**Light Notes**

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| Travels | Light travels in a straight line from the source. |
| Light Behavior | Reflection: When light hits a surface and **bounces back**Retraction: **bending** of light due to a change in speedTransmits: When light **passes through** a materialAbsorbs: When light **strikes** an object\*\* Remember ALL objects reflect SOME light\*\*  |
| Types of Materials | Transparent: A type of material that transmits light without scattering it.  Ex. Clear Window Translucent: A type of material that transmits light as it passes through. Ex. Frosted Glass Opaque: A type of material that reflects or absorbs all of the light that strikes it. Ex. Text Book, Birthday Cake |
| Reflection | When light **hits a surface** and **bounces back.**Regular Reflection: Reflection that occurs when parallel rays of light hit a **smooth**  surface and all **reflect** at the **same angle**. Also known as  specular reflection. Diffuse Reflection: Reflection that occurs when parallel rays of light hit an  **uneven (bumpy)** surface and all **reflect** at **different angles**.   [This Photo](https://physics.stackexchange.com/questions/72368/why-are-most-metals-gray-silver) by Unknown Author is licensed under [CC BY-SA](https://creativecommons.org/licenses/by-sa/3.0/)  |
| Law of Reflection | States the angle of incidence equals the angle of reflection. [This Photo](http://physics.stackexchange.com/questions/37731/refraction-reflection-and-what-is-total-reflection) by Unknown Author is licensed under [CC BY-SA](https://creativecommons.org/licenses/by-sa/3.0/) |
| Refraction | The bending of light waves due to a change in speed. It bends because the light wave has to slow down when entering a new medium. Doesn’t happen all the time when entering. Example: Light going from air to glass of water.

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| Why we see… | Rays of light reflect, or bounce off, objects and enter our eyes. This reflection of light is what enables us to see everything around us. [This Photo](http://cellularscale.blogspot.com/2012/05/dendrites-of-direction.html) by Unknown Author is licensed under [CC BY-SA-NC](https://creativecommons.org/licenses/by-nc-sa/3.0/) |
| Other important information | \*Light must enter our eyes in order for us to see objects.\*Materials can reflect or transmit light that shines on them and many do both.\*All materials reflect some light.\*Different materials reflect and/or transmit different amounts of light.\*When light transmits through a material, less light comes out the other side, but how much less depends on the material.\*When light reflects off of a material, less light bounces back, but how much less depends on the material. \*When light shines on bumpy surfaces at the micro scale, it scatters in all directions.\*When light shines on smooth surfaces at the micro scale, it reflects in a certain direction. |
| Color | Opaque objects: The color of an opaque object depends on the wavelengths of lights that the object reflects. **The color of an opaque object is the color it reflects.** [This Photo](http://doodledsgn.blogspot.com/2010/07/are-black-white-colours.html) by Unknown Author is licensed under [CC BY-NC-ND](https://creativecommons.org/licenses/by-nc-nd/3.0/)The color white **reflects** ALL colors of light.The color black **absorbs** ALL colors of light.  |
| Other terms | Diffraction: When a wave moves around a barrier or through an opening in a  barrier, it bends and spreads outInterference: is the interaction between waves that meetConstructive Interference: when waves combine to form a wave with larger  amplitude than the individual wavesDestructive Interference: When waves combine to form a wave with a smaller  amplitude than the original waves |
| Variables | Independent: The variable we are testing or changing each time we do itDependent: The variable we are collecting data with. (Measure)Control: The variables that stay the same. |

Models:



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