Name _____ Class _____ Date _____

Skills Worksheet **INTEGRATING PHYSICS**

Cross-Disciplinary

Plasma

Read the following paragraphs, and complete the exercises below.

You are familiar with the three common states of matter: solid, liquid, and gas. But did you know that these three states make up less than 1 percent of all matter? Although these states are common on Earth, most scientists believe that over 99 percent of the matter in the universe exists in a fourth state, called *plasma.*

Plasma is a mixture of positively charged ions and free electrons. When a gas is heated to a very high temperature, most of the electrons are separated from their atoms, and the gas becomes a plasma. Plasma is considered to be a fourth state of matter because its properties are different from those of solids, liquids, or gases.

WHERE PLASMA IS FOUND

Why is there so much plasma in the universe? The interiors of stars, including the sun, contain hot, dense plasmas. Stars are far more numerous than other types of celestial bodies such as planets. In addition, the space between stars contains plasma, although it is much less dense than the plasma found within stars.

Plasma is not as common on Earth, but it does exist. In fact, the glowing gas inside a neon sign is a plasma. Rarer but more spectacular examples of plasma are the flickering, colorful bands of light sometimes seen in the sky near Earth's poles. These displays, known as *aurora borealis* (in the north) and *aurora australis* (in the south), occur when plasma from the sun encounters Earth's magnetic field.

EXERCISES

1. Describe what plasma is, and name three examples of plasmas.

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2. How can plasma be the most common state of matter, since most matter we observe is either a solid, a liquid, or a gas?

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3. How is plasma different enough from a gas to be called a fourth state of matter?

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