



Pathfinder's Name

Hot Air Balloon

1. State the role each of the following played in the development of flying balloons.

Joseph Michel Montgolfier and Jacques-Etienne Montgolfier

Jean Francois Pilatre de Rozier and Francois Laurent Marquis d'Arlandes

Jacques Alexandre Cesar Charles and Nicolas Louis Robert

Ben L. Abruzzo, Maxie L. Anderson, and Larry Newman

Bertrand Piccard and Brian Jones

2. Cite the principle of Archimedes, and briefly describe how it applies to each of the following:

A piece of cork floating in a bowl of water

A ship floating in the ocean

A hot air balloon floating in the atmosphere

- 3. Using a textbook of Chemistry, or a reference book of scientific tables, draw up a simple table showing the composition of air by weight and by volume.

- 4. Draw up a simple table showing a comparison of the atomic number, atomic weight, and density of hydrogen, helium, nitrogen, and oxygen.

- ❑ 5. Name two gases that are used in flying gas filled balloons.
 1. _____
 2. _____

- ❑ 6. Explain how heat/temperature affect the density of air, and how this applies to flying hot air balloons.

- ❑ 7. Explain the role of each of the following in the structure and flying of a hot air balloon.
Envelope _____

Support structure _____

Throat _____

Fuel source _____

- ❑ 8. Name two materials that may be used for the envelope of a hot air balloon, and compare the advantages each cords because of its properties.

- 9.** Describe how flying balloons have served a useful function in
 Military campaigns _____

 Scientific research _____

- 10.** At what time of the day do most sport balloon flights take place? Why?

- 11.** Describe how a pilot controls the vertical movement of
 A hot air balloon _____

 A gas filled balloon _____

- 12.** Describe how a pilot controls the lateral or horizontal movement of a
 flying balloon.

- 13.** Build to completion one model hot air balloon (or two if working in
 pairs).
- 14.** Successfully launch, fly, and recover the model hot air balloon(s) which
 you have built.

Date completed _____

Instructor's Signature _____