



STEM Fair Curriculum Map Intermediate

UEQ: How do I use science, engineering, and mathematical practices to help me investigate and solve problems in my world?

K	U	D
<p>There are various ways of carrying out scientific exploration.</p> <p>There is a difference between inference and observation.</p> <p>There are various ways of communicating.</p> <p>Scientific explanations for phenomenon are based on evidence.</p> <p>Science, engineering, and math practices can help solve problems.</p> <p>Engineering begins with defining a problem to solve.</p> <p>Scientists search for answers through experiments and other processes such as research and inquiry.</p> <p>Independent and dependent variables affect the resulting data in an experiment.</p> <p>After scientists verify their results, they share and defend their conclusions with other scientists and make predictions about results in related investigations.</p> <p>When conducting an experiment, multiple trials are done to verify the results.</p> <p>Scientific experiments include a control group that allows the effect of the variable to be interpreted.</p>	<p>Scientists attempt to answer questions about the natural world by constructing a variety of investigations, making and recording observations, and connecting explanations to that evidence.</p>	<p>Raise questions about the natural world, investigate and generate appropriate explanations.</p> <p>Design a scientific investigation.</p> <p>Solve investigations using science, engineering, and math practices.</p> <p>Attempt reasonable answers to scientific question through investigation and cite evidence to support it.</p> <p>Keep records as appropriate, such as pictorial, written, or charts and graphs of investigations conducted.</p> <p>Use appropriate reference materials that support understanding to obtain information.</p> <p>Analyze control, independent and dependent variables in an experiment and how they affect the results</p> <p>Analyze conclusions and have students offer explanations for their conclusions based on data/evidence.</p> <p>Communicate results and findings.</p>



Connections to ELA Common Core Anchor Standards:

Reading:

CCSS.ELA-Literacy.CCRA.R.1 Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

CCSS.ELA-Literacy.CCRA.R.7 Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.

CCSS.ELA-Literacy.CCRA.R.10 Read and comprehend complex literary and informational texts independently and proficiently.

Writing:

CCSS.ELA-Literacy.CCRA.W.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.

CCSS.ELA-Literacy.CCRA.W.10 Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

Speaking and Listening

CCSS.ELA-Literacy.CCRA.SL.4 Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.

CCSS.ELA-Literacy.CCRA.SL.5 Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.

CCSS.ELA-Literacy.CCRA.SL.6 Adapt speech to a variety of contexts and communicative tasks, demonstrating command of formal English when indicated or appropriate.

Language:

CCSS.ELA-Literacy.CCRA.L.1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

CCSS.ELA-Literacy.CCRA.L.2 Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

Connections to Standards of Mathematical Practice:

- #1: Make sense of problems and persevere in solving them.
- #2: Reason abstractly and quantitatively.
- #3: Construct viable arguments and critique the reasoning of others.
- #6: Attend to precision.



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Concept: Scientific Processes	Benchmark(s): SC.3.N.1.1 SC.4.N.1.1 SC.4.N.1.2 SC.5.N.1.1	Lesson Essential Questions: What scientific processes do scientists use to solve a investigation?	Vocabulary: observation, explanation, evidence, inference, tools/methods, scientific inquiry
Concept: Experimental Design	Benchmark(s): SC.3.N.1.2 SC.3.N.1.6 SC.4.N.1.3 SC.4.N.1.8 SC.5.N.1.2 SC.5.N.1.3	Lesson Essential Questions: How do scientists create and design a scientific investigation?	Vocabulary: scientific method, investigation, experiment, research, observe, hypothesize, variables
Concept: Data and Evidence	Benchmark(s): SC.3.N.1.3 SC.3.N.1.5 SC.4.N.1.3 SC.4.N.1.6 SC.4.N.1.7 SC.5.N.2.2	Lesson Essential Questions: How can scientists use evidence and data to support investigation results?	Vocabulary: evidence, compare, contrast, data, support, graph
Concept: Models	Benchmark(s): SC.3.N.3.2 SC.3.N.3.3 SC.4.N.3.1	Lesson Essential Questions: What are models and how are they used when completing an investigation?	Vocabulary: models, representation
Concept: Communication	Benchmark(s): SC.3.N.1.4	Lesson Essential Questions: How do scientists explain their problem they have investigated to the world around them?	Vocabulary: communicate, collaborate, present, display