

# Mars Rover Celebration NGSS Alignment

**WEEK 2:** INVESTIGATING MARS  
**LESSON 5:** SELECTING TEAM'S ROVER MISSION  
**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"><li>Determine the nature of a valid scientific question that can be answered by data and/or modeling</li><li>Construct a valid scientific question that can be answered by data and/or modeling</li><li>Choose an appropriate mission for their rover that will answer their scientific question</li></ul>		
3-5 Engineering Design		
<b>3-5-ETS1-2 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.</b>		
SCIENCE AND ENGINEERING PRACTICES (SEP)	DISCIPLINE CORE IDEAS (DCI)	CROSSCUTTING CONCEPTS (CCC)
<b>Asking Questions and Defining Problems</b> Ask questions that can be investigated and predict reasonable outcomes based on patterns such as cause and effect	<b>ESS1: Earth's Place in the Universe:</b> ESS1.B: Earth and the Solar System  <b>ETS1: Engineering Design:</b> ETS1.A: Defining and Delimiting Engineering Problems	<b>System and System Models</b> A system can be described in terms of its components and interactions.

## 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)
<b>ENGAGE</b>	Asking Questions and Defining Problems	Earth and the Solar System	Systems and System Models
<b>EXPLORE</b>	Asking Questions and Defining Problems	Earth and the Solar System Defining and Delimiting Engineering Problems	Systems and System Models
<b>EXPLAIN</b>	Asking Questions and Defining Problems	Earth and the Solar System Defining and Delimiting Engineering Problems	Systems and System Models
<b>ELABORATE</b>	Asking Questions and Defining Problems	Earth and the Solar System	Systems and System Models
<b>EVALUATE</b>	Performance Expectations	Performance Expectations	Performance Expectations