



## Grades 3–5

### 3.5.3-5.P Technology and Engineering: Design in Technology and Engineering Education

**Students who demonstrate understanding can** *evaluate the strengths and weaknesses of existing design solutions, including their own solutions.*

**Clarifying Statement:** Students can evaluate a range of potential solutions by analyzing their relative strengths and weaknesses. Using criteria and constraints, students acknowledge the limitations caused by one solution and continue to explore a range of ideas.

**Assessment Boundary:** N/A

Science and Engineering Practices (SEP)	Disciplinary Core Ideas (DCI)	Technology and Engineering Practices (TEP)
<b>Engaging in Argument From Evidence</b> Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s). <ul style="list-style-type: none"> <li>Respectfully provide and receive critiques from peers about a proposed procedure, explanation, or model by citing relevant evidence and posing specific questions.</li> </ul>	<b>Developing Possible Solutions</b> <ul style="list-style-type: none"> <li>Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved.</li> </ul> <b>Optimizing the Design Solution</b> <ul style="list-style-type: none"> <li>Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints.</li> </ul>	<b>Critical Thinking</b> <ul style="list-style-type: none"> <li>Knows how to find answers to technological questions.</li> </ul> <b>Optimism</b> <ul style="list-style-type: none"> <li>Engages in “tinkering” to improve a design.</li> </ul>

**Pennsylvania Context:** Examples of Pennsylvania context include but are not limited to manufacturing businesses.

**Pennsylvania Career Ready Skills:** Identify multiple ways to solve conflicts and practice solving problems.

## Connections to Other Standards Content and Practices



Standard Source	Possible Connections to Other Standard(s) or Practice(s)
<b>PA Core Standards: Reading and Writing in Science and Technical Areas</b>	<p>CC.1.2.3.G: Use information gained from text features to demonstrate understanding of a text.</p> <p>CC.1.2.4.G: Interpret various presentations of information within a text or digital source and explain how the information contributes to an understanding of text in which it appears.</p> <p>CC.1.2.5.G: Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.</p> <p>CC.1.4.3.V: Conduct short research projects that build knowledge about a topic.</p> <p>CC.1.4.4.V: Conduct short research projects that build knowledge through investigation of different aspects of a topic.</p> <p>CC.1.4.5.V: Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.</p> <p>CC.1.4.3.W: Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.</p> <p>CC.1.4.4.W: Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources.</p> <p>CC.1.4.5.W: Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources.</p>
<b>PA Core Standards and Practices: Math</b>	<p>MP.2: Reason abstractly and quantitatively.</p> <p>MP.4: Model with mathematics.</p> <p>MP.5: Use appropriate tools strategically.</p>
<b>Science, Technology &amp; Engineering, and Environmental Literacy &amp; Sustainability Academic Standards</b>	<p>N/A</p>