

Unit 3: Logic and Reasoning Lesson 3.3**Coach's Corner – V**

1. Explain whether the reasoning in each of the following is correct.

- a. Lions, tigers, cougars, bobcats, and house cats all have sharp claws, so all cats have sharp claws.

Incorrect. Giving some examples is not enough to prove the general case.

- b. Naim said Tahnee will win the race and Naim knows a lot about racing, so Tahnee will win.

Incorrect. Even an expert can make an incorrect prediction about the outcome of a sporting event.

- c. A square is a rhombus because it has four equal sides.

Correct. The conclusion follows from the premises.

- d. All insects have an exoskeleton and a hornet is an insect, so it has an exoskeleton.

Correct. The conclusion follows from the premises.

- e. Nobody has ever disproved the existence of dragons, so they must exist.

Incorrect. Having never disproved something is not the same as proving it.

2. A phrase the ancient Greek Philosopher Socrates is credited with is “I know that I know nothing”. The statement stemmed from his belief that although one can be very confident in something, it is impossible to know anything with absolute certainty.

- a. Explain why the statement “I know that I know nothing” is inconsistent.

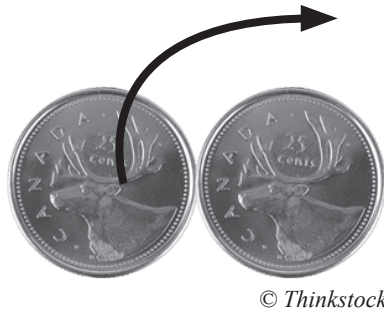
The statement is self-contradictory because saying that he knows nothing implies that he knows at least one thing.

- b. Make up your own self-contradicting statement. Explain why it is self-contradictory.

Statements will vary. “This sentence cannot be read” and “The first rule is there are no rules” are examples of self-contradictory statements.

3. Suppose two coins of the same type are laid side by side as shown in the diagram.
- a. If one coin is rolled along the other coin, conjecture how many rotations the moving coin will undergo to make one trip around the second coin.

Conjectures will vary.



- b. Test your conjecture. Was it correct? Revise it if not.

The conjecture can be tested by rolling one coin around another to see how many times it rotates.

- c. Explain why some people may find the number of rotations unexpected.

Some people may expect the coin to rotate once and find it surprising that the coin will rotate more than once each trip.

Please return to *Unit 3: Logic and Reasoning Lesson 3.3* to continue your training.