

Section 6.1

How Do We Reason?

- We make arguments, where an *argument* is a sequence of statements called *premises*, followed by a single statement called the *conclusion*.
- The hope is that we make valid arguments, where an argument is *valid* if the truth of the premises implies the truth of the conclusion.
- We can use the rules of logic to make valid arguments.
- The most common rule of logic is *modus ponens* (mode that affirms). If A and B are statements and “if A then B ” and A are both true, then we can conclude that B is true.
- Think of examples of modus ponens that you might have learned as a child.

More Ideas About Reasoning

- When a conclusion is made that does not follow from the premises the reasoning is called a *non sequitur* (it does not follow).
- Can you come up with examples of non sequiturs that you have encountered recently?
- Some dictionary-type definitions of *logic*:
 - The study of the principles of reasoning, especially of the structure of statements and of methods to determine their validity.
 - A system of reasoning.
 - Valid reasoning.
- A *calculus* is a language of expressions, where each expression has a value and there are rules to transform one expression into another that has the same value.