

Advanced Butterflies

Supplement to the “Painted Lady Butterfly Teacher’s Guide”

The following changes boost the Amazing Bugs® Painted Lady Butterfly kit to a more challenging level:

- Your kit will include two cups of painted lady caterpillars.
- We have created new handouts for activities 2–4.
- The instructions below replace most of the text in the Amazing Bugs teacher’s guide. You will need to refer to the teacher’s guide for activities 1–2.

1. “Butterfly Gazette”: Predict–Count–Compare

Follow the **instructions for the “Butterfly Gazette” on page 2 of the teacher’s guide**. Use Handout 1 to predict–count–compare the number of times the word **larva** appears in the gazette.

- **More** Start each day with a question to answer with a prediction. For example, *Will it rain today? Will there be spinach for lunch in the cafeteria?* Make sure to ask questions for which predictions can be “tested.” *Did it rain?* A prediction that can be tested is called a **hypothesis** [high-PAH-thuh-sis].

2. Measure Caterpillars

With Handout 2, students will practice measuring by finding the lengths of printed caterpillars. Follow the **instructions on page 3 of the teacher’s guide**.

3. Collect Data

Time 20–25 minutes to start; 10–15 minutes daily as caterpillars transform to butterflies

Materials For each student, two copies of Handout 3 and pencil

Teacher Prep Label one cup of caterpillars “1” and the other “2.” Place the cups in two locations that get different amounts of light, heat, and/or sound. You can safely put cups in a warm, well-lighted location near students (not in direct sunlight) and in a cloakroom, closet, corner, or drawer where it is cooler, darker, and/or quieter.

Instructions

- Students write cup numbers in the upper right corner of their handouts: one handout for cup 1, one for cup 2.
- Discuss different conditions with students. *How long will it take the larvas to become butterflies? Will one cup of caterpillars become butterflies faster than the other? Why? What are the different conditions (heat, light, noise)? What does the word predict mean? (To make a good guess based on what is known.) Do all of your students agree on a prediction? For example,*

“We predict that the caterpillars in cup 1 will become butterflies in 20 days. The butterflies in cup 2 will become butterflies in 28 days.” Or are there several predictions? Write your prediction(s) on the board. On their copies of Handout 3, students write the predictions they think are best.

- **Following Days** Observing larvae and recording data on Handout 3 is a way to test your predictions. Students may work individually during free time. Remind them often: *Have you checked the caterpillars today? Have you recorded your observation on your life-cycle charts (Handout 3)? What are the caterpillars doing? Are they acting the same way in both cups? Are they different than they were yesterday (or last Friday)? Have they grown? What stage are they in? Have you recorded your observations?* **Optional:** On Mondays you may wish to have students fill in data for three days, Saturday, Sunday and Monday. This will make the data you collect more accurate, but it is not necessary.
- When the larvae form pupas, move them into the mesh house. Carefully label the small sheets of paper to which pupas are attached, “Cup 1” and “Cup 2.”
- Students continue to observe until butterflies emerge from pupas.

4. Tabulate and Compare Data

Time 30–40 minutes

Materials For each student, Handout 4 and pencil

Instructions

- When all students have finished filling in both copies of Handout 3, have a class discussion. *How many days were the painted ladies in cup 1 in each of the first three life stages: egg, larva, pupa? How do the numbers compare for cups 1 and 2? What are the results of your investigation? What did we predict for each cup? Do the results match the predictions? Are you surprised? How did different conditions affect the life cycles of the painted ladies?*
- Students fill in numbers on the table on Handout 4. A table is an arrangement of words and numbers in columns. To *tabulate* is to arrange data in columns for easy comparison.
- When tables are complete, guide students through questions 1–6.
- **Results are never wrong!** When they match a prediction, they have proved it. When they don’t match, they have disproved it. Proving and disproving are equally good and important.

Name _____

PREDICT - COUNT - COMPARE

Predict (make a guess)

1. How many times will you see the word **larva** in the Butterfly Gazette? _____

Count

2. How will you keep track of how many times you see the word **larva**? Count it now.

Compare

3. How many times did you see the word **larva**? _____
4. Did you see it **more** times than you guessed?
 Yes No
5. Did you see it **fewer** times than you guessed?
 Yes No
6. Did you see it the **same** number of times that you guessed?
 Yes No
7. If you saw it **more** or **fewer** times, how many times more or fewer? _____

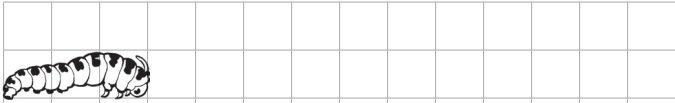
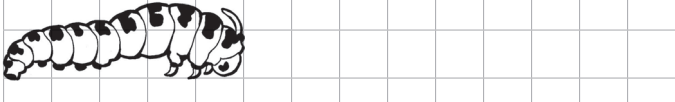
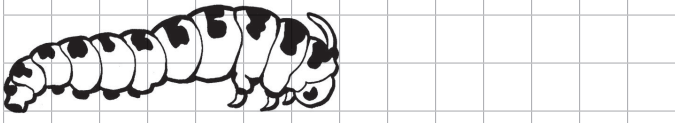
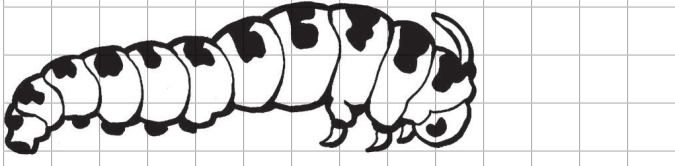
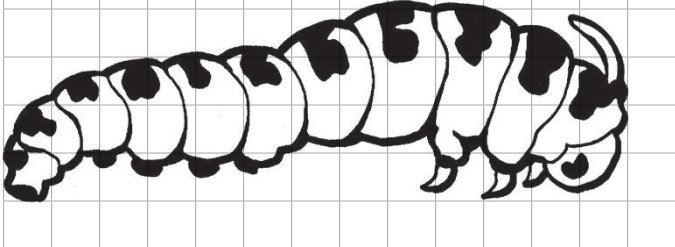
Name _____

MEASURE CATERPILLARS

Measure the caterpillars's length. How many squares?

L = Length

Sq = Squares

Instar	Caterpillar	Length
1		L = _____ sq
2		L = _____ sq
3		L = _____ sq
4		L = _____ sq
5		L = _____ sq

Instar is the name for a stage of growth. Each time an insect sheds its exoskeleton, it is in a new instar. Some insects have 4 instars, and some have more. For example, some beetles have thirty instars! How many instars does this caterpillar have? _____

Name _____

Cup Number _____

PREDICT AND CHART









Predict

How long will it take the painted ladies to become butterflies? Include all the days when the butterfly will be an egg, a larva, and a pupa.

I predict it will take _____ days.

Chart

 = Egg
  = Larva
  = Pupa
  = Adult Butterfly

 Day 1	 Day 2	 Day 3	 Day 4	 Day 5	 Day 6
 Day 7	 Day 8	Day 9	Day 10	Day 11	Day 12
Day 13	Day 14	Day 15	Day 16	Day 17	Day 18
Day 19	Day 20	Day 21	Day 22	Day 23	Day 24
Day 25	Day 26	Day 27	Day 28	Day 29	Day 30

Name _____

TABULATE AND COMPARE

Number of Days in Each Life Stage

STAGE	Cup 1 (days)	Cup 2 (days)
Egg	3	3
Larva		
Pupa		
TOTAL DAYS		

- | | Cup 1 | Cup 2 |
|--|-------|-------|
| 1. How many days were the painted ladies in the egg stage? | _____ | _____ |
| 2. How many days were the painted ladies in the larva stage? | _____ | _____ |
| 3. How many days were they in the pupa stage? | _____ | _____ |
| 4. How many days did it take the painted ladies to become adults? | _____ | _____ |
| 5. How many days did you predict it would take? | _____ | _____ |
| 6. Did you predict more, less, or the same number of days? Fill in the circle next to your answer.
Cup 1 <input type="radio"/> More <input type="radio"/> Less <input type="radio"/> Fewer
Cup 2 <input type="radio"/> More <input type="radio"/> Less <input type="radio"/> Fewer | | |