Discussion Question Answers
Strategies and Compromises:
Women in Astronomy at Harvard College Observatory

1. **What were the differences between the roles of the four women mentioned in the article?**
   - Williamina Fleming started out simply copying and computing, but worked her way up to supervising the other women and classifying solar spectra.
   - Antonia Maury also classified stellar spectra, but she did so with an advanced system of her own design. The director of the observatory, Pickering, did not like her system and so she left the observatory.
   - Annie Jump Cannon continued the spectra work of Maury, but used the standard system. She worked for 45 years doing classification work extremely quickly and consistently.
   - Henrietta Leavitt studied variable stars at first, identifying thousands of new ones. She also did the research assigned to her, which related to determining how stars appeared using different photographic techniques.

2. **What are the differences between their attitudes towards the roles they were assigned?**
   - Fleming accepted any work that was asked of her, but expanded the role of women’s work by her competence in accomplishing the tasks. She was privately bitter about the low pay and status of her work.
   - Maury thought that her intellectual contributions were worthy of credit and regard. She insisted on being recognized in the Observatory’s publications, and she fought for her system, which was based on star’s “natural relations” to be used. However, she did not succeed in getting the system used and so left the observatory.
   - Cannon did not mind the role she was assigned. She did it so quickly and well she eventually gained recognition and an honorary doctorate for he accomplishments.
   - Leavitt did original research and made discoveries on her own, but when she was asked to do different work by the observatory director, she chose to go along with it. She considered duty more important than individual research.

3. **Why was astronomy a field that women worked in and why did women become so prominent within the astronomical community?**
   - Starting in the late 1800s, astronomy started to become routinized. Astronomers wanted to look at very large numbers of star photographs and do calculations about all of them. Women were considered good at detail-oriented tasks that required attention to detail. They were also much cheaper to employ than men, so Harvard could hire many more women “computers” than male “assistant” or “technicians.”
Women became prominent because of their conscientiousness and patience in completing large numbers of routine tasks. They were able to accomplish much more as part of a team than a single person could do normally.

4. Why were so many women hired specifically at Harvard College Observatory, especially at a time when many women found it hard to get jobs in scientific fields?
- They were hired because they were cheaper for the Observatory and could pay closer attention to details than men.
- The director of Harvard Observatory was open to women doing science (as long as they followed his directions) and encouraged many women to apply.

5. What methods did the women use in order to have their work be recognized?
- Some tried to follow their instructions so thoroughly that it became an important contribution. For example, Annie Jump Cannon’s star catalogue.
- Antonia Maury tried to devise her own classification system and use it to classify stars. Though it was scientifically interesting, it was not accepted by the observatory director.
- Some tried to expand the role it was considered “proper” for women to have, by taking on additional responsibilities.

6. Was Harvard College Observatory forward thinking in the hiring of women, in your opinion?
- Answers will vary based on student interests.
- (Yes) Because Harvard realized women were as good, if not better, at classifying stars as men. They discovered many important things and made the observatory look good.
- (No) Because Harvard still thought women should only do the work assigned them, not think for themselves. They were only hired because they were cheaper than men.

7. In your opinion, why are the names of these women not better known?
- Answers will vary