Unit 3: Logic and Reasoning Lesson 3.2

Coach's Corner – III

1. Explain whether each of the following conclusions was drawn from inductive or deductive reasoning.

   a. The inflation rate was about 2% last year, so it will be about 2% next year.

      Inductive reasoning was used. A past example was used to predict a future value.

   b. Bobby is a hockey player so he plays in the National Hockey League.

      Deductive reasoning was used. The premise that all hockey players play in the NHL leads to the (incorrect) conclusion that Bobby plays in the NHL.

   c. All prime numbers larger than 2 must be odd because an even number will have 2 as a factor.

      Deductive reasoning was used. General statements that are accepted to be true were used to draw the conclusion.

   d. The next number in the sequence 2, 5, 11, 23, 47, 95 is 191.

      Inductive reasoning was used. A pattern was used to make a prediction.

2. Consider the following statements. Decide if the conclusion is valid in each case. Explain.

   a. Jessie is Sammy's only sister. Sammy's sister is afraid of heights. Sammy is afraid of heights.

      Invalid. Jessie's fear of heights is not enough information to conclude that Sammy will be afraid of heights.

   b. Water freezes at 0° Celsius. Tammy sees a thermometer that reads 0° Celsius. The puddles in Tammy's yard will have ice.

      Invalid. Although the puddles will eventually freeze, it may not happen immediately. In addition, the thermometer is measuring the air temperature and not the puddle water temperature.

c. Symptoms of the flu include aches and fever. Julie has a fever and her body aches. Julie has the flu.

Invalid. The flu is not the only illness that includes a fever and body aches as symptoms.

d. Tara lives in Grassy Lake. Grassy Lake is in Alberta. Tara lives in Alberta.

Valid.

Please return to *Unit 3: Logic and Reasoning Lesson 3.2* to continue your training.

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Coach's Corner – IV

1. Explain why the sum of the lengths of two sides of a triangle must always be greater than the length of the third side.

Suppose one side of a triangle was longer than the lengths of the other two combined. It would be impossible to form a closed shape because the two short sides would not be able to touch each other and the ends of the long side at the same time. This means that no side can be longer than the other two combined.

These sides are too short to touch.

In addition, if the longest side was the same length as the other two lengths combined, there would be no triangle formed, but rather just overlapping lines.

As such, to form a triangle, there must be two sides whose combined length is greater than the length of the third side.