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# Systems Engineering
Viewing Guide

## GRADES 9-12:
Career Field: Standard Engineering and Science Technologies

65:3: Describe postsecondary education and career opportunities in the field of Engineering.

## PROCEDURE:
In discussion before viewing *Systems Engineering*, the teacher may consider engaging students in discussion on any of the following topics:

- Systems Engineering integrates a number of other engineering disciplines to develop a number of different types of systems, e.g. a mechanical system with electrical components.
- Systems Engineers are degreed professionals.
- The field of Systems Engineering relies on support from many different disciplines to bring a project to completion.
- A common example of a system would be a car, which includes mechanical, electrical, and software components.
- Systems Engineers rely heavily on skills from the STEM content areas – Science, Technology, Engineering, and Math.
- Systems Engineers rely heavily on creative thinking skills in order to solve problems.

In discussion after viewing the *Systems Engineering* video, the teacher may have a follow-up discussion on the same topics discussed before viewing the video.

## BEFORE VIEWING:
Distribute the Agree-Disagree chart and the Pre and Post-viewing guide on the following page to provide focused viewing for students while watching the *STEM Career Lab* video, *Systems Engineering*.

Have each student complete the "Before Viewing" column on the Agree-Disagree Chart and the "What I Already Know" column of the Guided Viewing Worksheet. Let students know it's okay if they do not know all the answers.

## WHILE VIEWING:
Play the *Systems Engineering* video and instruct students to now fill out the "What I learned" Column. Students will make notes about their impressions of needed skills in science, technology, engineering and math and how they need to prepare to go into a career in Systems Engineering.

## AFTER VIEWING:
Have students complete the "After Viewing" column on the Agree-Disagree Chart. Discuss the changes in their answers, then use the Guided Viewing worksheet to facilitate a post viewing discussion with students.

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# Systems Engineering
## Discussion Tool: Agree-Disagree Chart

*(For use before and after viewing the video)*

**DIRECTIONS:**
Mark whether you agree or disagree with each statement in the left column before viewing the video. After viewing the video, identify whether you agree or disagree with each statement in the right column. Discuss each statement as a group.

| Before Viewing | Statement | After Viewing |
|---|---|---|
| Agree<br>Disagree | Systems Engineering as a career field is only for students who excel in STEM subjects. | Agree<br>Disagree |
| Agree<br>Disagree | Systems Engineering projects require teams of people with many different skills. | Agree<br>Disagree |
| Agree<br>Disagree | Systems Engineers integrate a number of different disciplines to develop a new product or a new technology. | Agree<br>Disagree |

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**Systems Engineering**
Guided Viewing

| | What I Already Know | What I Learned |
|---|---|---|
| 1. What is a Systems Engineer? | | |
| 2. What types of projects do Systems Engineers work on? | | |
| 3. True or False? Systems Engineering is a highly interdisciplinary field of engineering. | | |
| 4. Who is a good fit for the Systems Engineer career path? | | |
| 5. What are some of the STEM skills used on the job every day? | | |
| 6. What does a typical day on the job for a Systems Engineer look like? | | |
| 7. How do you prepare in high school to go into the field of Systems Engineering? | | |
| 8. What are some other courses, not STEM focused, that help you prepare for a career in Systems Engineering? | | |