

2019 CED SCIENCE PRACTICES	SKILLS
Science Practice 1 Concept Explanation	1.A Describe biological concepts and/or processes.
Explain biological concepts, processes, and models presented in written format.	1.B Explain biological concepts and/or processes.
	1.C Explain biological concepts, processes, and/or models in applied contexts.
Science Practice 2 Visual Representations	2.A Describe characteristics of a biological concept, process, or model represented visually.
Analyze visual representations of biological concepts and processes	2.B Explain relationships between different characteristics of biological concepts, processes, or models represented visually a. In theoretical contexts. b. In applied contexts.
	2.C Explain how biological concepts or processes represented visually relate to larger biological principles, concepts, processes, or theories.
	2.D Represent relationships within biological models, including a. Mathematical models. b. Diagrams. c. Flow charts.
Science Practice 3 Questions and Methods	3.A Identify or pose a testable question based on an observation, data, or a model.
Determine scientific questions and methods.	3.B State the null or alternative hypotheses, or predict the results of an experiment.
	3.C Identify experimental procedures that are aligned to the question, including a. Identifying dependent and independent variables. b. Identifying appropriate controls. c. Justifying appropriate controls.
	3.D Make observations, or collect data from representations of laboratory setups or results. (Lab only; not assessed)
	3.E Propose a new/next investigation based on a. An evaluation of the evidence from an experiment. b. An evaluation of the design/methods.
Science Practice 4 Representing and Describing Data	4.A Construct a graph, plot, or chart (X,Y; Log Y; Bar; Histogram; Line, Dual Y; Box and Whisker; Pie).
Argumentation 6	a. Orientation b. Labeling c. Units d. Scaling e. Plotting f. Type g. Trend line
	4.B Describe data from a table or graph, including a. Identifying specific data points. b. Describing trends and/or patterns in the data. c. Describing relationships between variables
Science Practice 5 Statistical Tests and Data Analysis	5.A Perform mathematical calculations, including a. Mathematical equations in the curriculum. b. Means. c. Rates. d. Ratios. e. Percentages.
Perform statistical tests and mathematical calculations to analyze and interpret data.	5.B Use confidence intervals and/ or error bars (both determined using standard errors) to determine whether sample means are statistically different.
	5.C Perform chi-square hypothesis testing.

	<p>5.D Use data to evaluate a hypothesis (or prediction), including</p> <ul style="list-style-type: none"> <li>a. Rejecting or failing to reject the null hypothesis.</li> <li>b. Supporting or refuting the alternative hypothesis.</li> </ul>
<p>Science Practice 6</p> <p>Develop and justify scientific arguments using evidence. Represent and describe data.</p>	6.A Make a scientific claim
	6.B Support a claim with evidence from biological principles, concepts, processes, and/or data.
	6.C Provide reasoning to justify a claim by connecting evidence to biological theories.
	6.D Explain the relationship between experimental results and larger biological concepts, processes, or theories.
	<p>6.E Predict the causes or effects of a change in, or disruption to, one or more components in a biological system based on</p> <ul style="list-style-type: none"> <li>a. Biological concepts or processes.</li> <li>b. A visual representation of a biological concept, process, or model.</li> <li>c. Data</li> </ul>