

What is an insect?

# Are insects animals?

Here you can put photos of a diversity of animals. I recommend obvious ones that most students would intuitively identify as an animal PLUS one photo that is obviously an animal.

**YES!!**

# Which of these are insects?

A

B

C

Fill this slide with 6 pictures of animals that are often confused with insects (annelids, arachnids, centipedes, milipedes, crustaceans. ) and with 3 pictures of insects.

Originally: A =spider; b= ant; c= earthworm; d= crab; e=earwig; f= centipede; g=snail; h=cockroach; i=shrimp.

D

E

F

I recommend animations to fade out the non-insect choices after polling the class.

Think of this slide as a “pre-test” to gauge student understanding. You will show the same slide after the activity.

G

H

I

# Insects must have:

- Exoskeletons
- Three part bodies (Head, Thorax, Abdomen)
- Legs with *joints*
- Three pairs of legs (six)
- Compound eyes
- One pair of antennae (two)

# Insect features series (notes to teacher)

- In the following series of slides I juxtapose a photo showcasing the each feature of insects in turn with an example from slide three that doesn't have the described feature. I use photos from slide #3 whenever possible.
- For each slide, use the notes to explain what the feature is, then ask the students which of the two animals is an insect based on that information.

# Exoskeleton

Left: beetles , right: earthworm from slide 3

The “no” symbol is animated to show the exclusion of the earthworm.



# Head, Thorax, Abdomen

Left: ant, right: crab from slide 3

The “no” symbol is animated to show the exclusion of the crab.



# Jointed legs

Left: snail from slide 3, right: ant from slide 3

The “no” symbol is animated to show the exclusion of the snail.





# Three pairs of legs

Left: centipede from slide 3, right: cockroach from slide 3

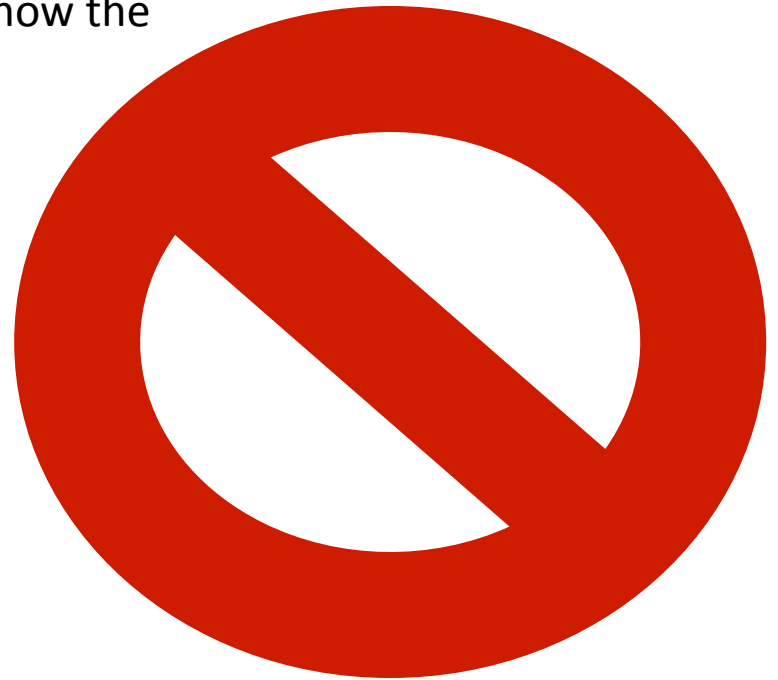
The “no” symbol is animated to show the exclusion of the centipede.



# Compound Eyes

Left: closeup of robberfly eyes, right: closeup of spider eyes

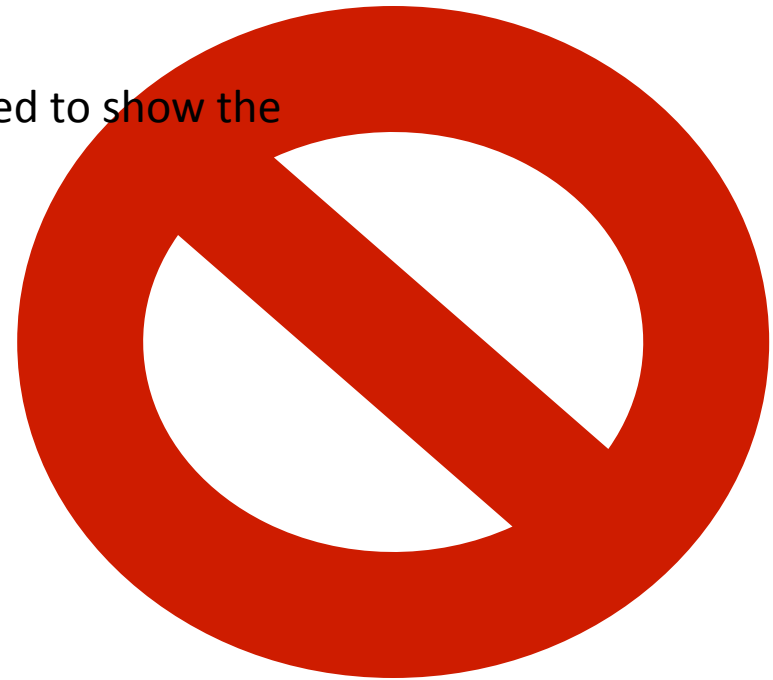
The “no” symbol is animated to show the exclusion of the spider.



# Two antennae (one pair)

Left: earwig from slide 3, right: shrimp from slide 3

The “no” symbol is animated to show the exclusion of the shrimp.



# Insects have must have

- Exoskeletons
- Three part bodies (Head, Thorax, Abdomen)
- Legs with *joints*
- Three pairs of legs (six)
- Compound eyes
- One pair of antennae (two)

# Which of these are insects?

A

B

C

Same as slid #3, this time as a review quiz. Students should be able to nail these now since you just showed them all the answers.

D

E

F

G

H

I

# Metamorphosis

- “meta” = change
- “morph” = shape

I found a cool animated gif from the twilight movies of a human turning into a werewolf but it has been removed for copyright reasons. Consider adding a similar image to spice the slide up.

# Hemi-metabolous

- Hemi = half
- Metabolous = ??
- Also called  
“incomplete  
metamorphosis”

Drawing of various instars of  
a grasshopper

Photo of squash bug young and  
adults.

# Holometabolous

- Holo = whole
- Metabolous = ??

Diagram of butterfly life cycle

Picture of fruitfly eggs, larva (several sizes), and adult.



# Holo- or Hemi- metabolous (notes to teachers)

- The following series presents well known insects and asks students which type of life cycle they have.
- For each insect, I tried to present a photo of the adult insect followed by a photo of the insect's life cycle that would fade in (animation) after polling the students.
- In between examples, I would show a “running tally” of which insects were in which columns with thumbnail photos of the adults.
- When asking students, prompt them to think about what “babies” of the insect in question look like.

Wormy things = holometabolous

Mini-adults = hemimetabolous.

# Housefly

“Hemimetabolous”

“Holometabolous”

“Hemimetabolous”

“Holometabolous”

Adult fly photo

# Monarch Butterfly

“Hemimetabolous”

“Holometabolous”

“Hemimetabolous”

“Holometabolous”

Photo of butterfly

Photo of housefly

# Dragonflies

“Hemimetabolous”

“Holometabolous”

## “Hemimetabolous”

Photo of dragonfly

## “Holometabolous”

Photo of butterfly

Photo of housefly

# Earwigs

“Hemimetabolous”

“Holometabolous”



## “Hemimetabolous”

Photo of dragonfly

Photo of earwig

## “Holometabolous”

Photo of butterfly

Photo of housefly

# Grasshoppers and crickets

“Hemimetabolous”

“Holometabolous”

## “Hemimetabolous”

Photo of dragonfly

Photo of earwig

Photo of grasshopper

## “Holometabolous”

Photo of butterfly

Photo of housefly

# Lady beetle (AKA ladybug)

“Hemimetabolous”

“Holometabolous”

## “Hemimetabolous”

Photo of dragonfly

Photo of earwig

Photo of grasshopper

## “Holometabolous”

Photo of butterfly

Photo of housefly

Photo of lady beetle

# Cockroaches

“Hemimetabolous”

“Holometabolous”

## “Hemimetabolous”

Photo of dragonfly

Photo of earwig

Photo of grasshopper

Photo of a cockroach

## “Holometabolous”

Photo of butterfly

Photo of housefly

# Ants

“Hemimetabolous”

“Holometabolous”



## “Hemimetabolous”

Photo of dragonfly

Photo of earwig

Photo of grasshopper

## “Holometabolous”

Photo of butterfly

Photo of housefly

Photo of an ant.