

Grades 10–11 Science, Project-Based Learning

Video 3 (Day 9)

Lesson Graph

This document accompanies a sample lesson scored using the UTeach Observation Protocol (UTOP). The video lesson is a shortened version of a 76-minute class period observed at Manor New Tech High School in Manor, Texas.

This document describes the objectives and agenda for the 76-minute class period and aligns the actual minutes of the class with the minutes of the video.

The project observed in this classroom was a multi-day project. The video, sample scores, and more for this and other days of the project are available on the UTOP website: <http://utop.uteach.utexas.edu/?q=sample-utop-scoring>.

Objective

- We will apply what we learned in the gravity workshop to analyze the gravitational forces in our solar system.

Products

- I will complete one gravity force calculation in my notebook for 5 stamps.
- I will work with my team to graph planetary orbits and to analyze the gravitational forces between our planets and our star (rubric section 2.1).

Agenda

1. Warm up (1 per student)
 - Warm up questions
 - Warm up answer form
 - Feedback sheet
2. Gravity notebook problem. See gravity workshop slides in the project briefcase.
3. Continue working on section 2 of the rubric (goal: at least 6 stamps in section 2).

Due Today

- Gravity calculation in notebook
- Gravity warm up
- 6+ stamps in rubric

Coming Soon

- Section 2 due

Texas Essential Knowledge and Skills and Learning Outcomes**Algebra II TEKS**

2A.b.5.A. Describe a conic section as the intersection of a plane and a cone.

2A.b.5.B Sketch graphs of conic sections to relate simple parameter changes in the equation to corresponding changes in the graph.

Physics TEKS

PHY.c.2.H. Make measurements with accuracy and precision and record data using scientific notation and International System (SI) units.

PHY.c.5.B. Describe and calculate how the magnitude of the gravitational force between two objects depends on their masses and the distance between their centers.

Video / Class Period Time Alignment

The actual class time is in black below. Video times are in blue and bracketed.

Time in minutes	Description of activity
0–15:20 [0–6:18]	Warm up Students complete a warm up covering gravity problems they completed prior to class. Students also reference their gravity notes during this time. During this time, the instructors are taking attendance and checking student work.
15:20–21:30 [6:18–11:35]	Workshop Instructor asks teams to send one member to the front to discuss section two of the rubric. While she is working with these team members, the other students continue to work and get feedback.
21:30–25:00 [11:35–12:42]	Student work time Students working on some on calculations with both instructors checking on their progress, giving stamps when successfully completed.
25:00–43:00 [12:42–23:08]	Workshop A co-instructor asks teams to send one group member to the front of the room to discuss ellipse problems. During this time the instructor summarizes the expectations and works example problems.
43:00–73:00 [23:09–27:39]	Student work time Students working on ellipse problems and instructors checking on their progress, giving stamps to indicate when the portion of the rubric is

	successfully completed.
73:00–76:00 [not shown]	Class ends Instructor reminds students to save their work before they leave for class. Students pack up and leave the classroom.