Telescope Scavenger Hunt (Teacher)

Use the website http://amazingspace.org/resources/explorations/groundup/ to complete this scavenger hunt.

1. Telescopio is the Greek word for telescope.

2. While he did not make the first telescope, Galileo was the first to point his telescope at the heavens.

3. Kepler made this improvement to the refracting telescope. Kepler replaced the concave eyepiece with a convex lens. He also discovered that the lens should not be spherical.

4. The maximum diameter of the refracting telescope was 40 inches.

5. Isaac Newton was a great scientist who, besides associating gravity with planetary motion, created the first reflecting telescope.

6. Distinguish between refracting and reflecting telescopes. A refracting telescope uses a convex lens to bend light to a focal point. A reflecting telescope uses one or more mirrors to gather and reflect light to a focal point.

7. Reflecting telescopes more commonly used in astronomy because Newton found that replacing a lens with a mirror eliminated chromatic aberration since the light was not split into different wavelengths. Also reflecting telescopes could have greater magnification even with a smaller size and were much more powerful.

8. Spherical aberration is caused by multiple focal points from the same mirror. It was resolved by using parabolic mirrors instead of spherical ones.

9. Atmospheric distortion can be reduced or avoided by constructing a telescope at a high elevation or sending it into space.

10. What are some advantages of radio telescopes? Radio telescopes can be used during the day as well as during cloudy or stormy weather. Radio waves reach the ground undistorted by the atmosphere.

11. Celestial objects are blurry when we see them from earth because of atmospheric distortion – the unpredictable bending of light as it passes through warm and cold pockets.

12. Name the four orbiting telescopes developed by NASA and what types of radiation they can detect.
    a. Hubble – Ultraviolet, visible, infrared
    b. Compton Gamma Ray Observatory
    c. CHANDRA X-ray Observatory
    d. Spitzer Space Telescope – Infrared

13. One disadvantage of space telescopes is they are very expensive to build and launch. They cannot be as big as ground observatories. Upgrading them may be difficult or impossible.