2. Obtain three dropper bulbs or small microtip pipets, and label them "A," "B," and "H_2O."
3. Fill the bulb or pipet A with solution A, the bulb or pipet B with solution B, and the bulb or pipet for H_2O with distilled water.

PROCEDURE

1. Using the first 8-well strip, place five drops of solution A into each of the first five wells. Record the number of drops in the appropriate places in your data table. **For the best results, try to make all drops about the same size.**
2. In the second 8-well reaction strip, place one drop of solution B in the first well, two drops in the second well, three drops in the third well, four drops in the fourth well, and five drops in the fifth well. Record the number of drops in your data table.
3. In the second 8-well strip that contains drops of solution B, add four drops of water to the first well, three drops to the second well, two drops to the third well, and one drop to the fourth well. Do not add any water to the fifth well.
4. Carefully invert the second strip. The surface tension should keep the solutions from falling out of the wells. Place the strip well-to-well on top of the first strip, as shown in Figure A.
5. Hold the strips tightly together as shown in Figure A, and record the exact time, or set the stopwatch, as you shake the strips once. This procedure should mix the upper solutions with each of the corresponding lower ones.

FIGURE A

6. Observe the lower wells. Note the sequence in which the solutions react, and record the number of seconds it takes for each solution to turn a blue-black color.

CLEANUP AND DISPOSAL

7. Dispose of the solutions in the container designated by your teacher. Wash your hands thoroughly after cleaning up the area and equipment.

ANALYSIS AND INTERPRETATION

1. **Organizing Data:** Calculate the time elapsed for the complete reaction of each combination of solutions A and B.
2. **Evaluating Data:** Make a graph of your results. Label the *x*-axis "Number of drops of solution B." Label the *y*-axis "Time elapsed." Make a similar graph for drops of solution B versus rate (1/time elapsed).
3. **Analyzing Information:** Which mixture reacted the fastest? Which mixture reacted the slowest?
4. **Evaluating Methods:** Why was it important to add the drops of water to the wells that contained fewer than five drops of solution B? (Hint: Figure out the total number of drops in each of the reaction wells.)

CONCLUSIONS

1. **Evaluating Conclusions:** Which of the following variables that can affect the rate of a reaction is tested in this experiment: temperature, catalyst, concentration, surface area, or nature of reactants? Explain your answer.
2. **Applying Ideas:** Use your data and graphs to determine the relationship between the concentration of solution B and the rate of the reaction. Describe this relationship in terms of a rate law.

EXTENSIONS

1. **Predicting Outcomes:** What combination of drops of solutions A and B would you use if you wanted the reaction to last exactly 2.5 min?