How are Arthropods classified?

In this investigation, you will compare and contrast characteristics among the five classes of arthropods. You will also classify various species of arthropods into one of the five classes based on examination of anatomical characteristics.

Objectives:

* Compare and contrast eternal anatomical characteristics among the five classes of arthropods.
* Classify selected species of arthropods as belonging to one of the five classes: Arachnida Chilppoda, Crustacea, Diplopoda, or Insecta
* Recognize the adaptive significance of particular arthropod characteristics.

Procedure:

NOTE: there are a total of **nine** arthropods available for you to classify in this investigation. Four of the nine specimens will be randomly assigned by the computer to the specimen containers. To get a new set of four specimens, click the Reset button at any time. To complete the Table for this investigation, you will **need to identify all nine** of the specimens.

1. Click More Information to read general information about arthropods
2. Select a specimen to examine by clicking one of the specimen jars near the dissecting try.

(Note: Arthropods on the dissecting tray are not necessarily drawn to scale.)

1. Move the mouse pointer over the specimen and watch for highlights. If an area highlights as the mouse passes over it, click to see a detailed view of that area.
2. As you examine the specimen on the tray, open the table and collect information about the specimen’s physical characteristics.
3. Click the Arthropod Reference Guide to get information about each of the five classes of arthropods. The reference guide will open to the Table of Contents page.
4. Use the Table of Contents choices and the forward and back pointers to move between pages of the reference guide.
5. There are five sections in the guide, one for each class. Each section has two pages, the first page contains text describing the characteristic of the selected class. The second page shows an illustration of a typical specimen from the selected class.
6. Move the pointer over the illustration to see labels and descriptions of the different parts of the arthropod.
7. Based on your examination of the selected specimen and your review of the Arthropod Reference Guide, decide which class the selected specimen belongs to.
8. Select the Class button that corresponds to your guess, and then click Check.
9. Repeat the procedure for each of the nine specimens. (Click Reset to get four new specimens.)
10. Answer the Analysis questions and Post-Lab questions.

Data Table: Classification of Arthropods

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Specimen Number | # Body Sections 1-2-3- >3 | Walking Legs 6-8 >8 | Any Other Appendages | Antennae 0-2-4 | Claws (yes no) | Jaws (yes no) | Class Name | Common Name |
| 1 |  |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |  |
| 5 |  |  |  |  |  |  |  |  |
| 6 |  |  |  |  |  |  |  |  |
| 7 |  |  |  |  |  |  |  |  |
| 8 |  |  |  |  |  |  |  |  |
| 9 |  |  |  |  |  |  |  |  |

Analysis Questions:

1. How many species of Arachnids are there?
2. What are Arachnids chelicerae used for?
3. How many species of Chilopoda are there?
4. Are Chilopoda herbivore, carnivore, or omnivore?
	1. What do they eat?
5. How many known species of Crustacea are there?
6. What does the Latin word “crusta” mean?
7. How many species of Diplopoda are there?
8. Are Diplopoda herbivores, carnivores, or omnivores?
	1. What do they eat?
9. About how many species of Insecta are known?
10. About how many species of Insecta have not yet been discovered?

**Post-laboratory Questions:**

1. Arthropods:
2. Are vertebrates
3. Make up >60% of animal species
4. Can be grouped into 5 Classes
5. B and C
6. All of the above
7. Arthropods can be found:
8. In the depths of the Pacific Ocean
9. In the Himalayan Mountains
10. In the Jungles of South America
11. All of the above
12. Members of the class *Insecta* are best adapted to living:
13. On land
14. In the ocean
15. In lakes
16. All of the above
17. Arachnids:
18. Have wings
19. Have antennae
20. Inject venom with their tails
21. None of the above
22. Please order the classes of arthropods from LEAST diverse to MOST diverse:
23. *Arachnida🡪Diplopoda🡪Chilopoda🡪Insecta🡪Crustacea*
24. *Chilopoda 🡪 Arachnida 🡪Diplopoda🡪 Insecta🡪Crustacea*
25. *Chilopoda 🡪 Diplopoda 🡪 Crustacea 🡪 Arachnida 🡪 Insecta*
26. *Insecta 🡪Arachnida🡪 Crustacea 🡪Diplopoda🡪Chilopoda*
27. You have found an organism that you believe is an Arthropod living in a saltwater tide pool. To which class does it most likely belong?
28. *Chilopoda*
29. *Diplopoda*
30. *Insecta*
31. *Crustacea*
32. You have caught an organism in midair with a butterfly net. To which class does it most likely belong?
33. *Chilopoda*
34. *Insecta*
35. *Diplopoda*
36. *Arachnida*
37. Which of the following structures can be used for respiration in the Arthropods?
38. Trachae
39. Alveoli
40. Antennae
41. All of the above
42. You have located an organism that lacks antennae crawling along the floor of a jungle. To which class does it most likely belong?
43. *Crustacea*
44. *Insecta*
45. *Diplopoda*
46. None of the above
47. You have located an organism crawling along the sand near the edge of a body of water and it appears to have claws. Based upon this information, to which class does it belong?
48. *Crustacea*
49. *Insecta*
50. *Chilopoda*
51. A or C
52. None of the above