






4th Grade Living Environment Unit Blueprint


Section # & Chapter	Essential/Unit Questions* (for conceptual benchmarks)	Benchmarks (Bolded sections indicate portion of benchmark addressed)	Formative and Summative Assessments (Unless noted as a Summative Assessment, the assessments are formative and should be used to guide teaching and learning.)	Using Assessments to Monitor Student Learning
<p>Section 1</p> <p>Chapter 1: Review Populations</p> <p>Pacing Suggestions: Session I— 2 days Session II— 2 days</p> <p>Teacher Resources: </p>	<p>In what ways can living things be sorted into groups? How should the categories be determined?</p> <p>What is the original source of almost all kinds of animals' food?</p>	<p>5A(3-5)#1: A great variety of kinds of living things can be sorted into groups in many ways using various features to decide which things belong to which group.</p> <p>5A(3-5)#2: Features used for grouping depend on the purpose of the grouping.</p> <p>5E(3-5)#1: Almost all kinds of animals' food can be traced back to plants.</p>	<p>Class discussion of Everglades posters (See pages 14 & 15 in Teacher's Guide.)</p> <p><i>A Survival Problem</i> worksheet (See page 17 in Teacher's Guide.)</p> <p>Everglades food web (Have kids make a food web using Kidspiration.)</p>	<ul style="list-style-type: none"> Do the students understand that organisms in the Everglades picture can be sorted into many different types of groups (animal eaters vs. plants, predators vs. prey)? Do students recognize that some groupings are more helpful than others for making a food web? <p><i>A Survival Problem</i> worksheet</p> <ul style="list-style-type: none"> Do the students' webs show plants as the original source of food for all animals? <p>Everglades food web (Kidspiration)</p> <ul style="list-style-type: none"> Do the students' webs show plants as the original source of food for all animals?

*Essential/Unit questions are major questions driving the unit of study. They are directly aligned with the benchmarks. Generally, no one lesson addresses a question in its entirety. By the end of the unit, students should be able to answer these core questions.


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<p>Section 1</p> <p>Chapter 3: Environmental Factors</p> <p>Pacing Suggestions: 1-2 days</p> <p>Teacher Resources: </p>	<p>Why do only certain plants and animals live in a particular environment? Why can't all plants and animals live in the same environment?</p>	<p>5D(3-5)#1: For any particular environment, some kinds of plants and animals survive well, some survive less well, and some cannot survive at all.</p>	<p>Class discussion of environmental factors (See Step 2 on page 30 and Step 3 on page 31 in Teacher's Guide.)</p>	<p>Class discussion of environmental factors (See page 30, #2 and page 31, #3 in Teacher's Guide.)</p> <ul style="list-style-type: none"> • Do the students' comments reflect an understanding that environmental factors affect both plants and animals? • Do students understand that the same environmental factor may help one organism survive and another organism survive less well or not at all?
<p>Section 1</p> <p>Chapter 4 Story: The Story of San Joaquin Valley (Page 41 in Teacher's Guide)</p> <p>Pacing Suggestions: 1 day</p> <p>Teacher Resources: </p>	<p>How do changes to an organism's habitat affect its survival?</p>	<p>5D(3-5)#4: Changes in an organism's habitat are sometimes beneficial to it and sometimes harmful.</p>	<p>Class discussion of the <i>Story of San Joaquin Valley</i> (See <i>Follow-up</i> on page 41 in Teacher's Guide and pages 7 & 8 in <i>Environments</i> Student Booklets.)</p>	<p>Class discussion of <i>The Story of San Joaquin Valley</i> (See page 41 in Teacher's Guide and pages 7 & 8 in <i>Environments</i> student booklets.)</p> <ul style="list-style-type: none"> • Can students identify specific examples of what could affect survival of plants and animals? • Can students explain how humans' attempts to control the environment affect the survival of plants and animals?

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<p>Section 1 Assessment Activity</p> <p>Pacing Suggestions: 1 day</p> <p>Teacher Resources: </p>	<p>Why do only certain plants and animals live in a particular environment? Why can't all plants and animals live in the same environment?</p> <p>How do changes to an organism's habitat affect its survival?</p>	<p>5D(3-5)#1: For any particular environment, some kinds of plants and animals survive well, some survive less well, and some cannot survive at all.</p> <p>5D(3-5)#4: Changes in an organism's habitat are sometimes beneficial to it and sometimes harmful.</p>	<p>Summative Assessment: <i>Environmental Factors for Animals</i> student sheet (See pages 43 & 44 in Teacher's Guide, especially <i>Keeping Records</i> on page 44—only use descriptors related to animal portion of assessment.)</p>	<ul style="list-style-type: none"> • Are students able to identify environmental factors that might have caused the cow's death? • Are students able to suggest some environmental factors that should be changed to support the viability of the cow?


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<p>Section 4</p> <p>Chapter 12: A Place to Live & Terrarium Observations (Ongoing throughout unit)</p> <p>Pacing Suggestions: Session I— 1 day Session II— 2 days Session III— 1 day Terrarium Observations & Maintenance At least 2 times per week</p> <p>Teacher Resources: </p>	<p>Why do only certain plants and animals live in a particular environment? Why can't all plants and animals live in the same environment?</p> <p>How can observations be made more accurate?</p>	<p>5D(3-5)#1: For any particular environment, some kinds of plants and animals survive well, some survive less well, and some cannot survive at all.</p> <p>12D(3-5)#3: Use numerical data in describing and comparing objects and events. 12C(3-5)#3: Keep a notebook that describes observations made, carefully distinguishes actual observations from ideas and speculations about what was observed, and is understandable weeks or months later. 12A(3-5)#1: Keep records of their investigations and observations and not change the records. 12D(3-5)#2: Make sketches to aid in [reporting observations and] explaining procedures or ideas.</p>	<p>Class discussion about environmental factors of seeds (See page 133 in Teacher's Guide.)</p> <p>Ongoing observations of terrarium recorded in <i>Terrarium Journal</i> (Teacher-generated journal pages available on electronic curriculum under "Teacher Resources")</p> <p>Click to view student work samples of terrarium drawings.</p> <p>Click to view student work samples of written observations of terrariums.</p> <p>Summative Assessment: Journal entries made at the end of the unit are appropriate for formal assessment.</p>	<ul style="list-style-type: none"> • Do the students' comments reflect an understanding of environmental factors that might affect the survival of seeds? • Do students understand that the sum of environmental factors in which an organism lives is its environment? • Do students understand that for any particular environment, some organisms survival well, some less well, and some not at all? • Do the students' drawings contain details that accurately portray what they see? • As the unit progresses, are the drawings increasing in accuracy & detail? • Do students' written observations only include observations, not comments about feelings or opinions? • As the unit progresses, are the observations increasing in accuracy and detail? • Do students refrain from changing journal entries?

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<p>Section 4</p> <p>Chapter 13: Temperature and Isopods</p> <p>Pacing Suggestions: Session I— 1 day Session II— 2 to 3 days Terrarium Observations & Maintenance At least 2 times per week</p>	<p>Why do only certain plants and animals live in a particular environment? Why can't all plants and animals live in the same environment?</p> <p>How can changes to an organism's habitat affect its survival?</p>	<p>5D(3-5)#1: For any particular environment, some kinds of plants and animals survive well, some survive less well, and some cannot survive at all.</p> <p>5D(3-5)#4: Changes in an organism's habitat are sometimes beneficial to it and sometimes harmful.</p>	<p>Class discussion of environmental factors and purpose of <i>Temperature and Isopods Experiment</i> (See Step 1 on page 141 in Teacher's Guide.)</p> <p><i>Note: The lesson does not specifically address the benchmarks. Start by focusing on students' understanding of how the experiments relate to environmental factors. Encourage students to generalize about how environmental factors can affect plants and animals.</i></p>	<ul style="list-style-type: none"> • Do students understand how the experiment relates to environmental factors? • Do students understand that an environmental factor may be helpful to one organism and harmful to another? • Do students understand that a change in the environment (a change in environmental factor) can affect an organism's survival? • Do students understand why all plants and animals can't live in the same environment?
<p>Teacher Resources:</p> 	<p>How can observations be made more accurate? (Use question to prompt students about quality/precise observations and record keeping.)</p>	<p>12D(3-5)#3: Use numerical data in describing and comparing objects and events.</p> <p>12C(3-5)#3: Keep a notebook that describes observations made, carefully distinguishes actual observations from ideas and speculations about what was observed, and is understandable weeks or months later.</p>	<p>Page 1 of teacher-generated <i>Temperature and Isopods Experiment</i> lab sheet (Lab sheet available on electronic curriculum under "Teacher Resources." Also, see Step 3 on page 143 in Teacher's Guide.)</p> <p>Click to view student work samples.</p>	<ul style="list-style-type: none"> • Do students' written observations include factual information, not ideas or explanations? • Do students' written observations include a description of the movement of the isopods? • Do students' written observations include quantitative data? (Example: <u>Three</u> isopods sat at the cold end of the trough. <u>One</u> isopod moved back and forth between the <u>20°C</u> and <u>24°C</u> sections?)


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Section 4 Chapter 13 (Continued)	Why are results to the same experiment seldom exactly the same? When results are different, what should be done?	1B(3-5)#2: Results of scientific investigations are seldom exactly the same, but if the differences are large, it is important to try to figure out why. One reason for following directions carefully and for keeping records of one’s work is to provide information on what might have caused the differences.	Page 2 of <i>Temperature and Isopods Experiment</i> and class discussion of histogram and experiment results (See Steps 4-7 on pages 143 & 144 in Teacher’s Guide.) Click to view student work samples. <i>Brainteaser</i> (See page 145 in Teacher’s Guide. Have students justify optimum temperature—an “Explain Your Choice(s)” student sheet is available on the electronic curriculum under “Teacher Resources.”)	Lab sheet (page 2) & class discussion of experiment results <ul style="list-style-type: none"> • If results vary significantly among groups, do students recognize the need to discuss experiment procedures used in each group? Do students recognize the shortcomings of the experiment? Do students recognize the benefit of running more trials and/or a different experiment to resolve the differences in the observations? • Are students able to articulate why a “fair” experiment is important? • If experiment results are similar, are students able to identify an optimal range of temperatures for isopods? Do students use their data and/or class data to support their choice of optimal temperature? Are students able to use the identified temperature range to suggest a real environment suitable for isopods? Brainteaser <ul style="list-style-type: none"> • Are the students able to use/interpret the data to determine the optimal temperature? • Are the students able to use the data and terrarium observations to support/justify the chosen temperature?
	What is a “fair” experiment? Why should experiments be “fair?”	12E(3-5)#2: Recognize when comparisons might not be fair because some conditions are not kept the same.		
	How do experiment results help determine an optimal environment for an organism?	5D(3-5)#1: For any particular environment, some kinds of plants survive well, some survive less well, and some cannot survive at all. 12D(3-5)#3: Use numerical data in describing and comparing objects and events. 1B(3-5)#3: Scientists’ explanations about what happens in the world come partly from what they observe, partly from what they think. Sometimes scientists have different explanations for the same set of observations. That usually leads to making more observations to resolve the differences.		

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<p>Section 4</p> <p>Chapter 14: The Best Environment for Isopods</p> <p>Pacing Suggestions: Session I— 3-4 days Session II— (Optional Lesson) 2-3 days Terrarium</p>	<p>Why do only certain plants and animals live in a particular environment? Why can't all plants and animals live in the same environment?</p> <p>How can changes to an organism's habitat affect its survival?</p>	<p>5D(3-5)#1: For any particular environment, some kinds of plants and animals survive well, some survive less well, and some cannot survive at all.</p> <p>5D(3-5)#4: Changes in an organism's habitat are sometimes beneficial to it and sometimes harmful.</p>	<p>Class discussion of environmental factors and purpose of <i>Light and Isopods Experiment & Water and Isopods Experiment</i></p> <p><i>Note: The lesson does not specifically address the benchmarks. Start by focusing on students' understanding of how the experiments relate to environmental factors. Encourage students to generalize about how environmental factors can affect plants and animals.</i></p>	<ul style="list-style-type: none"> • Do students understand how the experiment relates to environmental factors? • Do students understand that an environmental factor may be helpful to one organism and harmful to another? • Do students understand that a change in the environment (a change in environmental factor) can affect an organism's survival? • Do students understand why all plants and animals can't live in the same environment?
<p>Observations & Maintenance At least 2 times per week</p> <p>Teacher Resources:</p> 	<p>How can we make our observations more accurate? (Use question to prompt students about quality/precise observations and record keeping.)</p>	<p>12D(3-5)#3: Use numerical data in describing and comparing objects and events.</p> <p>12C(3-5)#3: Keep a notebook that describes observations made, carefully distinguishes actual observations from ideas and speculations about what was observed, and is understandable weeks or months later.</p>	<p>Teacher-generated <i>Light and Isopods Experiment & Water and Isopods Experiment</i> lab sheets (Lab sheet available on electronic curriculum under "Teacher Resources." Also, see pages 150 & 153 in Teacher's Guide.)</p> <p>Click to view student work sample.</p>	<ul style="list-style-type: none"> • Do students' written observations include factual information, not ideas or explanations? • Do students' written observations include a description of the movement of the isopods? • Do students' written observations include quantitative data? (Example: <u>Three</u> isopods sat at the wet end of the trough. <u>One</u> isopod moved back and forth between the wet and dry sections?)

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Section 4 Chapter 14 (Continued)	Why are results to the same experiment seldom exactly the same? When results are different, what should be done?	1B(3-5)#2: Results of scientific investigations are seldom exactly the same, but if the differences are large, it is important to try to figure out why. One reason for following directions carefully and for keeping records of one’s work is to provide information on what might have caused the differences.	Page 2 of <i>Light and Isopods Experiment & Water and Isopods Experiment</i> lab sheet Class discussion of histogram and general experiment results/observations from Light and Water Tests (See Step 4 on pages 150 & 151 and Step 8 on page 154 in Teacher’s Guide.) Click to view student work sample. <i>Brainteaser</i> (See page 154 in Teacher’s Guide. Have students justify locations selected—an “Explain Your Choice(s)” student sheet is available on the electronic curriculum under “Teacher Resources.”)	Lab sheet (page 2) & class discussion of experiment results <ul style="list-style-type: none"> If results vary significantly among groups, do students recognize the need to discuss experiment procedures used in each group? Do students recognize the shortcomings of the experiment? Do students recognize the benefit of running more trials and/or a different experiment to resolve the differences in the observations? Are students able to articulate why a “fair” experiment is important? If experiment results are similar, are students able to identify an optimal amount of light/moisture for isopods? Do students use their data and/or class data to support their choice of optimal light/moisture levels? Are students able to use the identified intensity of light/moisture to suggest a real environment suitable for isopods? Brainteaser <ul style="list-style-type: none"> Do students use/apply data from the Water and Temperature tests, as well as observations of the terrariums, to select reasonable locations to find isopods? Do students use data and terrarium observations to support chosen locations?
	What is a “fair” experiment? Why should experiments be “fair?”	12E(3-5)#2: Recognize when comparisons might not be fair because some conditions are not kept the same.		
	How do experiment results help determine an optimal environment for an organism?	5D(3-5)#1: For any particular environment, some kinds of plants and animals survive well, some survive less well, and some cannot survive at all. 12D(3-5)#3: Use numerical data in describing and comparing objects and events. 1B(3-5)#3: Scientists’ explanations about what happens in the world come partly from what they observe, partly from what they think. Sometimes scientists have different explanations for the same set of observations. That usually leads to making more observations to resolve the differences.		

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<p>Section 4</p> <p>Chapter 15: The Environment of Hermit Crabs</p> <p>Pacing Suggestions: Session I— 3-4 days Session II— 3-4 days Session III— (Optional Lesson) 2-3 days</p> <p>Terrarium Observations & Maintenance At least 2 times per week</p> <p>Teacher Resources: </p>	<p>Why do only certain plants and animals live in a particular environment? Why can't all plants and animals live in the same environment?</p>	<p>5D(3-5)#1: For any particular environment, some kinds of plants and animals survive well, some survive less well, and some cannot survive at all.</p>	<p>Class discussion of environmental factors and purpose of Light Test (See page 163 in Teacher's Guide.), Temperature Test (See page 163 in Teacher's Guide.), and Water Test (See page 165 in Teacher's Guide.)</p> <p><i>Note: The lesson does not specifically address the benchmarks. Start by focusing on students' understanding of how the experiments relate to environmental factors. Encourage students to generalize about how environmental factors can affect plants and animals.</i></p>	<ul style="list-style-type: none"> • Do students understand how the experiment relates to environmental factors? • Do students understand that an environmental factor may be helpful to one organism and harmful to another? • Do students understand that a change in the environment (a change in environmental factor) can affect an organism's survival? • Do students understand why all plants and animals can't live in the same environment?
	<p>How can observations be made more accurate?</p>	<p>12D(3-5)#3: Use numerical data in describing and comparing objects and events. 12C(3-5)#3: Keep a notebook that describes observations made, carefully distinguishes actual observations from ideas and speculations about what was observed, and is understandable weeks or months later.</p>	<p>Page 1 of teacher-generated <i>Temperature Test for Hermit Crabs</i> lab sheet (Lab sheet available on electronic curriculum under "Teacher Resources." Also, see page 145 in Teacher's Guide.)</p> <p>Click to view student work sample.</p> <p>Page 1 of <i>Water Test for Hermit Crabs</i> lab sheet (Lab sheet available on electronic curriculum under "Teacher Resources." Also, see page 165 in Teacher's Guide.)</p>	<ul style="list-style-type: none"> • Do students' written observations include factual information, not ideas or explanations? • Do students' written observations include a description of the movement of the isopods? • Do students' written observations include quantitative data? (Examples: <u>One</u> hermit crab moved back and forth between the <u>20°C</u> and <u>24°C</u> sections. <u>Two</u> hermit crabs moved back and forth between the moist and dry sections.)

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Section 4 Chapter 15 (Continued)	Why are results to the same experiment seldom exactly the same? When results are different, what should be done?	1B(3-5)#2: The results of scientific investigations are seldom exactly the same, but if the differences are large, it is important to try to figure out why. One reason for following directions carefully and for keeping records of one’s work is to provide information on what might have caused the differences.	Class discussion of page 2 of <i>Temperature Test</i> and <i>Water Test</i> lab sheets, Class discussion of histogram, general experiment results/observations, and variables (See Steps 5-8 on pages 161-163; Step 11 on page 164; and Steps 14 & 15 on page 166 in Teacher’s Guide.)	Lab sheet (page 2) & class discussion of experiment results <ul style="list-style-type: none"> If results vary significantly among groups, do students recognize the need to discuss experiment procedures used in each group? Do students recognize the shortcomings of the experiment? Do students recognize the benefit of running more trials and/or a different experiment to resolve the differences in the observations? Are students able to articulate why a “fair” experiment is important? If experiment results are similar, are students able to identify an optimal range of temperatures and preferences regarding moisture/light intensity for hermit crabs? Do students use their data and/or class data to support their choice of optimal temperature and moisture level? Are students able to use the identified range of temperatures and preferences regarding moisture/light intensity to suggest a real environment suitable for hermit crabs? Brainteaser <ul style="list-style-type: none"> Do students use past lab experiences and terrarium observations to select hermit crabs placed in favorable environments? Do students use past lab data and observations to support/justify their selections? Do students recognize that the hermit crabs placed in unfavorable environments will survive less well or not at all?
	What is a “fair” experiment? Why should experiments be “fair?”	12E(3-5)#2: Recognize when comparisons might not be fair because some conditions are not kept the same. 4E(3-5)#1: Things that give off light often give off heat. Heat is produced by mechanical and electrical machines and any time one thing rubs against something else. <i>Note: Benchmark included and aligned with “fair experiment” question because the <u>light</u> experiment doesn’t isolate light as the independent variable—light and heat are tested simultaneously.</i>	Note: <i>Water Test</i> lab sheet (both sides) can serve as a summative assessment. <u>Click to view student work sample.</u>	
	How do experimental results help determine an optimal environment for an organism?	5D(3-5)#1: For any particular environment, some kinds of plants survive well, some survive less well, and some cannot survive at all. 12D(3-5)#3: Use numerical data in describing and comparing objects and events. 1B(3-5)#3: Scientists’ explanations about what happens in the world come partly from what they observe, partly from what they think. Sometimes scientists have different explanations for the same set of observations. That usually leads to making more observations to resolve the differences.	Summative Assessment: <i>Brainteaser</i> (See page 166 in Teacher’s Guide. Have students justify favorable locations selected—an “Explain Your Choice(s)” student sheet is available on the electronic curriculum under “Teacher Resources.”)	

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<p><u>End of Unit Assessments</u></p> <p>Pacing Suggestions: One Day – Section 5 Assessment Activity</p> <p>Teacher Resources: </p>	<p>How do experiment results help determine an optimal environment for an organism?</p>	<p>5D(3-5)#1: For any particular environment, some kinds of plants and animals survive well, some survive less well, and some cannot survive at all.</p> <p>12D(3-5)#3: Use numerical data in describing and comparing objects and events.</p> <p>1B(3-5)#3: Scientists’ explanations about what happens in the world come partly from what they observe, partly from what they think.</p> <p>Sometimes scientists have different explanations for the same set of observations. That usually leads to making more observations to resolve the differences.</p>	<p><i>Environmental Factors for Snails</i> student sheet (See page 203 in Teacher’s Guide.)</p>	<p><i>Environmental Factors for Snails</i> See <i>Keeping Records</i> section on pages 203 & 204 and A-12 (Assessment tab) in Teacher’s Guide for assessment criteria.</p>