COSMOS – A Sky full of Ghosts

Pay very close attention to the very beginning of this episode. In it, is the basis for everything we see, everything we discover.

1. \_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can create realities that lie beyond human experience.
   1. Light, space-time, speed, gravity
   2. Light, time, space, gravity
   3. Time, gravitational force, conjecture, imagination
   4. Space-time, gravity, light, planets
2. Every star is as big and bright as our own Sun.
   1. True
   2. False \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Some stars that are very far away means that their light could take a couple of years to be seen on earth.
   1. True
   2. False \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. William Herschel was the first person to…
   1. Understand that a telescope is a time machine
   2. State that stars are born in cosmic nurseries
   3. Hypothesize that stars vary in brightness and size due to distance
   4. Understand faster than light travel
5. Light travels at…
   1. 1 billion miles per hour
   2. 186,000 miles per second
   3. Very infrequent intervals near planets and suns
   4. A speed that can be calculated using flashlights
6. Sun light takes about…
   1. 3 minutes to reach the earth
   2. 6 minutes to reach the earth
   3. 8 minutes to reach the earth
   4. 12 minutes to reach the earth
7. A light year can be considered to be the yard stick off the Cosmos
   1. True
   2. False \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
8. Voyager is NASA’s farthest traveling space craft. Its speed is 56,000 KPH. How long would it take Voyager to reach our nearest star?
   1. 80 years
   2. 800 years
   3. 8,000 years
   4. 80, 000 years
9. What moves faster than light?
   1. Nothing
   2. A pulsar’s light
   3. Outgassing from a supernova
   4. Dark matter
10. Clouds of Hydrogen and Helium condensed into stars and light over 100 billion years ago. But planets formed not while these stars were created. Planets were formed by the death of stars.
    1. True
    2. False \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
11. Gravity that holds us to the earth uses the exact same principal that governs the stars and planets of the Cosmos.
    1. True
    2. False \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
12. Gravitational waves move through the universe…
    1. At 10,000 miles per hour
    2. At the speed of light
    3. By bouncing off of larger stars
    4. Near planets, moons, stars and galaxies
13. There is no “fixed” place in the Cosmos. All is in motion.
    1. True
    2. False \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
14. An “event horizon” as it pertains to a black hole is…
    1. The point where gases disappear
    2. The point where the black hole and the rest of space is separate
    3. The reason why light cannot be seen in a black hole
    4. Where gravity is no longer a part of the black hole
15. Today, we know exactly what happens inside a black hole.
    1. True
    2. False \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Extra credit: Draw a picture of a black hole and identify the following: (max three points)

Event horizon - Singularity - accretion disk