Science Face-Off

Grade 5 Name: _____

Read the science passage comparing two topics. Then use evidence from the text to answer the questions.

Science facts: use exact numbers, names, and examples from the passage as your evidence.

Stars vs Planets: Celestial Neighbors

In the vast expanse of space, we find countless celestial objects, two of the most common being stars and planets. **Both** are fundamental components of galaxies, and **both** are roughly spherical in shape due to their immense gravity. However, their nature and roles in the universe are profoundly different.

The most significant distinction is how they produce light and heat. Stars are colossal cosmic furnaces, generating their own immense energy through nuclear fusion, a process where lighter elements like hydrogen combine to form heavier ones, releasing enormous amounts of heat and light. Our Sun is a perfect example of a star. **In contrast**, planets do not produce their own light; instead, they reflect the light from a nearby star. This is why planets appear to shine, but their glow is merely reflected starlight.

Another key difference lies in their composition and size. Stars are primarily composed of hot gases, mainly hydrogen and helium, and are typically much larger and more massive than planets. For instance, the Sun is over a million times larger than Earth in volume. **While** planets can vary greatly in size and composition, from rocky worlds like Mars to gas giants like Jupiter, they are all considerably smaller than the stars they often orbit.

The relationship between a star and its planets is one of cause and effect. A star's powerful gravitational pull is what keeps planets in stable orbits around it. Without this gravitational force, planets would simply drift off into space. This gravitational interaction is crucial for the formation and stability of solar systems, including our own.

Scientists continue to discover exoplanets—planets outside our solar system—orbiting distant stars. This ongoing research fuels a scientific debate: how common is life in the universe? The presence of a stable star and planets within its "habitable zone" (where temperatures allow for liquid water) is considered essential for life as we know it. **Unlike** stars, which are active energy sources, planets provide the diverse environments where life might potentially thrive.

COMPREHENSION QUESTIONS

(1) Which celestial body generates its own light and heat?

(A) Stars (B) Planets (C) Both (D) Neither

(2) Which celestial body typically orbits another, larger body?

(A) Stars (B) Planets (C) Both (D) Neither

(3) "Both are roughly spherical in shape." Is this a SIMILARITY or DIFFERENCE?

(A) Similarity (B) Difference

(4) "Stars are primarily made of hot gases, while planets can be rocky, gaseous, or icy." Is this a SIMILARITY or DIFFERENCE?

(A) Similarity (B) Difference

(5) Use a detail from the passage to explain ONE way stars and planets are similar.

(6) Which concept do you think is more important for life on Earth? Use TWO facts from the passage.