



## Space Exploration - Section 3 -

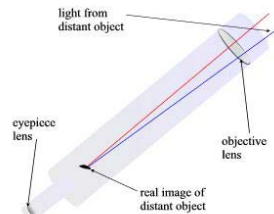
Optical telescopes, radio telescopes, and other technologies advance our understanding of space.

Name \_\_\_\_\_

Class \_\_\_\_\_

### 3.1 Using Technology To See the Visible

1.



This type of telescope is a ...

- A. reflecting
  - B. refracting**
  - C. complex
  - D. compound
2. To build bigger and better telescopes, builders use a method called ...
- A. spin casting
  - B. fly fishing
  - C. baiting
  - D. trolling
3. One of the newest innovations for ground-based optical reflecting telescopes is the use of ...
- A. metal instead of glass
  - B. liquid instead of glass
  - C. segmented mirrors**
  - D. mirror arrays
4. *Interferometry* is a technique of using telescopes in combination. The advantage of using two or more telescopes together is that astronomers are able to ...
- A. work together
  - B. see more detail**
  - C. hypothesize about images
  - D. create more colorful images
5. The **Hubble Space Telescope** offers a solution to the problems faced by astronomers on the Earth. Despite the remote mountain locations of ground-based telescopes to get away from light and air pollution, astronomers on the Earth still have to deal with interference caused by ...
- A. noise
  - B. aircraft
  - C. weather**
  - D. earthquakes

### 3.2 Using Technology to See Beyond the Visible

6. Optical telescopes give us information based on visible light. However, objects in space, such as stars and galaxies, also emit many forms of electromagnetic energy. The energy form that has the longest wavelength is ...
- A. infrared
  - B. gamma
  - C. x-ray
  - D. radio**



7. The electromagnetic spectrum identifies the many forms of electromagnetic energy. We can only see the visible light, but bees and other insects can see this form of electromagnetic energy ...
- A. x-rays
  - B. infrared
  - C. **ultraviolet**
  - D. microwaves
8. Although **neutral hydrogen** (which makes up a large bulk of matter in space) emits no light, it does emit energy at a specific wavelength. Astronomers are able to map out this neutral hydrogen in our Milky Way galaxy by using these type of telescopes ...
- A. **radio telescopes**
  - B. infrared telescopes
  - C. refracting telescopes
  - D. interferometry telescopes
9. Radio Interferometry, the combinations of many radio telescopes enables astronomers to improve performance and accuracy of images. They can more accurately measure position if they are ...
- A. at a higher altitude
  - B. closer to sea level
  - C. closer together
  - D. **further apart**
10. Another way to get information about distant objects in space is to send out a **space probe**. These probes are unmanned satellites, or remote-controlled 'landers' that place equipment close to a place where humans have not been able to get to. '**Spirit**' and '**Opportunity**' are two probes that have recently been sent by **NASA** to get information about ...
- A. Mercury
  - B. **Mars**
  - C. Titan (Jupiter's moon)
  - D. Comet Halle-Bop

### 3.3 Using Technology to Interpret Space

11. If you have a baseline and know the angles to an object - an unknown distance away - you can accurately determine its actual distance away by using this method ...
- A. trigonometry
  - B. interferometry
  - C. **triangulation**
  - D. base ten math
12. **Parallax** is the *apparent shift in position of a nearby object when the object is viewed from two different positions*. Astronomers use a star's parallax to determine ...
- A. **what angles to use when they triangulate the star's distance from Earth**
  - B. its orbital velocity and rotation compared to the Earth
  - C. its actual distance from our Sun, measured in parsecs
  - D. the degree of shift that will account for its relative position in the night sky
13. A police officer might pull you over because you were speeding. The officer can prove you were traveling at a certain speed because the radar device that is used sends out a radio signal that reflects off your vehicle. The difference in wavelength is the speed you are traveling. This is a practical everyday application of this scientific principle - the ...
- A. parallax effect
  - B. spectrometer effect
  - C. ripple effect
  - D. **doppler effect**