The Journey Inside^{SM}: Digital Information

Student Handout: Decision Making

Decision Making

You are used to being in situations where you have to make a decision. For example, suppose you are asked to write a paragraph about the event you enjoyed the most during the summer. What topic do you choose? Or, suppose you need to go home from school as quickly as possible. If there is more than one way to travel, you must decide which would be the fastest. These types of situations you can think of as **OR** situations. You select only one of several available and reasonable options.

You make other kinds of decisions as well. One kind of decision making helps you achieve some goal you set. For example, you may want to become the best basketball player in your grade. Or, you want to become skilled enough to compete in both the butterfly and the backstroke in the next swim meet. These types of situations involve more than just one step, so they can be thought of as **AND** situations. To meet this type of goal, you need to accomplish more than just one thing.

If you think of a circuit with two switches connected to a light, you can use the circuit to represent your decision-making process. If the circuit is designed as a series circuit—one where you have only one complete pathway between the power source and the load—you can complete the thinking needed for **AND** situations. If you create a circuit that is parallel—more than one pathway to complete the circuit between the power source and load—you have a way to model **OR** thinking.

The reaction of the circuit load to the switches being open or closed is referred to as the circuit logic. And, you can think of input to the thinking process as the switch being off or on and the output as the load being done or not being done. Decisions can be made about the final outcome of a set of conditions with **OR** and **AND** kinds of thinking.

Activities

1. Remember the definition of binary? Think of questions that you can answer using only yes or no. Do they fit the definition of a binary situation? To answer the following questions, when your answer is yes, use a 1. If your answer is no, use a 0. The word **AND** requires both conditions to be true—both questions answered with a yes. The word **OR** requires only one condition to be true. It is false only if both answers are no.

2. Complete the following tables. Use yes and no to answer the questions.

If (my homework is done)	AND (my room is tidy)	then (I can go to a movie)

If (the teacher is absent)	OR (there is a blizzard)	then (I can stay home)

3. Now complete the same tables but using 1s and 0s instead of yes and no.

If (my homework is done)	AND (my room is tidy)	then (I can go to a movie)

If (the teacher is absent)	OR (there is a blizzard)	then (I can stay home)