**Optic Technologies**

Instructions:

1. You will use your textbook to find information on each subject.
   1. Most information will be between pages 216-225
2. Use the found information to complete the following notes.
3. Once completed, bring your completed notes to the front to get a homework mark from Mr. Westergaard. Start on p229 for homework.

Hints/Tips:

-Use headings to find the right area to look for information.

-Bolded words often have definitions in the glossary in the back of the text book.

-Scan the page for the keyword you are looking for then read the section it is in.

-Once every other method has failed read the entire page.

-Only after you’ve tried each one of these steps you may ask the teacher.

**How to Bring an Image into Focus**

Adjusting the distance between a screen and a lens to make a clear image is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

If a screen is too close or too far away from a lens the image on it will be \_\_\_\_\_\_\_\_\_\_\_\_\_.

**Microscopes**

Define: Magnify

How many lenses does a compound microscope use?

Draw a diagram of a microscope with light rays. Draw an object and image that would be looked at.

The types of lenses used in compound microscopes are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The lens that is looked through is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and the lens closest to the object is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

In order to focus a microscope you move the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Telescopes**

When an object is moving away from you \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ light reflects off the object and enters your eye. This makes it look \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

A telescope can get more light from the object than your eye because \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

The names of the two lenses in a telescope are \_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_.

The two types of telescopes are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Draw each type of telescope with a ray diagram and a picture of the image.

List the weaknesses of a refracting telescope.

Instead of an objective lens, a reflecting telescope uses \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Why is the Hubble Space Telescope put into space?

The primary mirror in the Hubble Space Telescope is \_\_\_\_\_\_\_\_\_\_\_\_ across.

Binoculars are two \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ mounted side by side.

Binoculars are telescopes that are shortened by using \_\_\_\_\_\_\_\_\_\_\_\_ that serve as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Cameras**

A camera works by bending light with a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The lens projects the image onto a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to digitally record the image.

When taking a photo a \_\_\_\_\_\_\_\_\_\_\_ opens for a short period of time to let light enter an opening called an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Light will then be focused by the lens to form an image on the light detector.

Wide angle lenses produce \_\_\_\_\_\_\_\_\_\_ images of the object but have a \_\_\_\_\_\_\_\_ field of view. They must be placed \_\_\_\_\_\_\_\_\_\_\_\_ to the light detector to produce a sharp image.

Telephoto lenses produce \_\_\_\_\_\_\_\_\_\_\_ images of the object but have a \_\_\_\_\_\_\_\_\_ field of view. They must be placed \_\_\_\_\_\_\_\_\_\_\_ from the light detector to produce a sharp image.

Wide angle lenses have a \_\_\_\_\_\_\_\_\_\_\_\_\_ focal length.

Telephoto lenses have a \_\_\_\_\_\_\_\_\_\_\_\_\_ focal length.

In point form, write some comparisons for parts of the camera and parts of the eye:

**Lasers**

Describe how laser light is different from regular light. Draw a picture of each type of light.

Laser light can contain lots of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

List the types of tasks lasers used for in medical procedures.