



Exchange Activity Notes

Name: _____ Class Period: _____

Have students make observations of the liquid in their cups using their visual and olfactory senses. Confirm that all cups contain a clear and odorless liquid.

Step 1 Make observations about the liquid in your cup and record them below:

- a. Color of the liquid: Clear
- b. Smell of the liquid: None—odorless

Point out that students will also record the cup numbers from the three exchanges they will do.

Step 2 Record your cup number in column B of the Exchange Record Table below.

First, demonstrate for the class the exchange of liquid by pouring liquid from one cup into the other, then dividing the mixture evenly between the two cups. Afterwards, have students conduct one exchange at a time and record the cup numbers in the order of exchange.

Step 3 Exchange the liquid in your cup with that of another student. First, record his or her cup number in column B of the Table below, then pour the liquid from one cup into the other student's cup. Next divide the mixture evenly between the two cups. Repeat this with two other students, so you have had a total of three exchanges.

Once again, after three exchanges all cups still contain a clear, odorless liquid. There is no visible, immediate change caused by the three liquid exchanges.

Step 4 After completing three exchanges, record the color and smell of your liquid below:

- c. Color of the liquid: Clear
- d. Smell of the liquid: None—odorless

As you are adding a couple of drops of phenolphthalein ($C_{20}H_{14}O_4$) into the cups of students who have completed their three exchanges, tell them to observe and record the color of the liquid in their cups in column C of the Exchange Data Table. Tell students to go find the three students with whom they have done exchanges with, then observe and record the color of each of their liquids in their corresponding row in column C. Give students time to record the information and settle back in their seats to summarize and analyze the activity they have just completed.

Step 5 After three exchanges, have the teacher add phenolphthalein ($C_{20}H_{14}O_4$) solution to your cup and record the color of the liquid in your cup in column C in the Exchange Table. Also, record in column C the color of the liquid in each of the three cups that you have exchanged liquids in Step 2.

Exchange Data Table

A	B (Step 2) Record each cup number.	C (Step 4) Record the color of the liquid after your teacher adds a solution in each cup.
Your cup		
First exchange		
Second exchange		
Third exchange		

