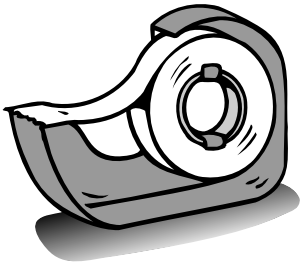
Chapter Science Investigation Name _____

Investigating the Interaction of Organ Systems

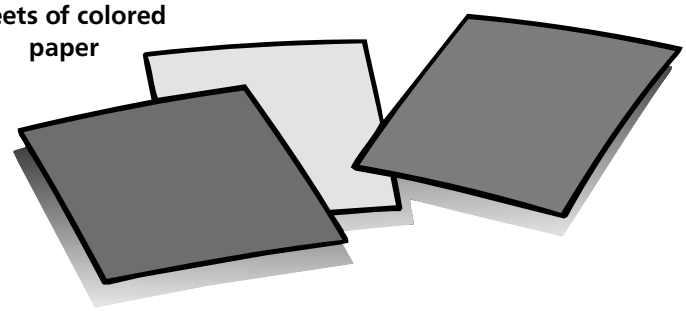
What You Need

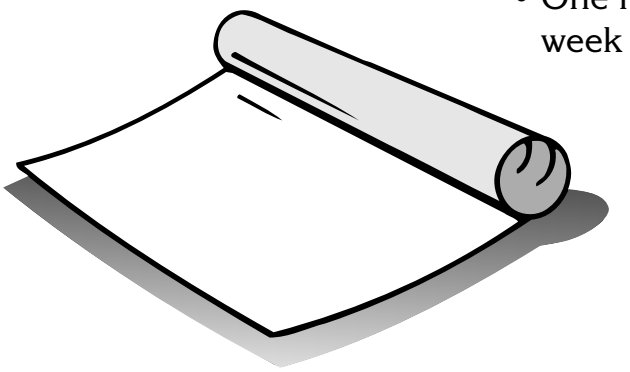
scissors



tape

sheets of colored paper





sheet of white roll paper, large enough for a life-sized outline of yourself

Find Out

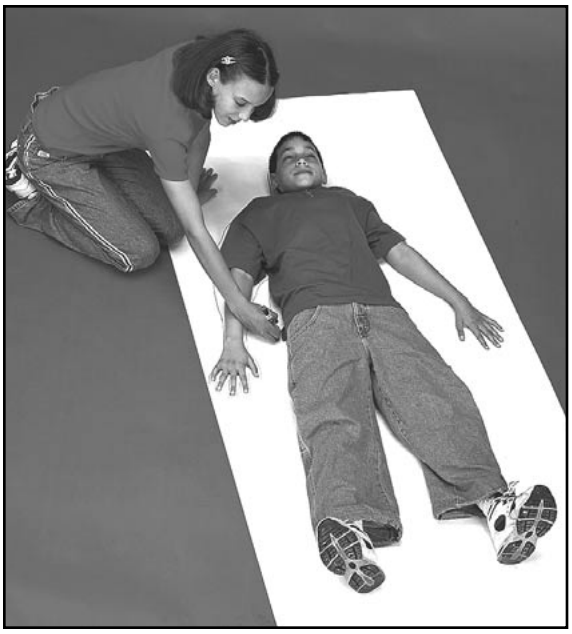
Do this activity to find out how the body's systems interact to form a bigger system.

Process Skills

Measuring
Classifying
Observing
Inferring

Time

- One hour once a week for three weeks



What to Do

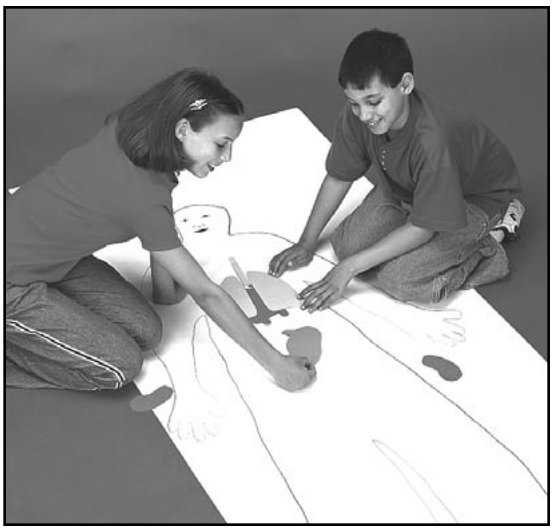
1. Have a classmate draw an outline of your body on the roll paper. **Measure** the height and width of the drawing.

2. As you study each system in the human body, use colored paper to cut shapes that represent the major organs in each system (for example, digestive, excretory, and so on). Each body system should be a different color.

3. Attach the shapes to their corresponding places on the human outline and **label** each organ by its name and by the system of which it is a part. Try to keep from entirely covering any one organ or system with another.

4. **Record** the names of the organs and their functions, and identify the body system with which each is associated.

5. Indicate the connections that each system has to other systems in the body with arrows linking the system labels that are written outside of the human outline. **Observe** how the systems interact.



Organ Systems		
Name of Organ	**Organ System to Which It Belongs**	**Function**

Conclusions

1. What organ systems does your life-sized figure show?

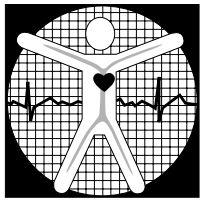
2. What are some ways in which the organ systems interact?

New Questions

1. **Infer** how the removal of one organ could affect the way that an organ system is able to perform its function in the body.

2. What organs are not shown in your life-sized figure?

Name _____



ACTIVITY

Investigating Blood Pressure

Predict whether the hard plastic or flexible plastic tube will squirt farther when you squeeze the bottle.

Record the observations you make during the activity in the data table below.

Data and Observations

	Distance Water Squirts (cm)	
Trial	**Hard Tube**	**Flexible Tube**
1		
2		
3		
Total		
Average		

Name _____

Conclusions

1. **Infer** what body organ the plastic bottle represents. What does the water represent?

2. Compare your prediction with your observations. Which tube squirted water farther?

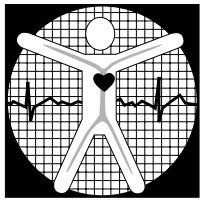
3. Which tube was under higher pressure? Lower pressure?

Asking New Questions

1. Artery walls are more muscular, but less elastic or flexible, than veins. Which tube represents an artery, and which represents a vein?

2. On the basis of your answer to the previous question, compare blood pressure in arteries and veins.

Name _____



ACTIVITY

Investigating Absorption

Make a **hypothesis** by telling in which beaker the most water will be absorbed and why.

Record how much water is in each beaker and the amount of water absorbed in the table below.

	Amount of Water Before Paper Towels Added	**Amount of Water After Paper Towels Removed**	**Amount of Water Absorbed**
Beaker A			
Beaker B			
Beaker C			
Beaker D			

Name _____

Conclusions

1. Compare your hypothesis with your results.

2. Explain why some beakers absorbed more water than others.

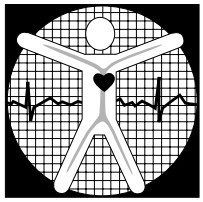
3. In what ways are the paper towels like villi in your small intestine?

Asking New Questions

1. How would a beaker that had five paper towels in it compare with those that you observed in the activity?

2. On the basis of the results of your activity, **infer** how the number of villi in your small intestine increases the surface area of your small intestine and allows more food to be absorbed.

Name _____



ACTIVITY

Filtering a Mixture

Predict what will happen as the water and crushed chalk mixture is poured through the filter.

What did you see in the filter? **Record** your observations.

Name _____

Conclusions

1. Compare your prediction with your observations.

2. What happened when the mixture was poured through the filter paper?

3. Describe how this filtering process compares to the kidney's filtering process.

Asking New Questions

1. What would happen if you kept adding larger particles of chalk to the mixture? What kinds of further information would be helpful to support your conclusion or to answer new questions that you have?

2. Describe how this activity could be changed to make it more like the filter system in your kidneys.