

Entomology Activity Worksheet



Station 1

	Life Cycle A	Life Cycle B
1. What kind of metamorphosis does this lifecycle model?	Complete metamorphosis (holometabolous)	Incomplete or gradual metamorphosis (hemimetabolous)
2. How do mouthparts differ between the immatures and adult shown?	immatures have chewing mouthparts, adults have siphoning	immatures and adults both have chewing mouthparts
3. List the common name of three vegetable pests that exhibit this kind of metamorphosis.	1. Tomato fruitworm 2. Spotted cucumber beetle 3. Leafminers	1. Squash bugs 2. Stink bugs 3. Earwigs

Bonus question: what kind of mouthparts would you expect a beneficial predator to have? Why?

Beneficial predators can have chewing or piercing-sucking mouthparts. Lady beetles and syrphid fly larvae have chewing mouthparts. Assassin bugs have piercing mouthparts.

Station 2

Select one pesticide product. What is the name of the product?	Caterpillar Killer (answers vary)
1. What is the AI (active ingredient) for this product?	<i>Bacillus thuringiensis</i> subspecies <i>kurstaki</i> strain SA-12 solids, spores and Lepidopteran active toxins
2. What is the preharvest interval (days between the last application and harvest of edible plants)?	none, you may apply up to and on the day of harvest
3. Is this a ready-to-use (RTU) product or a concentrate?	concentrate
4. Can this product be applied to your vegetable crop group?	for cabbage looper on cole crops, lettuce, melon, and tomato
5. How do you apply this product?	mix 1.5 fl ounces per 3 gallons water for hand sprayer for fruit and veg to cover an area of 1000 sqft

Bonus activity: compare the product you chose with someone else's.

Station 3

Minute Pirate Bug	
1. How do immatures differ from adults? What's another name for the immatures?	Immatures, called nymphs, are smaller than adults and wingless. Nymphs are often yellow with red eyes while adults are black and white.
2. What type of development (metamorphosis) does this insect go through?	incomplete metamorphosis
3. What are the preferred insect prey according to the vegetable pest card set?	They feed on tiny insects like thrips, mites, and insect eggs.
Green Lacewing	
1. What do these insects feed on?	soft bodied insects, mites, and eggs
2. What kind of mouthparts do they have?	adults and larvae have chewing mouthparts
Parasitic Wasp	
1. How many eggs does an adult lay in each aphid?	one
2. What is a mummy? Visually, how does it differ from a live aphid?	Mummies are swollen, discolored aphid skins. They have an exit hole where the adult parasitic wasp emerged.

Bonus question: based on UC IPM resources, name 2 ways to encourage natural enemies.

1. eliminate broad spectrum insecticides to conserve natural enemies
2. manage ants that farm honeydew producers such as aphids

Station 4

Pressed Leaves	Damage A	Damage B
1. Describe damage.	serpentine tunnels in between top and bottom layer of leaf, black and brown spots visible in tunnels	uneven, irregular holes chewed throughout leaf
2. What is a possible insect pest that would cause this damage?	leafminer	cucumber beetle, potato beetle
3. What kind of mouthparts does that pest have?	immatures (leafminers) have chewing mouthparts	chewing
4. What is one management practice for this pest?	clusters of eggs can be wiped off before larvae hatch or use protective coverings before adults are active to prevent seedlings	protect seedlings with covers, remove weedy refuges before planting

Bonus Questions: Caterpillar image	
1. Describe the damage this insect pest would cause.	small caterpillars may cause windowpane damage, surface feeding; larger caterpillars may defoliate and skeletonize leaves
2. What kind of mouthparts does this insect pest have?	chewing
3. What is one management method for this pest?	inspect plants, hand pick caterpillars to remove; protect seedlings

Station 5

Insect	Is this insect a pest, beneficial, or benign?	What is the common name of this insect?	What kind of mouthpart does this insect have?
A	pest	leafhopper	piercing sucking
B	beneficial	predaceous ground beetle	chewing
C	beneficial	praying mantis ootheca (egg case)	chewing
D	benign (can be a nuisance pest)	cicada	piercing sucking
E	beneficial	syrphid fly	sponging lapping
F	benign (can be a nuisance pest)	house fly	sponging lapping
G	pest	harlequin bug (eggs)	piercing sucking
H	beneficial	assassin bug	piercing sucking
I	pest	conchuela stink bug	piercing sucking

Bonus question: what orders do these insects belong to?

A. hemiptera	F. diptera
B. coleoptera	G. hemiptera
C. mantodea	H. hemiptera
E. hemiptera	I. hemiptera