## Reading Part 3: Reading for Information

**Time: 10 minutes**

**Read the following message:**

**A.** Don't let the name fool you: a black hole is anything but empty space. Rather, it is a great amount of matter packed into a very small area - think of a star ten times more massive than the Sun squeezed into a sphere approximately the diameter of New York City. The result is a gravitational field so strong that nothing, not even light, can escape. In recent years, NASA instruments have painted a new picture of these strange objects that are, to many, the most fascinating objects in space.

**B.** The idea of an object in space that is so massive exists somewhere in the universe has been around for centuries. Most famously, black holes were predicted by Einstein's theory of general relativity, which showed that when a massive star dies it leaves behind a small, dense remnant core. If the core's mass is more than about three times the mass of the Sun, the equations showed, the force of gravity overwhelms all other forces and produces a black hole.

**C.** Scientists can't directly observe black holes with telescopes that detect x-rays, light, or other forms of electromagnetic radiation. We can, however, infer the presence of black holes and study them by detecting their effect on other matter nearby. If a black hole passes through a cloud of interstellar matter, for example, it will draw matter inward in a process known as accretion. A similar process can occur if a normal star passes close to a black hole. In this case, the black hole can tear the star apart as it pulls it toward itself. As the attracted matter accelerates and heats up, it emits x-rays that radiate into space.

**D.** Most black holes form from the remnants of a large star that dies in a supernova explosion. If the total mass of the star is large enough (about three times the mass of the Sun), it can be proven theoretically that no force can keep the star from collapsing under the influence of gravity. However, as the star collapses, a strange thing occurs. As the surface of the star nears an imaginary surface called the "event horizon," time on the star slows relative to the time kept by observers far away. When the surface reaches the event horizon, time stands still, and the star can collapse no more - it is a frozen collapsing object.

**E. Not given in any of the above paragraphs.**

**Decide which paragraph, A to D, has the information given in each statement below. Select E if the information is not given in any of the paragraphs.**

1.Small stars can become black holes if certain conditions are met.
(☐)
2. An enormous amount of condensed mass will cause a strong force that will pull in any objects.
(☐)
3. Human naked eyes cannot see black holes.
(☐)
4. According to the theory, an object less than three times the mass of the sun will not create a black hole.
(☐)
5. Some remnants of a star become asteroids.
(☐)
6. Black holes are relatively recent discoveries made by astrophysicists.
(☐)
7. Scientists discern a black hole by looking at the surrounding objects.
(☐)
8. An explosion of a star can create a black hole.
(☐)
9. Moving closer to the event horizon will slow down the passage of time.
(☐)