1.3-1.4 Describing and Critiquing Arguments and Logical Fallacies - SOLUTIONS

Group Activity

1. Determine whether each argument is inductive or deductive.

a. All cats have a keen sense of smell. Fluffy is a cat, so Fluffy has a keen sense of smell.
   This argument goes from general to specific so it is deductive.

b. All brown dogs in the park are small dogs. Therefore, all small dogs are brown.
   This argument goes from specific to general so it is inductive.

c. My friends who are in college eat pizza. Pizza is affordable. Therefore, all college students eat pizza.
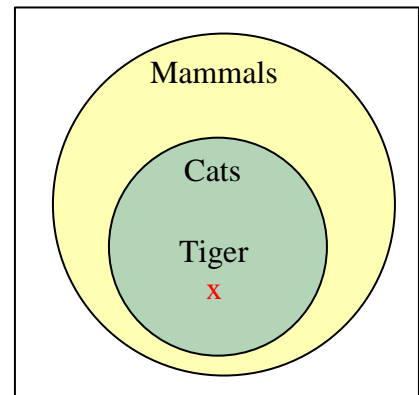   **This argument goes from specific to general so it is inductive.**

2. Draw a Venn diagram for each deductive argument and determine whether it is valid and sound. (Problems adapted from David Lippman http://www.opentextbookstore.com/mathinsociety/index.html)

a. Premise: All cats are mammals **(T)**
   Premise: A tiger is a cat **(T)**
   Conclusion: A tiger is a mammal **(T)**
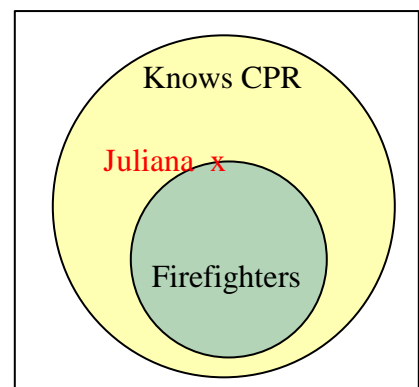
   The conclusion is valid/invalid
   The conclusion is sound/not sound

b. Premise: All firefighters know CPR
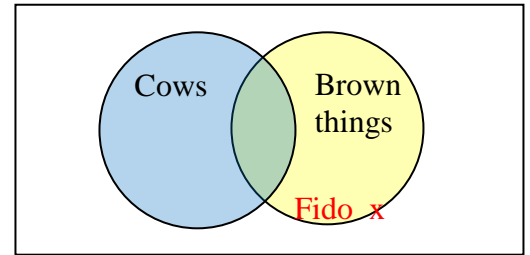   Premise: Juliana knows CPR
   Conclusion: Juliana is a firefighter

   The conclusion is valid/invalid
   The conclusion is sound/not sound

   The conclusion does not follow from the premises. It does not matter whether the premises are true or false, the argument is invalid and therefore it is not sound.
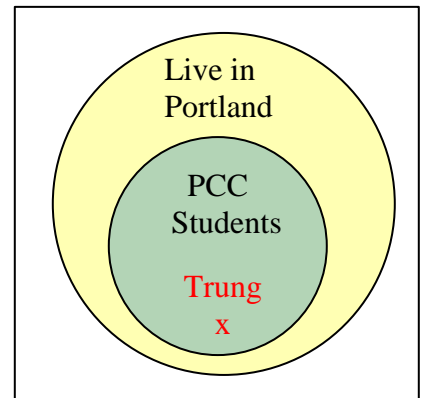
c.   Premise: Some cows are brown
      Premise: Fido is not a cow
      Conclusion: Fido is brown

Cows / Brown things / Fido x

The conclusion is valid/invalid
The conclusion is sound/not sound

The conclusion does not follow from the premises, so the argument is invalid. Because it is invalid it cannot be sound.
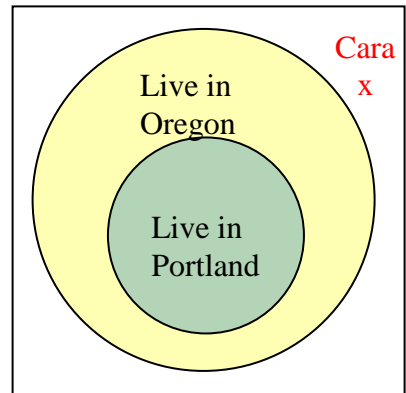
d.   Premise: All PCC Students Live in Portland **(F)**
      Premise: Trung is a PCC Student **(T)**
      Conclusion: Trung lives in Portland **(Unknown)**

Live in Portland / PCC Students / Trung x

The conclusion is valid/invalid
The conclusion is sound/not sound

The conclusion follows from the premises so the argument is valid. The first premise is false, however, so the argument is not sound.

e.   Premise: If you live in Portland, you live in Oregon **(T)**
      Premise: Cara does not live in Oregon **(F)**
      Conclusion: Cara does not live in Portland **(F)**

Cara x / Live in Oregon / Live in Portland

The conclusion is valid/invalid
The conclusion is sound/not sound

The conclusion follows from the premises so the argument is valid. The second premise is false, however, so the argument is not sound.

1.4: Logical Fallacies

A **logical fallacy** is a type of flawed or misleading argument.

3. We are going to study six common fallacies (but there are many more that you can find on the internet). The fallacies are listed on the yellow and red cards (like fútbol or soccer penalty cards) with their descriptions on the back. Match one example card to each fallacy and write the name in the space provided.

6 Common Logical Fallacies

Fallacy	Description	Examples
Personal Attack or Ad Hominem	There is something wrong with the person or group making the claim, so the claim is not true.	"Vote against the healthcare bill because 'Lying Laura' supports it."
Appeal to Ignorance	There is no proof that the claim is true; therefore, it is false	"No one has proven it isn't Bigfoot in the photo, so it must be Bigfoot."
Appeal to Authority	An expert says the claim is true; therefore, it is true.	"Oprah Winfrey says Weight Watchers works so it must be very effective."
False Dilemma	A and B are the only options. A is false; therefore, only B can be true.	"Either those lights in the sky were an airplane or aliens. There are no airplanes scheduled for tonight, so it must be aliens."
Straw Person	Presenting an oversimplified or distorted view of an argument and attacking the misrepresentation.	"Senator Khouri has proposed reducing military funding by 10%. Apparently, she wants to leave us defenseless against attacks by terrorists."
Post Hoc or False Cause	A came before B; therefore, A caused B.	"Today I wore a red shirt, and my team won! I will wear a red shirt every time they play to make sure they keep winning."

4. Identify the type of logical fallacy in each example

  a. The Association for Family Values has endorsed Ms. Burke, so you should vote for her.
       Appeal to Authority

  b. Coyotes must be extinct, since I haven't seen any for five years.
       Appeal to Ignorance

  c. "You don't drink Coke, so you must not consume caffeinated drinks."
       False Dilemma

  d. "People should avoid seeing the movie *Star Wars* because Jan was diagnosed with strep throat the next day after she saw it, and I got the flu a few days after seeing that same movie."
       False Cause

  e. **"**The failing New York Times endorsed "Mr. Cheng, but he is a moron who doesn't know what he is doing. Don't vote for him."
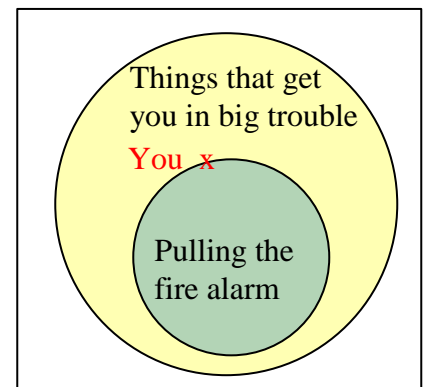   **Personal Attack**

More Practice

1. Draw a Venn diagram for each deductive argument and determine whether it is valid and sound. (Problems adapted from David Lippman http://www.opentextbookstore.com/mathinsociety/index.html)

  a.   Premise: If you pull the fire alarm you will get in big trouble
        Premise: You got in big trouble
        Conclusion: You must have pulled the fire alarm

        The conclusion is valid/<mark>invalid</mark>
        The conclusion is sound/<mark>not sound</mark>

  b.   Premise: All chocolate bars contain nuts **(F)**
        Premise: This bar is made of chocolate
        Conclusion: It must contain nuts

        The conclusion is <mark>valid</mark>/invalid
        The conclusion is sound/<mark>not sound</mark>