

SAMPLESAMPLE***SAMPLE***SAMPLE***

SC.3.12.4.C Make a claim about the merit of a design solution that reduces the impact of a weather related hazard. Examples of design solutions to weather related hazards could include barriers to prevent flooding, wind resistant roofs, and lightning rods.

SEP	DCI	CCC
<p>Engaging in Argument from Evidence § Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem. (3.12.4.C)</p>	<p>ESS3.B: Natural Hazards A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts. (3.12.4.C)</p>	<p>Cause and Effect Cause and effect relationships are routinely identified, tested, and used to explain change. (3.12.4.C)</p> <p>Influence of Engineering, Technology, and Science on Society and the Natural World § Engineers improve existing technologies or develop new ones to increase their benefits (e.g., better artificial limbs), decrease known risks (e.g., seatbelts in cars), and meet societal demands (e.g., cell phones). (3.12.4.C)</p> <p>Science is a Human Endeavor § Science affects everyday life. (3.12.4.C)</p>

Unwrapping the Standard			
Unwrapped Skills (Verbs)	Unwrapped Concepts (Nouns)	Performance Criteria (Considerations)	Level of Rigor for the row
Make	A claim	About the merit of a design solution	Medium
Cite	Evidence	About how a claim meets criteria and constraints of a problem	Medium
Identify, test, and use	Cause and Effect relationships	explaining change	High
Design	Solutions	That reduces impact of weather	High
<p>General Performance Conditions (may or may not be used): consider the assessment boundaries here.</p>			
<p>Content Context: consider the examples in the clarification statement--refer to the previous grade-band and identify what distinguishes the content at this level--identify why students need to know this content (what real-world phenomena can students use this information to explain and/or what real-world problems can they solve using this</p>			

content? What uncertainties might students possess related to this content? What conceptions may they have?



- Differences from previous grade band-Previous weather was taught. Now observing and designing solutions to weather related hazards.

- Phenomena/problem-
 - How does a lightning rod work?
 - What is the purpose of a dam?
 - What is the purpose of a snow fence?
 - Why are there treelines around a farm?
 - How are structures designed to withstand hazardous weather?
 - What do animals create to survive certain hazardous weather (nests, hives???)

- Uncertainties-What impacts will designs have on the environment both positive and negative

- Prior Conceptions-That all solutions will work to prevent damage from hazardous weather

Related Practices: (What other practices can be used to sequence the learning? For example, if carrying out an investigation, there could be data to be analyzed.)

- Asking questions and defining problems (for engineering)**
- Constructing explanations and design solutions (for engineering)**

Additional CCC Lenses: (What additional lenses can be used to scaffold student thinking? For example, patterns can be used to identify stability and change and that can be used to think about the flow of energy in systems)

- Structure and Function**
- Energy and Matter**
- Stability and Change**

Clarify Key Terms: In your clarification, identify the term and explain why students need to know it. For example, students need to know 'photosynthesis' to explain how matter and energy move in plant systems or students need to know 'decomposer' to describe the organisms responsible for breaking down dead organisms and recycling matter in an ecosystem.

- Claim-(knowing this will help them design their solution to match their claim)
- Merit-(knowing they will need a solid design solution that they can support)
- Design-(will help with the engineering part of this standard)
- Solution-(will help with the engineering part of this standard)
- Weather-(knowing this term will help in designing a solution for a weather hazard)
- Hazard-(knowing this term will help in designing a solution for a weather hazard)

3D Learning Performances: What learning targets will allow students to gather, analyze and

Level of Rigor

communicate information? What SEPs and CCCs will scaffold the learning to deeper thinking?

- ❑ Gather...
 - Obtain information about a weather related hazard to see the cause and effect of a weather related hazard and a design solution for that hazard.
 - Ask questions about the structure and function of the merit of a design solution for weather related hazards.
 - Plan a design solution that will show a change and reduce the impact of a weather related hazard.
- ❑ Analyze...
 - Analyze a claim of the merit of a design solution that will reduce the impact of a weather related hazard and the structure and function of the design solution.
- ❑ Communicate...
 - Make a claim and communicate about the merit and structure and function of a design solution that will reduce the impact of a weather related hazard.
 - Construct an explanation about the stability and change of a design solution for a weather related hazard.

3.12.4.C Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.

1	Supported claims
a	Students make a claim about the merit of a given design solution that reduces the impact of a weather-related hazard.
2	Identifying scientific evidence
a	Students describe* the given evidence about the design solution, including evidence about:
	i. The given weather-related hazard (e.g., heavy rain or snow, strong winds, lightning, flooding along river banks).
	ii. Problems caused by the weather related hazard (e.g., heavy rains cause flooding, lightning causes fires).

		<p>iii. How the proposed solution addresses the problem (e.g., dams and levees are designed to control flooding, lightning rods reduce the chance of fires) [note: mechanisms are limited to simple observable relationships that rely on logical reasoning].</p>
3	Evaluating and critiquing evidence	
	a	Students evaluate the evidence using given criteria and constraints to determine:
		<p>i. How the proposed solution addresses the problem, including the impact of the weather-related hazard after the design solution has been implemented.</p>
		<p>ii. The merits of a given solution in reducing the impact of a weather-related hazard (i.e., whether the design solution meets the given criteria and constraints).</p>
		<p>iii. The benefits and risks a given solution poses when responding to the societal demand to reduce the impact of a hazard.</p>