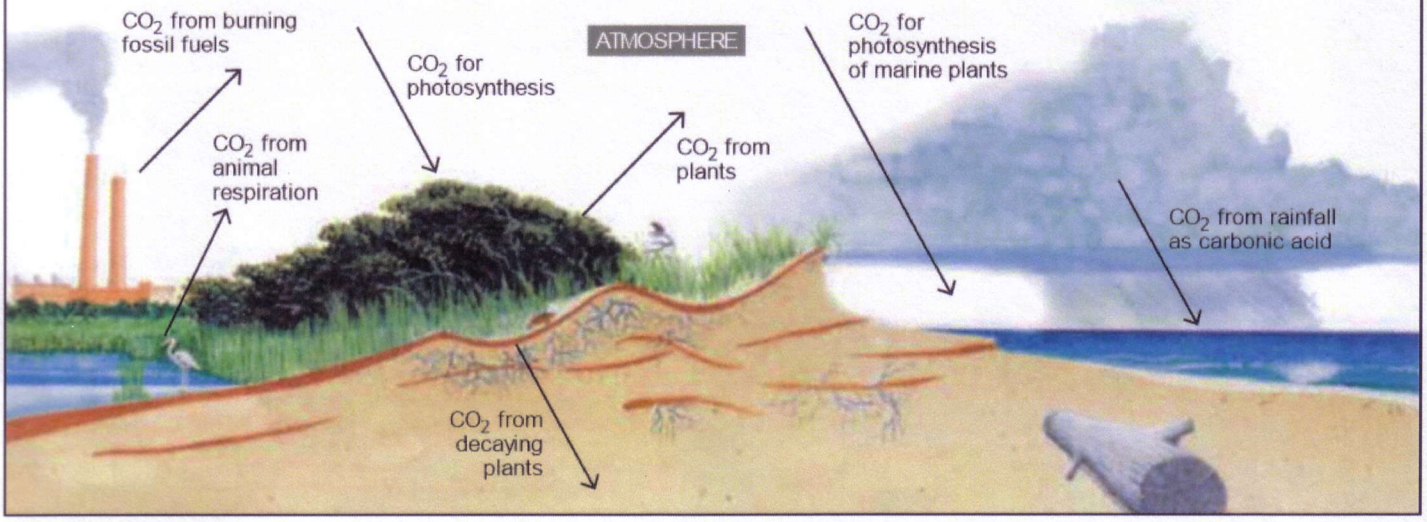
Name: _____

# CARBON ON THE MOVE

In "The Ivory War" (p. 8), you learned that scientists are able to find the age of elephant tusks by examining the amount of radiocarbon in the ivory. This element is incorporated into the tusks from plants that the elephant eats. The diagram below shows Earth's carbon cycle, or the processes by which carbon is transferred through the environment. Study the diagram and then answer the questions that follow.

## THE CARBON CYCLE

All living things contain the element carbon, as do the air, oceans, and rocks. Carbon circulates through the environment mostly in the form of carbon dioxide ($CO_2$) gas. Plants absorb $CO_2$ from the air to make their own food through photosynthesis. The element becomes incorporated into the plant tissue. Decomposing plants and animals release carbon into the soil and atmosphere. Many other processes release $CO_2$ gas, such as when animals exhale. Burning fossil fuels, which are made of ancient plants and animals, also releases $CO_2$. The oceans absorb $CO_2$, some of which is used by marine animals to make their shells.




## QUESTIONS

**1.** In which state of matter is most of the carbon that circulates around Earth?

**2.** Use your own words to explain how plants move carbon through the environment.

**3.** What are two processes that release $CO_2$ into the atmosphere?

**4.** Why do fossil fuels contain carbon?

**5.** What is one way that humans could decrease the amount of $CO_2$ in the atmosphere?

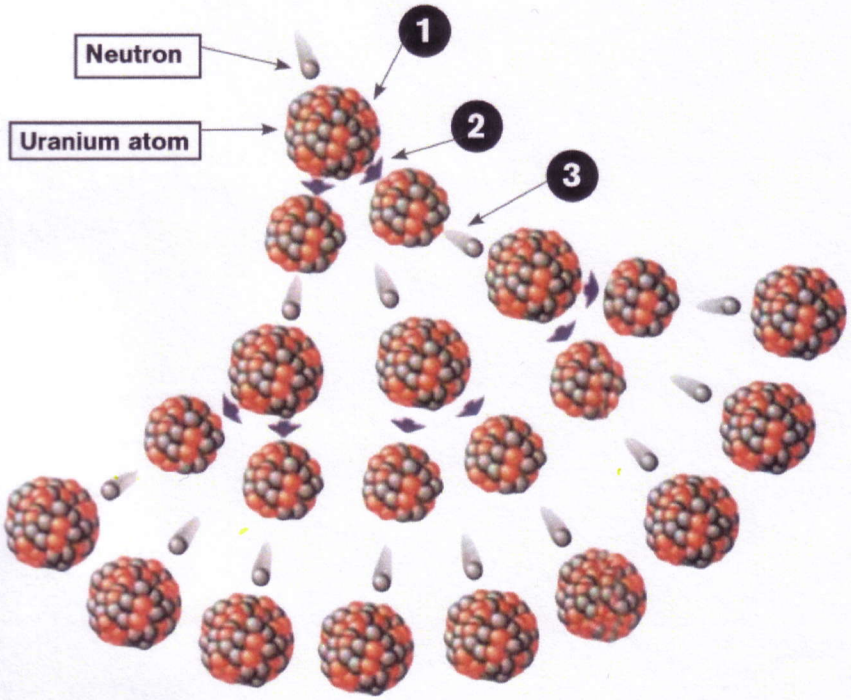
Name: _____

# ENERGY BLAST

In "The Ivory War" (p. 8), you learned that nuclear bomb testing in the 1950s released materials into the air that help scientists determine the age of elephant tusks. The diagram below shows how an explosion in a nuclear bomb is set off. Use the diagram to answer the questions that follow.

### CHAIN REACTION

A nuclear bomb's explosive power comes from a series of nuclear reactions. Most nuclear bombs rely on fission, in which the nucleus, or center, of an atom is split. Fission causes a chain reaction that releases massive amounts of energy in an explosion.




1. The nucleus of a uranium atom contains positively charged protons and uncharged neutrons. The nucleus splits when a free neutron hits it.

2. When the nucleus splits, it releases two or three free neutrons. The split also produces energy in the form of heat and radiation.

3. The released neutrons strike the nuclei of other uranium atoms, causing a chain reaction.

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## QUESTIONS

1. What type of atom is represented in the diagram?

2. What particles are contained inside the atoms?

3. What causes the atom's nucleus to split?

4. What types of energy are released from a nuclear bomb?

5. What is one factor that would cause a chain reaction to stop?