**Chapter 5 Review**

Terms

Transparent

Translucent

Opaque

Incident light ray

Reflected light ray

Normal

Angle of Incidence

Angle of reflection

Plane Mirror

Concave Mirror

Convex Mirror

Refraction

Refracted Ray

Angle of Refraction

1. Describe the ray model of light.

Used to understand how light moves in straight lines, reflects off mirrors and refracts through lenses.

1. What is the difference between diffuse and specular reflection. Give 2 examples of surfaces where each type of reflection would take place.

Diffuse: Reflection from a rough surface which does not produce a clear image but instead allows you to see what is on the surface. Ex a piece of white paper, a light coloured shirt.  
Specular: reflection from a mirror-like surface which produces an image of the surroundings ex: a mirror, a spoon.

1. State the law of reflection. Accompany it with a labelled diagram.  
   The angle of incidence + the law of reflection – see page 178 for a diagram.
2. List the 3 types of mirrors and give an example of where each can be found.   
   Plane – in your bathroom, any kind of regular mirror.   
   Concave – a makeup mirror, the reflector around a bulb in a flashlight. Convex – on the side of a bus, in a store.
3. Describe the characteristics of an image formed by a plane mirror. (SPOT)  
   Size: Is the image smaller/bigger or the same size as the object?  
   Position: Is the image farther/closer/ same distance to the mirror as the object?  
   Orientation: Is the image upside down or rightside up?  
   Type: Does the image appear behind the mirror (see the reflection - virtual) or in front (projector screen - real)
4. Describe the characteristics of an image formed by a concave mirror for each of the object positions. (SPOT)

See your notes!

Size: It can be smaller or larger

Position: Image distance can be larger or smaller than the object distance  
Orientation: It can be upright or inverted

Type: It can be real or virtual

1. Describe the characteristics of an image formed by a convex mirror. (SPOT)

Size: The image is smaller than the object

Position: The image distance is smaller than the object distance

Orientation: The image is upright

Type: The image is virtual

1. Use a ray diagram to determine the location of an image formed by a concave or convex mirror.

|  |  |
| --- | --- |
|  | Kind of mirror: Plane  S: The image size is the same as the object size.  P: The image distance is equal to the object distance.  O: The image is upright  T: The image is virtual See page 189-190. |
|  | Kind of mirror: Concave Where is the object: Between the focal point (F) and the mirror  S: The image is bigger than the object.  P: The image distance is larger than the object distance.  O: The image is upright  T: The image is virtual See page 200. |
|  | Kind of mirror: Concave Where is the object: Past the focal point (F).  S: The image is bigger than the object.  P: The image distance is farther than the object distance.  O: The image is upside down  T: The image is real See page 201. |
|  | Kind of mirror: Concave Where is the object: Past twice the focal point (2F)  S: The image is smaller than the object.  P: The image distance is smaller than the object distance.  O: The image is upside down.  T: The image is real. See page 202. |
|  | Kind of mirror: Convex Where is the object: On the opposite side of the mirror from the focal point (F)  S: The image is smaller than the object  P: The image distance is smaller than the object distance.  O: The image is upright  T: The image is virtual.  See page 205. |

1. Distinguish between real and virtual images.

Virtual images are formed when reflected rays are extended and are located behind the mirror. A real image is formed when reflected rays (Not extended rays) meet and is located in fromt of the mirror. You need a screen to view a real image (like an overhead projector). A flat or convex mirror always has a virtual image. A concave mirror can have a virtual or real image.

1. What happens to the speed of light as it passes from a less dense medium into a more dense medium?   
   It slows down and bends toward the normal.

As it passes from a more dense medium into a less dense medium?

It speeds up and bends away from the normal.

1. Complete the following statements:
   * an incident light ray travelling into a more dense medium will bend\_\_\_\_\_Towards\_\_\_\_\_\_ the normal.
   * An incident light ray travelling into a less dense medium will bend\_\_\_\_Away from\_\_\_\_\_\_\_the normal.
2. When looking at an object underwater why is the object not where you think it is.

If the light travels through two different media before it reaches your eyes, it does not travel in a straight line so the object is not where your brain thinks it is.