

Michael Arrasmith
Up, Up and Away

The purpose of this project was to identify the best amount of heat to lift a hot air balloon. I hypothesized that if the internal temperature of the balloon is increased, then the height of ascent would be increased. The experiment involved constructing a launch platform for the balloon as well as creating a balloon out of a dry cleaning bag. With the balloon positioned on the launch platform, the balloon was heated with a propane torch to a pre-determined temperature and released. I recorded the height of the balloon's ascent in relation to height marks on the wall. I held a video camera so that multiple people could view the results afterward. I performed the test 3 times for each of 5 temperatures (35°C, 40°C, 45°C, 50°C, and 55°C). The data collected partially supported the original hypothesis. The height did increase for each increase in temperature, but it appears that if higher temperatures were recorded, the height of ascent would eventually level off. 35°: 1.17 meters; 40°: 3.07 meters; 45°: 4.52 meters; 50°: 5.43 meters; and 55°: 5.80 meters. The launch height seemed to begin to plateau as the temperature increased. These findings led me to conclude that the hotter the inside of a hot air balloon is during launch, the higher the balloon will rise until a certain temperature is reached; however, higher temperatures must be tested in order to confirm results.