

Mars Rover Celebration NGSS Alignment

WEEK 3: DESIGNING THE MISSION
LESSON 7: HOW DO I MEASURE THIS?
GRADE LEVEL: 3-5

PERFORMANCE EXPECTATIONS

In the NGSS framework, one of the important things that teachers need to do is explicitly identify when Science and Engineering Practices (SEP) and Cross Cutting Concepts (CCC) are being covered. The SEP's and CCC's are pervasive throughout the Mars Rover Celebration curriculum. The tables here are intended to assist the teacher in deciding when to mention that an SEP or CCC is part of the material being presented.

Lesson Objectives		
Students who demonstrate understanding can: <ul style="list-style-type: none">• Learn the importance of standardized units of measure• Learn and be able to explain the importance of taking accurate measurements• Work collaboratively to conduct a scientific experiment• Collect and record data to draw logical and scientific conclusions• Learn and review using a ruler to make metric measurements• Learn or review how to make inferences and draw reasonable conclusions		
3-5 Engineering Design		
3-5-ETS1-3 Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.		
SCIENCE AND ENGINEERING PRACTICES (SEP)	DISCIPLINE CORE IDEAS (DCI)	CROSSCUTTING CONCEPTS (CCC)
Planning and Carrying Out Investigations Make observations and measurements to produce data to serve as the basis for evidence for and explanation of the phenomena Analyzing and Interpreting Data	ESS1: Earth's Place in the Universe: ESS1.B: Earth and the Solar System ETS1: Engineering Design: ETS1.B: Developing Possible Solutions	System and System Models A system can be described in terms of its components and interactions.

Represent data in graphical displays to reveal patterns that indicate relationships

SUMMARY OF THE THREE DIMENSIONS

The 5E lesson model provides the 5 phases of learning that helps to facilitate the process of science understanding. Teachers are encouraged to use the table below to help align their teaching methods with the embedded Science and Engineering Practices (SEP), Disciplinary Core Ideas (DCI) and Cross Cutting Concepts (CCC) present in the lesson.

5E MODEL PHASE	SCIENCE AND ENGINEERING PRACTICES (SEP)	DISCIPLINE CORE IDEAS (DCI)	CROSSCUTTING CONCEPTS (CCC)
ENGAGE	Planning and Carrying Out Investigations	Earth and the Solar System	Systems and System Models
EXPLORE	Planning and Carrying Out Investigations	Earth and the Solar System Developing Possible Solutions	Systems and System Models
EXPLAIN	Analyzing and Interpreting Data	Earth and the Solar System Developing Possible Solutions	Systems and System Models
ELABORATE	Analyzing and Interpreting Data	Earth and the Solar System	Systems and System Models
EVALUATE	Performance Expectations	Performance Expectations	Performance Expectations