

Name: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

## Testing Urine

### Learner Outcomes:

- Interpret the healthy function of human body systems and illustrate ways the body reacts to internal and external stimuli.
- Compile and display data, by hand or by computer, in a variety of formats, including diagrams, flow charts, tables, bar graphs or line graphs.

### Key Terms:

protein

diabetes

dialysis

glucose

kidney failure

Biuret solution

**Background Information:** Urine contains waste products, but sometimes other compounds can appear in the urine. Doctors can determine whether a patient has certain diseases by testing the urine. Normally, urine does not contain protein or glucose. Protein in the urine is a sign of kidney failure, and glucose in the urine is a sign of diabetes.

**Research Question:** What can we tell about the health of three fictitious patients, by testing their urine?

### Hypothesis:

### Materials:

6 test tubes

Glucose solution

Glucose test strips

Test tube rack

Protein solution

Paper towel

Masking tape

3 simulated urine

6 eyedroppers

Pen

samples

Biuret solution

Water

Tweezers

**Procedure:**

1. Label 6 test tubes according to patient number (1, 2, 3) and the control samples (water, protein, glucose) Add simulated urine, or the control substance to each test tube to a depth of about 5 -7 cm (half full).
2. Create a data table to record your results.
3. Using tweezers, dip a glucose strip into each of the samples. Record the color on the test strip, and use the glucose test strip chart to interpret your results.
4. Add 10 drips of Biuret solution to each of the samples. Swirl each tube gently and record the color in the test tube.

**Observations:** Create a data table for your results.

**Analysis:**

1. What color did the glucose strip turn when the glucose solution was added to it?
2. What color did the protein solution turn when the Biuret solution was added to it?
3. What was the purpose of the water sample?

4. Did any of the patient samples show any signs of diabetes? How did / would you know? What other symptoms might the patient have?
  
5. Did any of the patient samples show any signs of kidney failure? How did / would you know? What other symptoms might the patient have?
  
6. In this experiment, all samples were colorless. What would you expect to happen if you used real urine? How might this influence your tests?

**Conclusion:**

**Extension:**

1. Select either kidney failure or diabetes and create an informational pamphlet on this disease to tell patients about potential causes of the disease, symptoms of the disease, other tests / means to diagnose the disease, and treatments used to cure / manage the disease.