

Answering Homework Assignments

Try to use your own words as far as possible (I like that and will ignore grammatical errors provided your meaning is clear). You can also quote from books and internet articles. You will discuss most homework questions in class and see student responses to them in PollEverywhere. If you use words from a published source, including responses you or other students submitted to PollEverywhere, you MUST reference it as shown in the example below. Not referencing someone else's published words would be *plagiarism*. You will not receive much credit if you just copy a whole section from a published source, hoping that the answer is in there somewhere; pick out particular sentences that address exactly the question asked.

While you can certainly discuss your answers with other students, homework submissions should be your own work. If *any* of your wording is exactly the same as on someone else's homework, it must be from a published, referenced source or from referenced PollEverywhere responses.

Plagiarism is a serious form of academic misconduct. It will result in a 0 on the entire homework for a first occurrence, and an F course grade if repeated.

Here is an example which gives you an idea of how much detail is required in answering a question to get full credit and how to reference sources.

What is the difference between Dark Matter and Dark Energy?

Dark matter is a hypothetical form of matter that is thought to account for approximately 85% of the matter in the universe, and about a quarter of its total energy, possibly being composed of some as-yet undiscovered subatomic particles.¹ Its existence is inferred from its gravitational pull on the visible stars, especially the way galaxies are observed to rotate. The particles that constitute Dark Matter must be individually very massive, in order to produce such strong gravity on a galactic scale, yet interact very weakly or not at all via the other forces in nature². Dark matter does not emit or reflect light, hence the name "dark"³. Einstein discovered that it is possible for more space to come into existence and that empty space can possess its own energy, so-called "Dark Energy" or vacuum energy. As more space comes into existence, more of this energy-of-space would appear. As a result, this form of energy would cause the universe to expand faster and faster.⁴ This acceleration has recently been observed in astronomical observations of the red-shift of galaxies. The word "Dark" here simply means poorly understood. It turns out that roughly 68% of the universe is dark energy. The nature of both Dark Matter and Dark Energy are two of the biggest unsolved mysteries in physics.

1. https://en.wikipedia.org/wiki/Dark_matter, 8/20/2018

2. Ideas of Modern Physics, page 186.

3. PollEverywhere, 8/20/2018

4. <https://science.nasa.gov/astrophysics/focus-areas/what-is-dark-energy>, 8/21/2018