

For those of you who don't yet have a textbook, homework assignment #3 will be difficult. This document should make the homework much easier.

You need to read the following paragraph and answer the two underlined questions. This paragraph appears on page 8 of the textbook.

Part 1

See It For Yourself

Using a star chart (such as those in Appendix J), find the Andromeda Galaxy in the night sky. If you have a dark site, you should be able to see a glow from its central regions with your naked eye; otherwise, try to find it with binoculars. Contemplate the fact that the light entering your eyes traveled freely through space for some 2.5 million years before finally being absorbed on your retina. Then ask yourself: If students on a planet somewhere in the Andromeda Galaxy are doing the same activity but looking at the Milky Way, what would they see? Could they know that we exist here on Earth? Explain.

Part 2

- Read the two “Common Misconceptions” on pages 7 and 13 (copied below). Then ask 5 people **not in an astronomy class** about the misconception, using the examples below. **Write down and submit their answers AND THEIR explanations.** If the people you interview ask you a question you can't answer, share it with the class next time we meet or write it on your paper. I urge you to explain the real situation to the people you interview who get it wrong, but that's optional.
 - EXAMPLE 1: For the misconception on page 7, ask “Is the following statement reasonable or correct: ‘It will be light-years before anyone builds a better product?’”
 - EXAMPLE 2: For the misconception on page 13, ask “Which is bigger, the solar system, the galaxy, or are they the same?”

Common Misconception, page 7

The Meaning of a Light-Year

You'll sometimes hear advertisements say things like “It will be light-years before anyone builds a better product.” But this statement doesn't really make sense, because light-years are a unit of *distance*, not time. If you are unsure whether the *light-year* is being used correctly, try testing the statement by remembering that 1 light-year is approximately 10 trillion kilometers, or 6 trillion miles. The statement then reads “It will be 6 trillion miles before anyone builds a better product,” which clearly does not make sense.

Common Misconception, page 13

Confusing Very Different Things

Most people are familiar with the terms *solar system* and *galaxy*, but people sometimes mix them up. Notice how incredibly different our solar system is from our galaxy. Our solar system is a single star system consisting of our Sun and the various objects that orbit it, including Earth and the other planets. Our galaxy is a collection of more than 100 billion star systems—so many that it would take thousands of years just to count them. Thus confusing the terms *solar system* and *galaxy* means making a mistake by a factor of 100 billion—a fairly big mistake!