Name _____ Class_____Date_____

Skills Worksheet

DR 18-2 pgs. 558 – 563

Section: Telescopes

1. An instrument that gathers electromagnetic radiation and concentrates it for better observation is a(n) _____.

2. The most common type of telescope is the _____telescope.

OPTICAL TELESCOPES

_____ 3. An optical telescope is an instrument that
   a. collects and focuses visible light for closer observation.
   b. collects and focuses invisible light for closer observation.
   c. collects visible light and breaks it apart.
   d. collects invisible light and breaks it apart.

_____ 4. The simplest optical telescope contains
   a. an objective lens and a mirror.
   b. two objective lenses.
   c. an obtuse lens and a lens in the eyepiece of the telescope.
   d. an objective lens and a lens in the eyepiece of the telescope.

5. What is the function of the objective lens?

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_____

_____

6. What is the function of the lens in the eyepiece?

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_____

_____

Two types of optical telescopes are refracting telescopes and reflecting telescopes. In the space provided, write FR if the phrase describes a refracting telescope and FL if the phrase describes a reflecting telescope.

_____ 7. uses lenses to gather and focus light

_____ 8. uses mirrors to gather and focus light

_____ 9. used by most professional astronomers

_____ 10. cannot focus images perfectly

_____ 11. focuses all colors of light to the same focal point

_____ 12. distorts images if lens is too large

_____ 13. can use large mirrors to gather light

_____ 14. flaws in the glass don't affect the collected light

15. What are two disadvantages of refracting telescopes?

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16. What are three advantages of reflecting telescopes?

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17. What do very large reflecting telescopes use to gather more light and focus it in one spot?

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18. How does the Earth's atmosphere affect the light gathered by telescopes on Earth?

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19. Why is a mountaintop a good place on Earth to put a telescope?

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20. What is the best place to put a telescope? Explain why.

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THE ELECTROMAGNETIC SPECTRUM

_____ 21. What did James Clerk Maxwell prove about visible light?
   a. It is the only form of radiation.
   b. It is made up of magnetic elements.
   c. It is part of the electromagnetic spectrum.
   d. It cannot be detected by the human eye.

_____ 22. Each color of light on the electromagnetic spectrum has a
   a. different form of magnetic energy.
   b. different wavelength of electromagnetic radiation.
   c. different type of gamma rays.
   d. different type of radio waves.

_____ 23. Humans can see radiation from
   a. ultraviolet light.
   b. infrared light to ultraviolet light.
   c. infrared light.
   d. red light to blue light.

24. Place the following types of radiation in order from shortest wavelength to longest wavelength: microwaves, gamma rays, radio waves, X rays.

_____

_____

Each of the following wavelengths is either blocked or unblocked by the Earth's atmosphere. In the space provided, write B if the wavelength is blocked and U if the wavelength is unblocked.

_____ 25. infrared light

_____ 26. gamma rays

_____ 27. X rays

_____ 28. visible light

_____ 29. microwaves

NONOPTICAL TELESCOPES

30. Why do astronomers study the entire electromagnetic spectrum?

_____

_____

_____

31. Radio telescopes are much larger than _____ telescopes because radio wavelengths are much longer than optical wavelengths.

32. The _____ of a radio telescope can be more flawed than the lenses and mirrors of an optical telescope.

33. Why can chicken wire be used as the surface of a radio telescope?

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34. Why have scientists put ultraviolet, infrared, gamma-ray, and X ray telescopes in space?

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