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Architecture: Physics
Viewing Guide

GRADE 12:
Benchmark D: Physical Sciences

Forces and Motion

9. Describe how gravitational forces act between all masses and always create a force of attraction. Recognize that the strength of the force is proportional to the masses and weakens rapidly with increasing distance between them.

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

- Architecture is a field in which a strong background in STEM subjects is critical.
- Architects must take gravitational forces into consideration whenever they design a structure.
- Architects must possess an understanding of broad Physics principles including gravitational forces.

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

BEFORE VIEWING:
Have each student complete the "Before Viewing" column on the Agree-Disagree Chart.

WHILE VIEWING:
Students make notes about their impressions of what skills in science, technology, engineering, math and the arts they need to go into a career in architecture.

AFTER VIEWING:
Have students complete the "After Viewing" column on the Agree-Disagree Chart. Discuss the changes in their answers.

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Architecture: Physics
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 Disagree	As an architect it is important to have a strong background in STEM subjects.	Agree Disagree
Agree Disagree	Architects must have a broad understanding of Physics, specifically as it relates to forces and gravity.	Agree Disagree
Agree Disagree	Architects must have creative thinking skills and abilities.	Agree Disagree

PROCEDURE:

Distribute the pre and post-viewing guide on the following page to provide focused viewing for students while watching the *STEM Career Lab* video, *Architecture: Physics*.

Before viewing the video, instruct students to read and respond to the "What I Already Know" column of the *Architecture: Physics Viewing Guide*. Let students know it's okay if they do not know all of the answers. Play the *Architecture Physics* video and instruct students to now fill out the "What I Learned" column. After playing the video, use the guide to facilitate a post-viewing discussion with students.

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Architecture: Physics
Guided Viewing Key

1. Forces that act between all masses and always create a force of attraction.
2. 9.8 m/s2
3. Live loads and dead loads.
4. A load that does not change.
5. A load that changes such as people or traffic.
6. Horizontal weight is distributed through the vertical elements.
7. Through the foundation or footing.
8. Triangulation resolves forces down to the ground.

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Architecture: Physics
Guided Viewing

	What I Already Know	What I Learned
1. What are gravitational forces?		
2. At what speeds do objects fall?		
3. List two structural forces.		
4. What is a dead load?		
5. What is a live load?		
6. How is the horizontal weight in a building transferred?		
7. In a building, how are forces distributed down through the earth?		
8. How does triangulation disperse forces?		