



This worksheet is based on National Public Radio's "Climate Connection" video series, available online at: <http://www.npr.org/news/specials/climate/video/>

Begin by watching the video(s) that your instructor directs you to view.

1) Cut out the atom cartoons from the next page (carbon, hydrogen, oxygen).

2) Arrange the cut-out cartoon characters to create the following molecules:

methane (CH_4)

carbon dioxide (CO_2)

atmospheric oxygen (O_2)

water (H_2O)

glucose ($\text{C}_6\text{H}_{12}\text{O}_6$)

fossil carbon, such as coal (C)

3) Tell the following "stories" (chemical reactions) using the cut-out characters as "actors" playing out the story on the "stage" of the final page of this handout:

A) **Photosynthesis:** In a plant, carbon dioxide and water combine to make glucose.

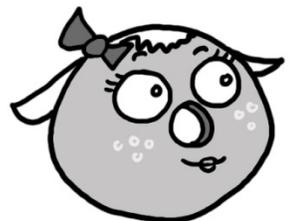
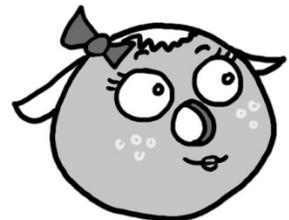
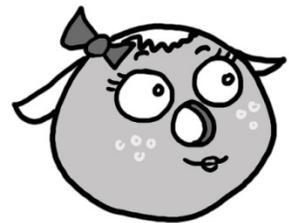
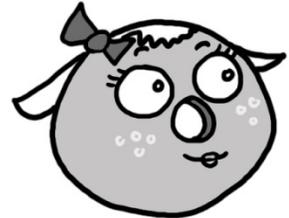
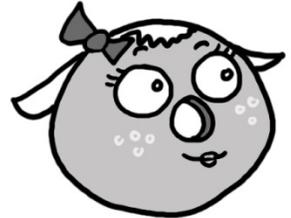
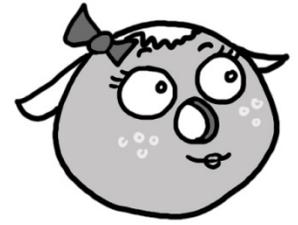
B) **Respiration:** An animal of your choice eats glucose, and breaks it down to make carbon dioxide and water.

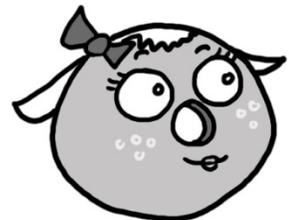
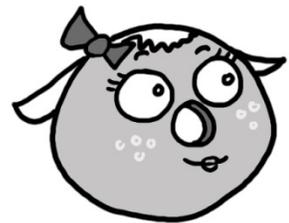
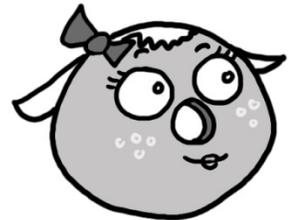
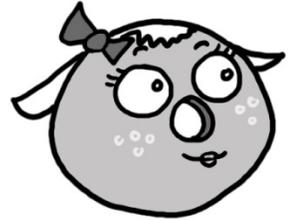
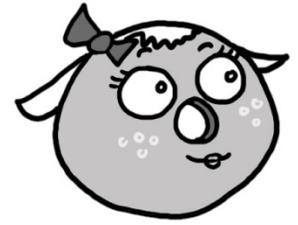
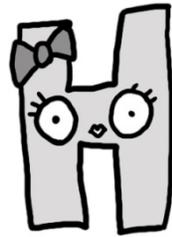
C) **Geological carbon sequestration:** A plant full of glucose gets buried by sea level rise, and compression drives off the hydrogen and oxygen, leaving only carbon.

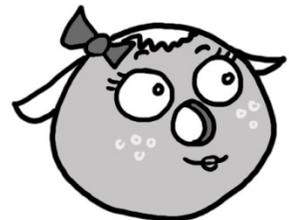
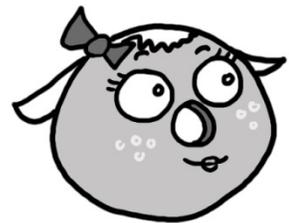
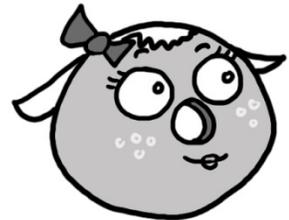
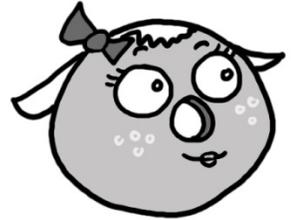
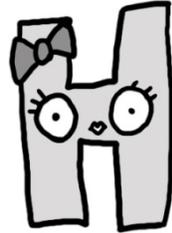
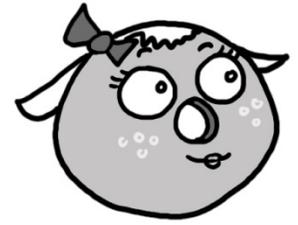
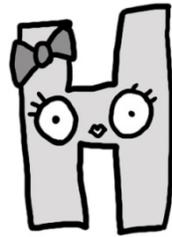
D) **Fossil fuel burning:** Geologically sequestered carbon gets dug up and combined with atmospheric oxygen to produce carbon dioxide.

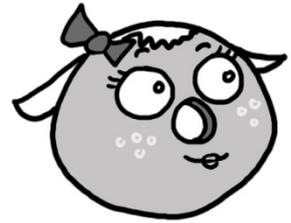
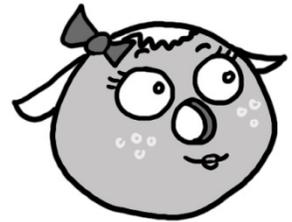
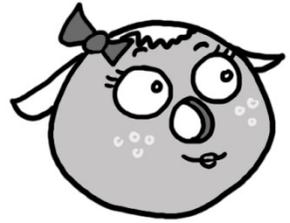
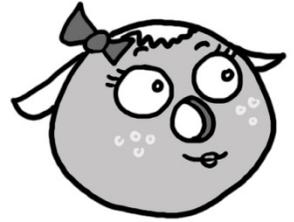
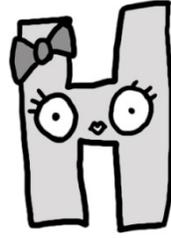
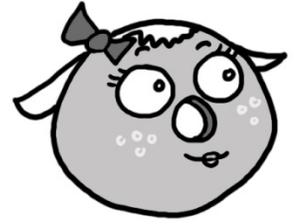
Multiple copies of the "stage" are provided for the different "acts" of your story.

4) Pick one of the four chemical "stories." Add unique details to your story to make it more memorable. Make your story as compelling and memorable as possible. Write it out in detail, like instructions for a play, on a separate piece of paper. Glue or tape the cartoon chemical "actors" to the "stage" sheet (multiple copies are provided so you can show "before" and "after") and submit the results to your instructor at the beginning of class. You may add other elements to your story if you need to. (For instance, a calcium atom will be needed if your story will feature the CaCO_3 that makes up the shells of many marine creatures.)









ATMOSPHERE

PLANT

ANIMAL

FOSSIL FUEL

ATMOSPHERE

PLANT

ANIMAL

FOSSIL FUEL

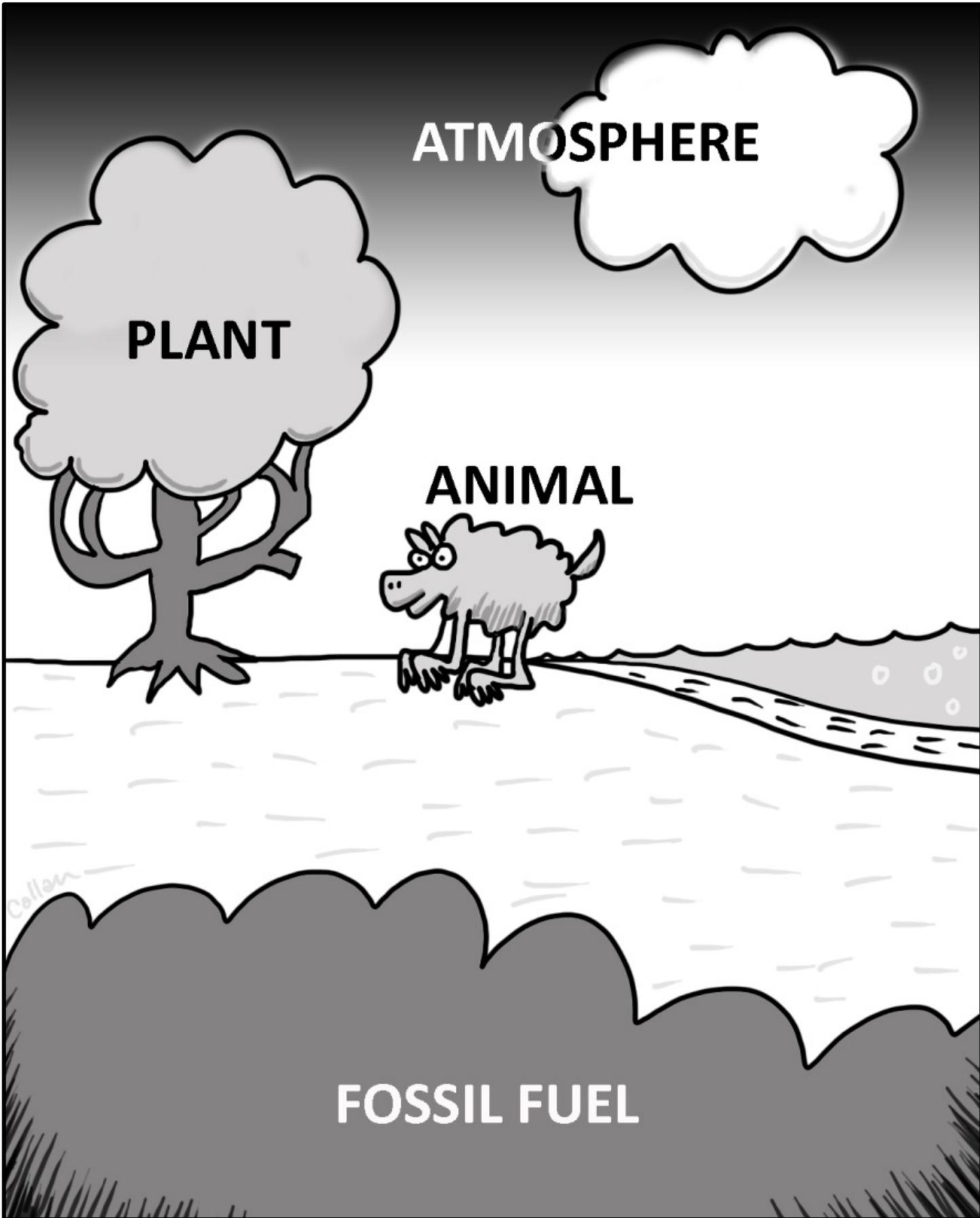
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ATMOSPHERE

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FOSSIL FUEL



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