Blue  
Violet

**There is a whole  
spectrum of colors.**

这有一个颜色的整个光谱



**We imagine**  
**rainbows like this.**

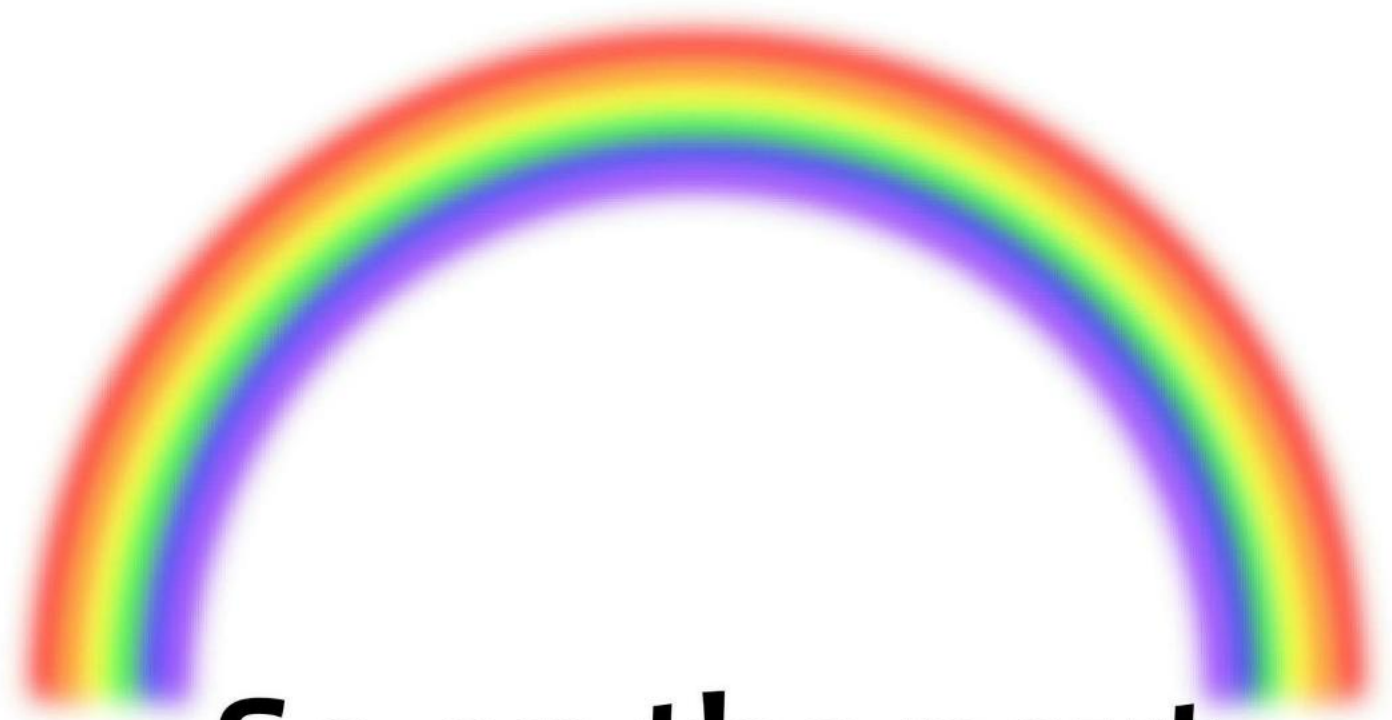
我们想象这样的彩虹



**But they look more  
like this.**

但是它们看起来更像是这样





**So on the next  
sunny and rainy day,  
see if you can spot  
a rainbow.**

所以在下一个阳光灿烂的雨天，  
看看你能不能看到彩虹