***How Light Interacts with Matter***

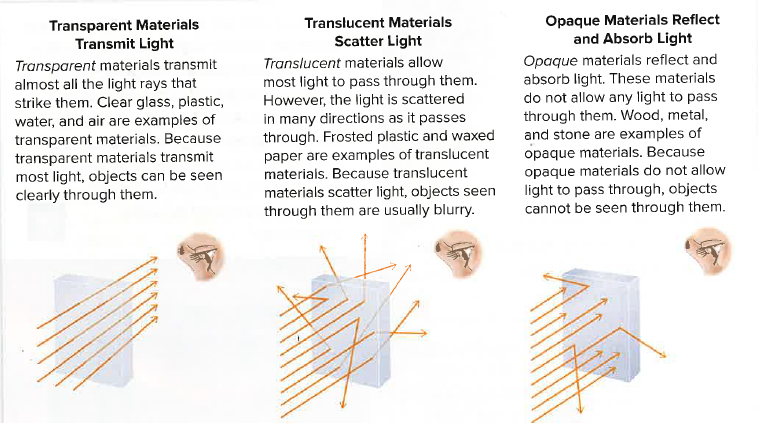
NAME: Div.: Date:

The ray model is a basic example of how light moves showing it in a straight line. This simplistic model is still useful because it can accurately demonstrate how light will react when interacting with matter.

A close-up of a document

Description automatically generated with low confidence

**TRANSMISSION**



**REFLECTION**

Diagram

Description automatically generatedDiagram

Description automatically generated

Diagram

Description automatically generated

**REFRACTION**

Refractive index of some transparent substances

|  |  |  |
| --- | --- | --- |
| **Substance** | **Refractive index** | **Angle of refraction if incident ray enters substance at 20º** |
| Air | 1.00 | 20 |
| Water | 1.33 | ~ 15 |
| Glass | 1.5 | ~ 13 |

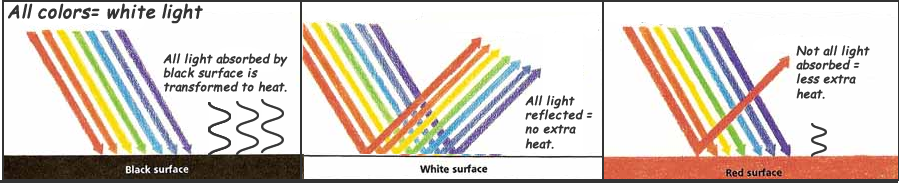
* All angles are measured from an imaginary line drawn at 90° to the surface of the two substances This line is drawn as a dotted line and is called the normal.
* If light enters any substance with a *higher* refractive index (such as from air into glass) it slows down. The light bends *towards* the normal line. (Travelling Air to Glass: 20 ÷ 1.5 = ~13)
* If light traveling enters into a substance with a *lower* refractive index (such as from water into air) it speeds up. The light bends *away* from the normal line. (Travelling Water to Air: 15 x 1.33 = ~20)
* A higher refractive index shows that light will slow down and change direction more as it enters the substance.

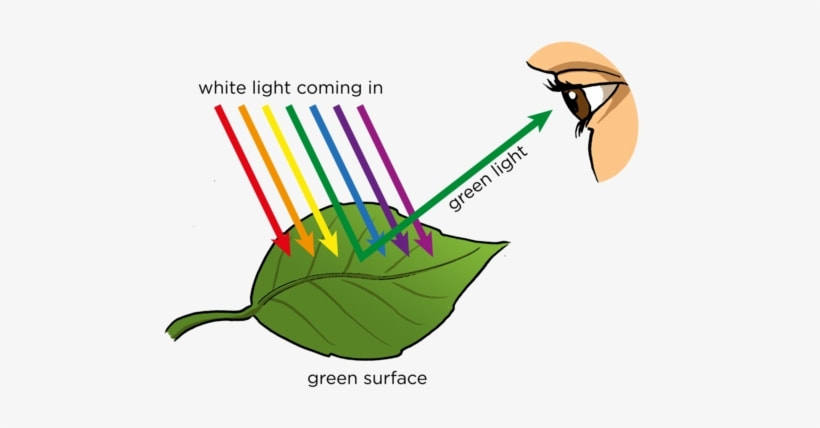
Diagram

Description automatically generated

**ABSORPTION**

*\* Light energy can be absorbed and not reflected. When the different wavelengths of colours are absorbed the ones that are reflected are the colour that you observe the object to be. As light energy is absorbed heat is generated.*

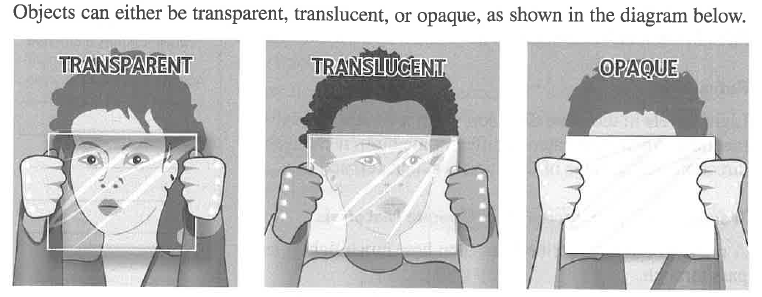


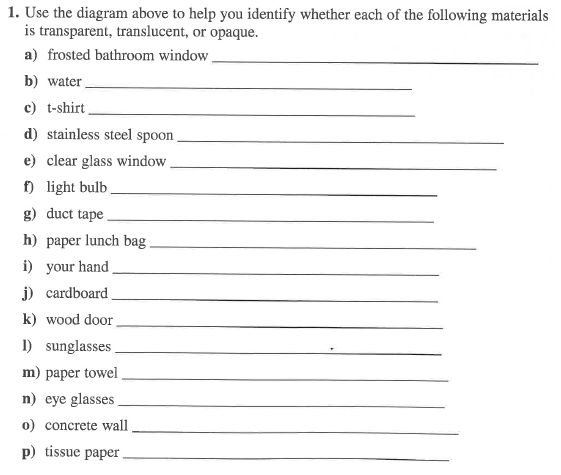


**How Light interacts with Matter**

Name: Div.: Date:

1. Define the following terms:
   1. Transmission 🡪
   2. Reflection 🡪
   3. Law of Reflection 🡪
   4. Absorption 🡪
   5. Transparent 🡪
   6. Opaque 🡪
   7. Translucent 🡪





Diagram, shape

Description automatically generated with medium confidence

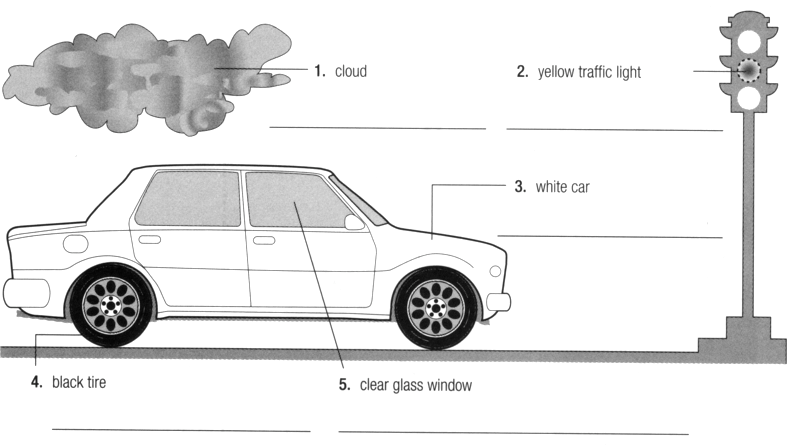
Define the following terms:

* 1. Refraction 🡪
  2. Scattering 🡪
  3. Absorption 🡪

Diagram

Description automatically generated

1. State whether light is mostly absorbed, reflected, transmitted, or scattered by each object in the image below.



**Research and Relate**

1. Why would the Polar ice caps melting and exposing more ocean water or land underneath make Global Warming worse.
2. Could cities painting roofs or streets white help cool down the city?
3. Why is the sky blue for most of the day, but red, orange, yellow at dawn and dusk?

Table

Description automatically generated

Diagram

Description automatically generated

Graphical user interface, text, application, email

Description automatically generated