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Module 1 - How People Reason

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Module 1 - How People Reason - Overview

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Module 1

How People Reason

Introduction

You have probably been puzzled at various times in your teaching career by the thinking strategies that students appear to use to solve problems. It is difficult for most of us to understand that many students do not use reasoning patterns that seem obvious to us. Many students substitute numbers into a formula they remember even though the formulas may not be applicable to the problem at hand. This situation quite naturally leads us to wonder about the reasoning that students utilize when we would employ mental operations such as separating variables, excluding an irrelevant factor, or applying a mathematical relationship such as ratios.

Objectives

To assist you in distinguishing among various patterns of reasoning used to solve simple problems.

Procedure

The activities of this module take place at four different stations. You will find a different puzzle activity at each station, and may visit them in any order you wish. Take one of the puzzle pamphlets at the station's table and then carry out the steps described on the first page of the pamphlet in the order given. Please do at least three activities, and then complete the self-check on the back of this page. You may wish to discuss your findings with the other participants as you proceed through this module.

You will be able to examine four different puzzle activities:
The Treasure Hunt Puzzle, The Mr. Short/Mr. Tall Puzzle, The Mealworm Puzzle and The Islands Puzzle

Have a good time!

Module 1 Self Check

After you have completed the puzzles in Module 1, please read the following responses and classify them as Student A or Student B. Compare your answers with those of other participants and with ours (bottom of page).

Student X_1 (age 23) Treasure Hunt Puzzle

W, WR, WJ, WF, WRJ, WRJF, WRF, WJF, R, J, F Type_____

Student X_2 (age 21) Mr. Short/Mr. Tall Puzzle

Prediction for Mr. Tall: 15 paper clips high
Explanation: "Guess, I'm really not sure how to do this." Type_____

Student X_3 (age 20) Mealworm Puzzle

A) light but not moisture. "When the sunlight is at one end of the box it is dry, they all move to that one end." Type_____

Student X_4 (age 20) Islands Puzzle

1. Answer: Can't tell from the two clues
   Explanation: No information about flights between B and D.

2. Answer: Yes
   Explanation: Go from C to D and then to B.

3. Answer: Can't tell from the three clues.
   Explanation: Not possible to fly from B to A, and there is no mention of a direct flight between C and A. Type_____

Now go on to Module 2.