

April 22, 2013

Physics 132

Prof. E. F. Redish

- **Theme Music:** Lea Salonga
Reflection (from Mulan)
- **Cartoon:** Pat Brady
Rose is Rose



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Foothold Ideas 1: **The Physics**



- Certain objects (the sun, bulbs,...) give off light.
- Through empty space (or ~air) light travels in straight lines.
- Each point on an object scatters light, spraying it off in all directions.
- A polished surface reflects rays back again according to the rule: *The angle of incidence equals the angle of reflection.*

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Foothold Ideas 2: The Psycho-physiology



- We only see something when light coming from it enters our eyes.
- Our eyes identify a point as being on an object when rays traced back converge at that point.
 - (We use other clues as well – and some people’s brains do not merge binocular vision.)

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- Top Secret
- <http://www.youtube.com/watch?v=tgp7FaA0dms>
 - (1 minute into trailer)



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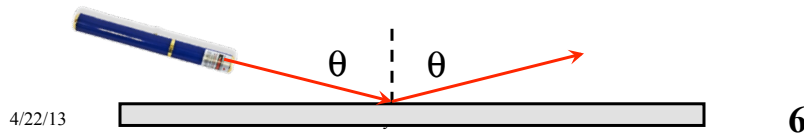
Foothold Ideas 3: Mirrors



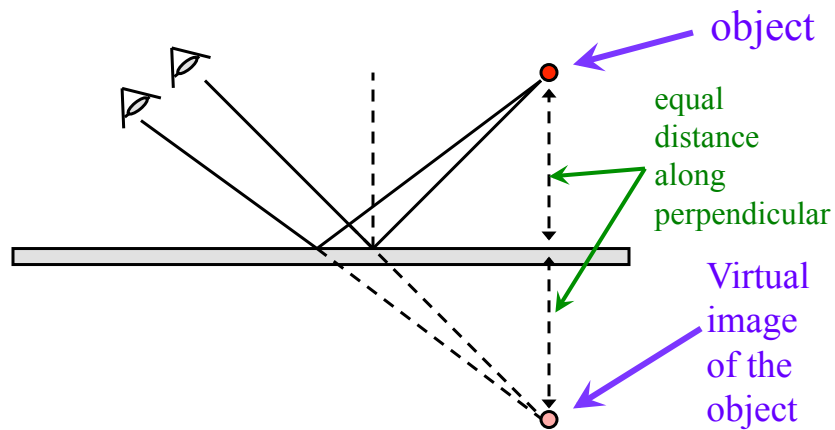
- For most objects, light scatters in all directions.
For some objects (mirrors) light scatters from them in controlled directions.



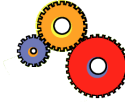
- A polished surface reflects rays back again according to the rule: *The angle of incidence equals the angle of reflection.*



Where does an object seen in a mirror appear to be?



Kinds of Images: Virtual



- In the case of the previous slide, the rays seen by the eye do not actually meet at a point – but the brain, only knowing the direction of the ray, assumes it came directly from an object.
- When the rays seen by the eye do not meet, but the brain assumes they do, the image is called *virtual*.
- If a screen is put at the position of the virtual image, there are no rays there so nothing will be seen on the screen.

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