

CASE



Activity 3.2.1 Organize and Identify

Purpose

In a deck of cards, to what group does a King of Hearts belong? If you think it belongs in the group with other kings, then you are correct. If you think it belongs with other cards that have hearts on them, then you are also right. If you think the King of Hearts is grouped with the red cards or other face cards, you are still correct. There are many ways you can sort, or classify, objects.

Classification is grouping items together into categories with similar attributes. The categories can change depending upon your needs or preferences. If a category description changes, items placed in the original categories may now be placed into different categories. In other words, the same object may be classified two or more ways depending upon the descriptions of the categories.

When using classification, there needs to be a system of organization. One organizational system commonly used in the scientific community is the dichotomous key. A dichotomous key gives you a series of steps with a set of choices that are opposite or contrasting in nature. The choices are initially very general and become more specific as you proceed through the steps. By analyzing the physical characteristics or purposes of the object or organism in question and using the steps given in the key, you can identify an object or organism based upon established traits.

How can you classify a group of objects? Where can you use a dichotomous key?

Materials

Per pair of students:

- Set of blue paper figures
- Set of red paper figures
- *Critter Identification Guide*

Per student:

- Pencil
- *Agriscience Notebook*

Procedure

Classify figures based on physical characteristics. Then use a dichotomous key to identify eight specimens.

Part One – Card Classification

Your teacher will give you and your partner a set of paper figures. Work with your partner to identify five different ways to classify the figures based on physical characteristics. Use Table 1 on the student worksheet to describe the categories you identified. Sort the figures into different categories and list the number of the figure in each category column you feel it fits for each respective classification.

For example:

- **Object:** Deck of Cards
- **Classification Feature:** Suits
- **Description of the Classification:** Shape of symbol on card
- **Names of Categories:** Clubs, Diamonds, Hearts, and Spades

Part Two – Critter Identification

Work with your partner to identify eight specimens using the dichotomous key provided.

1. Carefully observe the characteristics of the first specimen in Table 2 of the student worksheet.
2. Start at Step 1 on the *Critter Identification Guide* and determine which choice describes the specimen better.
3. Continue following the key by selecting the best match until you identify the specimen.
4. Record three identifying features and the type of critter in Table 3 on *Activity 3.2.1 Student Worksheet*.
5. Repeat Step 1 through Step 4 for each specimen.

Conclusion

1. Explain why the same figure can be classified into two different categories.

They can have different colors or they could fit under two different categories.

2. Why is understanding the process of classification of objects important?

It is important because if you can't ever classify anything it would be very hard to sort things apart

3. How do you use classification every day?

Dad uses classification in his tool cabinet, each shelf has different tool and of those tools they have the different sizes

4. Based on what you have learned, what other applications could you use a dichotomous key for?

You can use it for anything that you need to classify

5. Why is observing the characteristics of an object an important first step to identify the object?

Without observing it you wouldn't be able to tell how things are similar and different

Adapted from: LabSCI. (2014). *Taxonomy: Who is in my family?* Retrieved from
<http://www.stanford.edu/group/lpchscience/cgi-bin/wordpress/taxonomy.html>

Name _____

Activity 3.2.1 Student Worksheet

Table 1. Classifying Objects

Classification Feature	Description of the Classification	Names of the Categories Included in the Classification			
rectangular	4 sides	open middle	closed middle		
		List the Numbers of the Figures in the Correct Category			
		4	8		
Classification Feature	Description of the Classification	Names of the Categories Included in the Classification			
rounded sides	no defined sides	circles	bubbles		
		List the Numbers of the Figures in the Correct Category			
		4	4		
Classification Feature	Description of the Classification	Names of the Categories Included in the Classification			
triangles	3 sides	blue	pink		
		List the Numbers of the Figures in the Correct Category			
		2	2		
Classification Feature	Description of the Classification	Names of the Categories Included in the Classification			
		List the Numbers of the Figures in the Correct Category			
Classification Feature	Description of the Classification	Names of the Categories Included in the Classification			
		List the Numbers of the Figures in the Correct Category			

Table 2. Specimens

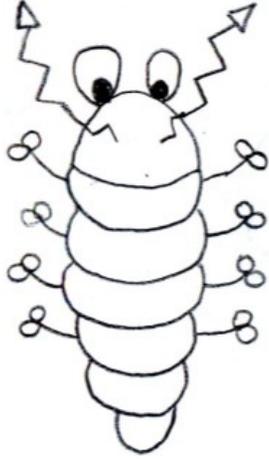
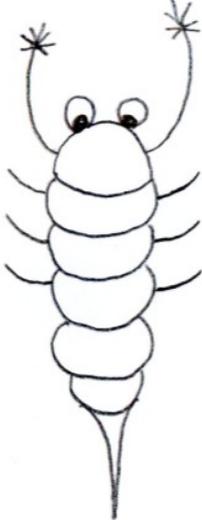
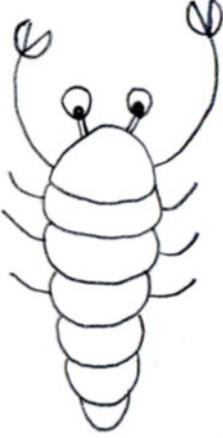
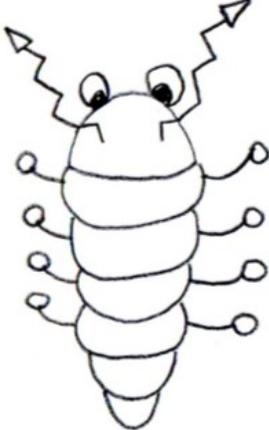
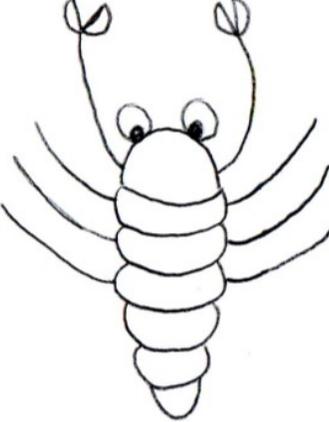
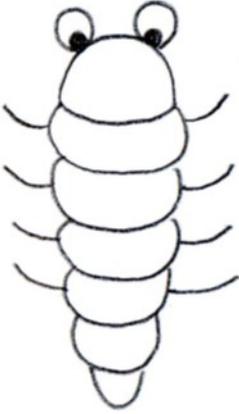
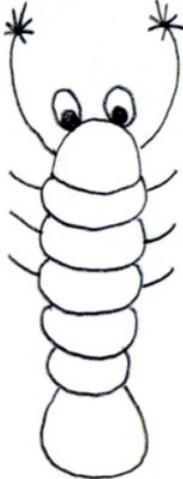
			
<p>Specimen 1</p>	<p>Specimen 2</p>	<p>Specimen 3</p>	<p>Specimen 4</p>
			
<p>Specimen 5</p>	<p>Specimen 6</p>	<p>Specimen 7</p>	<p>Specimen 8</p>

Table 3. Critter Identification

Specimen #	Feature 1	Feature 2	Feature 3	Critter Name
1	8 legs	short antenna	2 feet per leg	<i>Rotundopedus bipede</i>

2	8 legs	antenna present	long antenna	<i>Octocrus mirum</i>
3	has fingers	tail is pointed		<i>Palma thyrus</i>
4	6 legs	has pinchers	eye stalks present	<i>Chelicerus stipula</i>
5	8 legs	has short antenna	1 foot per leg	<i>Rotundopedus uniped</i>
6	6 legs	has pinchers	legs are long	<i>Chelicerus longacrus</i>
7	8 legs	antenna absent		<i>Octocrus archetypum</i>
8	has fingers	tail is round		<i>Palma magnocauda</i>