

Cross-Curricular Discussion: Q

Directions: Reflection is both a part of science and a personal practice. The questions that follow will help you take notes, brainstorm ideas and test your thinking on reflection-related concepts in order to be more actively engaged in class discussions.

1. What is reflection? How can reflection be useful?

2. How much reflective thinking have you done in the past? What methods or practices did you use?

Scientific Reflection

1. What is wavelength?

2. What is the frequency of a wave?

3. What is the velocity of a wave?

4. What is constructive interference? What is destructive interference?

5. How are mirrors made?

6. What determines the direction that light reflects from a mirror?

7. The *Science News* article "[Perfect mirror debuts](#)," published 7/10/2013, and the accompanying *Science News for Students* article "[Perfect reflections](#)," published 7/18/2013, describe a new technology for creating a perfect optical reflection. What information do both of those articles report?

8. What facts did you learn from only the *Science News* article? What was included only in the *Science News for Students* article?

Historical Reflection

1. Most of the famous scientists, engineers and mathematicians we hear about, especially from the early history of science, were male. Give a few examples of women who have made significant contributions to science, math and/or engineering. Feel free to explore the resources listed below.

2. Do you think these scientific pioneers receive the recognition that they deserve? Why or why not?

3. What barriers have these scientists faced?

4. What scientist, mathematician, engineer or medical doctor do you find most inspirational? Why?

5. What are some similarities or differences between your interests and those of the person you find most inspirational?

6. What are some similarities or differences between your education and that of the person you find most inspirational?

7. What are some similarities or differences between your career goals and those of the person you find most inspirational?

8. What are some similarities or differences between obstacles that you have faced and those faced by the person you find most inspirational?

Self-Reflection and Practices

1. How did this school year go? Explain.

2. What have you accomplished over the past year that you are proudest of?

3. What have you learned over the past year that you are proudest of?

4. What challenges have you overcome over the past year?

5. What specific aspirations or goals do you have for the next year?

6. How could you measure your progress toward those goals?

7. What are your reflections on your academic achievement so far? List both positive personal accomplishments and areas of personal improvement.

8. What are your reflections on your personal characteristics? List both positive personal accomplishments and areas of personal improvement.

9. Are there benefits to reflection? If so, what are they?

10. Do you practice reflection daily, weekly, monthly? Explain.

11. What techniques for reflection could be useful on a regular basis?