

Pill Bug Checkpoint Lab

Materials (per group of 3 or 4 students)

Red and green cups (for signaling the teacher)
Shallow box
Hand lens
Flashlight
Newspaper
5–10 pill bugs

Next Generation Science Standards

Grade 4: LS1.A Structure and Function:
Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction
Grades 3-5: Science & Engineering Practices
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Constructing explanations

NOTE: This activity should be done BEFORE reading *Next Time You See a Pill Bug*. That way, students can make some firsthand discoveries about pill bugs and then compare these experiences to what they read in a nonfiction book about pill bugs.

Procedure

Pill Bugs Checkpoint Lab

Form teams of 3 or 4 students and tell them they will be learning about how pill bugs react to their environments. Give each member of the team a copy of the Pill Bug Checkpoint Lab worksheet. Explain that they will be following the directions on the student page. As they are working, they should keep their green cup on top of their red cup. If they need help, or if they are at a checkpoint, they should put their red cups on top. Each member of the group is responsible for recording data and writing responses. Before you give a team a stamp on the teacher checkpoint so they can move ahead in the lab, ask different members of the team to explain their answers. This way all students are held accountable.

Part A: Students should have a drawing of the pill bug with at least 3 parts labeled. The pill bugs have 14 legs. Pill bugs react to touch by rolling up into a ball, stopping, or running away. Just make sure the students realize that the pill bug does react to the touch.

Part B: In this part, teams have to come up with an idea for an experiment and draw it. The experiment should test whether pill bugs prefer light or dark areas. The most common answer is a drawing of the metal pan with the paper towel in the bottom, half covered with newspaper and the other half under the light. Encourage them to discuss their ideas with each other and to position the materials while they are discussing it. But they may not actually perform the experiment until they get the checkpoint stamped by the teacher.

Part C: The purpose of this section is to teach students that not all of the experiments will come out the same exact way. Scientists typically repeat experiments several times and look at the overall results when making a conclusion. Most pill bugs will go to the dark area, but not all. The question “What is your evidence?” might be challenging for students. Their evidence is that after looking at their results and the results of 5 other teams, they will see that **most of the pill bugs went to the dark area.**

Part D: Students will use the data table in Julia’s journal to determine that most moths prefer to be in the light.

After students have completed the checkpoint lab, discuss each part together. Then, read *Next Time You See a Pill Bug* aloud and compare their findings to what they learn from the book.

Name _____

Pill Bug Checkpoint Lab

Follow the directions below. If your team is working, put the green cup on top. If you have a question, put the red cup on top. If you are finished with a part and you are ready for a check from your teacher, put the red cup on top.

Part A. Pill Bug Observations

Draw a detailed picture of your pill bug in the box below. Use a hand lens to give you a closer look. Label the following parts of the pill bug:

- head antennae legs tail end



Answer the following questions about your pill bug.

1. How many legs does your pill bug have? _____
2. If you touch your pill bug, what does it do? _____



Checkpoint A

Part B. A Pill Bug Experiment

Do pill bugs prefer light areas or dark areas? Design an experiment to find out. You can use the supplies on your desk to help you. They are a **box**, a piece of **newspaper**, and a **flashlight**. Draw a diagram explaining your ideas for an experiment in the box below. DO NOT try the experiment yet. Just draw your idea. 😊

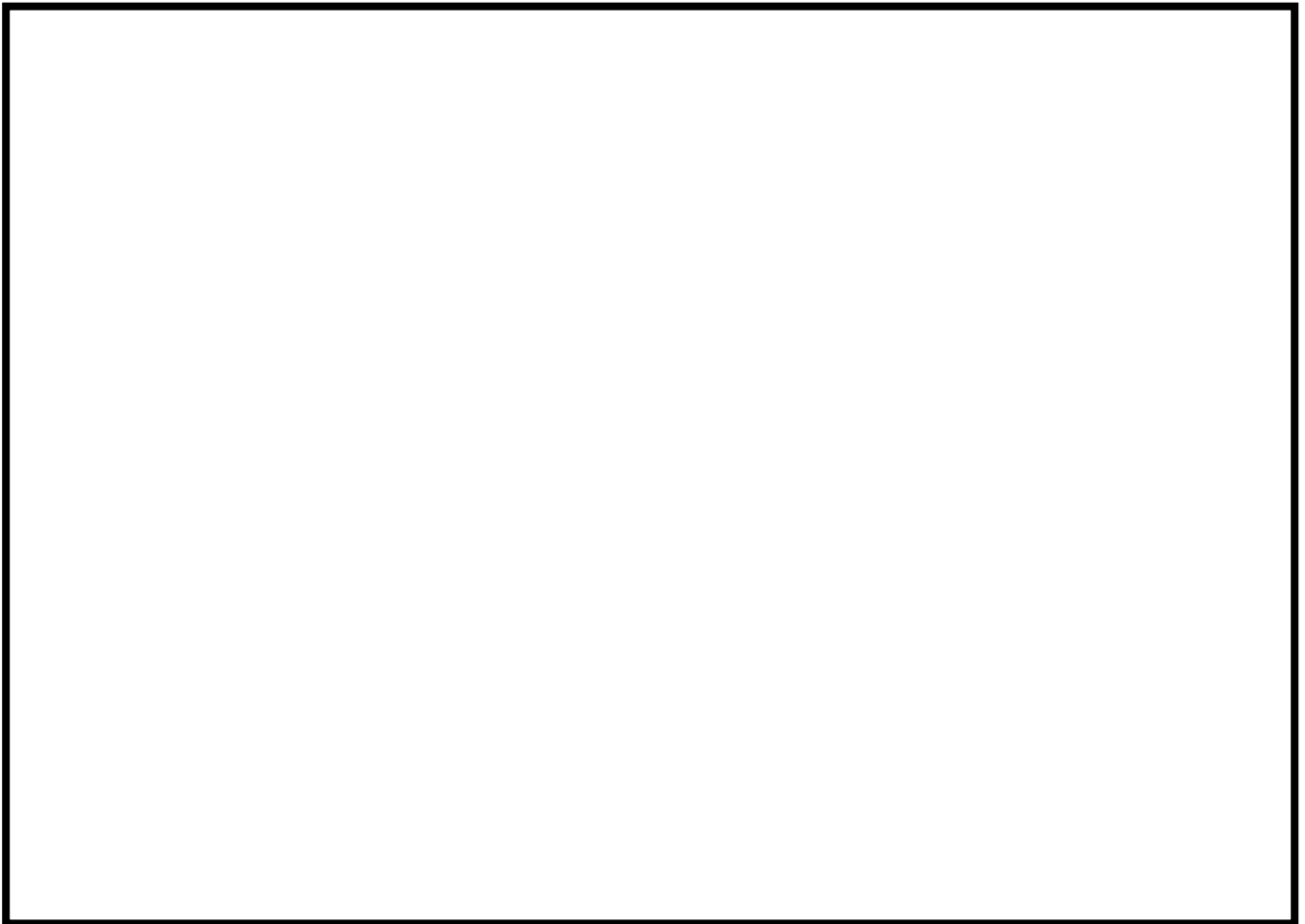
Be sure to label the following parts in your diagram:

flashlight

newspaper

pan

pill bugs



Checkpoint B

Part C. Results of the Pill Bug Experiment

1. How many of your pill bugs were in the dark area? _____
2. How many were in the light area? _____
3. Record your results in the first row of the column below.
4. Ask at least 5 other teams about their results. Record their results in the chart below.

Pill Bug Response

Team Name	Number of Pill Bugs in the Light	Number of Pill Bugs in the Dark
Your Team		
TOTALS		

5. Do pill bugs prefer light or dark areas? _____
6. How do you know? Use the evidence in the table above to support your claim.




Checkpoint C

Part D. A Moth Experiment

Julia wanted to know if moths prefer light or dark. She set up an experiment to find out. She put two identical lamps outside at night. She turned one lamp on and left another lamp off. She recorded the number of moths around each lamp every 10 minutes for 30 minutes. Below is the data from Julia's experiment.

My Moth Experiment

By Julia



My Question: Do moths prefer light or dark?

Time	Number of Moths in the Light	Number of Moths in the Dark
8:30 p.m.	3	0
8:40 p.m.	5	1
8:50 p.m.	7	1
9:00 p.m.	5	0
TOTALS	20	2

1. Do moths prefer light or dark areas? _____

2. How do you know? Use the evidence in the table above to support your claim.



Checkpoint D