Thoughts about light have changed over time as we learn more about it. Our eyes causing vision to occur were proven wrong because it was impossible to see in the dark. This theory of light was presented to the people of his time by …

A. Ptolemy  
B. Aristotle  
C. Pythagoras  
D. Archimedes

When light is shone into a mirror, the angle of the incoming beam is equal to the angle of the outgoing beam. This understanding of light was suggested by …

A. Ptolemy  
B. Aristotle  
C. Al-Haytham  
D. Euclid

The 1st scientist to reasonably measure the speed of light was …

A. Ole Romer  
B. Isaac Newton  
C. Albert Einstein  
D. Albert Michelson

Archimedes understood that light travels in straight lines and can be reflected, his military plan, was to …

sink enemy ships with the rays of light

Antonie van Leeuwenhoek used a simple microscope and discovered, what he called ...

little animacules

The invention of the microscope enabled scientists to study microorganisms. This area of science is called ...

A. Genetics  
B. Microbiology  
C. Cell Engineering  
D. Animal Science

The type of telescope that collects light from distant objects using mirrors and focusing the light in the eyepiece is called ...

refracting telescope

This illustration demonstrates a type of reflection known as ...

diffuse reflection

This illustration demonstrates how light travels and is referred to as ...

ray diagram
QUESTION 11
Reflection is the process in which light strikes a surface and bounces off that surface. The reflected ray will bounce back directly to the light source if it is lined up with the ...

A. incident ray  
B. reflected ray  
C. normal line  
D. reflecting surface

QUESTION 12
A frosted window allows some light to pass through, but objects on the other side of the window cannot be seen in detail. The frosted window is an example of this type of material ...

_______ translucent

QUESTION 13
When you attempt to focus an image on a screen, using a concave mirror, but cannot, yet, you can see an image when are looking into the same concave mirror, the image is called a ...

A. virtual image  
B. concave image  
C. convex distortion  
D. reflected distortion

QUESTION 14
When parallel rays of light hit the surface of this type of mirror, they are reflected back to a focal point in front of the mirror. The type of mirror that does this is called a ...

_______ concave mirror

QUESTION 15
Cosmetic mirrors, flashlights, reflecting telescopes, and headlights in a car are all examples of practical applications for these type mirrors ...

A. plane mirror  
B. bubble mirror  
C. convex mirror  
D. concave mirror

QUESTION 16
If an object is placed between the focal point in a concave mirror and the mirror itself, the image will appear ...

A. upright (right side up) and smaller  
B. inverted (upside down) and smaller  
C. upright (right side up) and larger  
D. inverted (upside down) and larger

QUESTION 17
Refraction is the bending of light when it travels from one medium to another. What direction does the light bend when it travels from a medium of greater density to one of lesser density? ...

_______ away from the normal

QUESTION 18
When the sky is refracted by warm air an illusion of a watery surface is created. This illusion is called a ...

_______ mirage

QUESTION 19
During refraction, an object in a denser material (like a water drop), will appear to be ...

A. smaller  
B. invisible  
C. larger  
D. inverted

QUESTION 20
When light passing through a lens, the light is bent, causing the rays of light to diverge. The type of lens is called a ...

_______ double-concave lens

QUESTION 21
When an object is further away than the focal point of the double convex lens, the image that is formed is ...

A. real and inverted  
B. virtual and inverted  
C. virtual and upright  
D. real and upright

QUESTION 22
Glass building blocks are used in many modern types of building and commercial construction projects. People even use them as part of an outer bathroom wall in a house. What property of light enables this construction practice to be practical in preserving the privacy of individuals behind the glass blocks?

_______ light can be bent

QUESTION 23
Cosmetic mirrors, flashlights, reflecting telescopes, and headlights in a car are all examples of practical applications for these type mirrors ...

A. plane mirror  
B. bubble mirror  
C. convex mirror  
D. concave mirror
QUESTION 23

The height of each wave above the rest position indicates the ...

A. frequency  
B. rest position  
C. amplitude  
D. wavelength

QUESTION 24

As frequency decreases, this will happen to the wavelengths of light, they ...

A. longer and less frequent  
B. longer and more frequent  
C. shorter and less frequent  
D. shorter and more frequent

QUESTION 25

White light is refracted through a device that breaks it up into all the visible colors that make up white light. The device that does this is called a ...

A. scurvy  
B. exema  
C. jaundice  
D. atrophy

QUESTION 26

Rainbows are formed in the sky—enabling us to see all the colors of the visible spectrum. What is needed in order for a rainbow to form?

A. sunlight & raindrops  
B. gamma rays  
C. infrared waves  
D. ultraviolet waves

QUESTION 27

A television set puts the theory of color addition into practice. If you look closely at the screen, you will see that it is actually made up of rows of ...

A. red, blue and yellow dots  
B. red, blue and yellow squares  
C. blue, green and red dots  
D. blue, green and red squares
The eye and the camera can be thought of as image-producing technologies. One (the eye) happens to be a natural technology, while the other (the camera) is a mechanical innovation.

**QUESTION 35**
The retina in the eye has a thin layer of cells that are light sensitive. These cells are called photoreceptors. There are two kinds of photoreceptor cells. The type of photoreceptor cell in the retina that detect color are called __________.

**QUESTION 36**
Night vision goggles are used to get images in the dark. __________ make a green image on the screen because light makes phosphor particles __________.

**QUESTION 37**
The human eye and most other vertebrates have eyes that can be compared to cameras and are called camera eyes. Fish also have camera eyes, but instead of an oval-shaped lens, they have a __________.

**QUESTION 38**
Nocturnal animals, such as cats and owls have very large pupils to allow them to collect as much light as possible. The purpose of the thin layer inside their eyes, called the tapetum lucidum, is to act as this inside their eye -- a __________.

**QUESTION 39**
An ommatidium is a long tube-like structure with a lens on the outer surface, a focusing cone below it and a light sensitive cell below that. Insect eyes have ommatidia facing in almost all directions because their eyes tend to have a __________.

**QUESTION 40**
One drawback of the compound eye is that it has difficulty focusing a single, coherent sharp image. This is because of its __________.

**QUESTION 41**
Digital information is stored by a computer converting the information into __________ numbers.

**QUESTION 42**
The eye and the camera can be thought of as image-producing technologies. One (the eye) happens to be a natural technology, while the other (the camera) is a __________.

**QUESTION 43**
The process of creating a big picture or a message out of smaller pictures or colored tiles is similar to the process of digital imaging. The small elements that make up a picture, or a stadium image, are called pixels. More pixels that make up a picture, the higher the __________.

**QUESTION 44**
The greatest advantage to digital imaging is that the pictures don’t have to be __________.

**QUESTION 45**
A digital image can also capture different parts of the electromagnetic spectrum, enabling scientists and other observers to learn more about things that appear to be invisible. The different colors that are captured in a thermogram image show scientists and observers this part of the electromagnetic spectrum __________.

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**SCIENTIFIC ILLUSTRATION 1**
Label the optical parts of the binoculars:
Identify the parts of the microscope:

2. __tube__
6. __objective lens__
9. __stage__
10. __coarse adjustment__
14. __switch (power)__

Ray Diagram 1
Illustrate a ray diagram showing how light travels when it hits a mirror.

BONUS: The law of \textit{Reflection} – the angle of the incoming light ray to the mirror from the light source = angle of incidence = equals the angle leaving the mirror = angle of reflection

Ray Diagram 2
Illustrate a ray diagram showing how light (C beams) from a ray box travels when goes through a double convex lens.

BONUS: The law of \textit{Refraction} – as light enters a medium of greater density, the light ray will bend toward the normal – if light enters a medium of lesser density, it will bend away from the normal.

Explain fully the LAW of LIGHT this ray diagram illustrates