

# GRANDMA'S APPLE PIE

## Introduction

Scientists have been studying the origins of the universe for much of history. Our recent classroom study has focused on this, by taking a critical look at the origins and "life cycle" of matter. This problem is designed to give you the opportunity to showcase what you know about where we come from.



Carl Sagan is quoted as saying that, "To make an apple pie from scratch you must first invent the universe." Your group's problem is to create a presentation that illustrates the meaning of this statement. You will pick an element that can be found in good old American apple pie and trace its evolutionary history back to the birth of the universe itself. You will also share your vision of the environment in which that element may find itself 5 or so billion years from now after the Earth is long gone. Your discussion should address briefly the constant recycling of elements here on earth, as well as the formation of elements in the cores of active stars and supernovae. You must describe the way in which these elements were dispersed from the star through space and ultimately to the Earth. Both your tracing of the element back through time and your creative vision of that element in the future should show a solid understanding of the "life cycle" of matter. Each presentation should also include an artistic element - an original song, an illustration, a poem, a video, etc. that better explains the scientific concepts you are trying to illustrate.

Grading  
Accuracy of scientific content 40%  
Quality of Presentation 20%  
Creativity of the artistic element. 20%  
Successfully addressing all aspects of the problem. 20%

20%

# Problem Limitations

- *Your group has 1 week to complete this assignment.*
- *Every member of the group must participate in the presentation or contribute to design of the artistic element.*
- *The group must address all parts of the problem in their presentation.*
- *Each presentation should be less than 15 minutes in length.*
- *Each presentation must contain an artistic element that complements the material being discussed.*
- *Each presentation must show a solid understanding of the scientific concepts being discussed.*