Answers to the Exercises -- Introduction

SECTION 2

1. a. INVALID Any possible situation in which Lee was a president but neither of the others was.
   b. INVALID Any possible situation in which Polk was a president but neither of the others was.
   c. VALID
   d. INVALID Any possible situation in which Whitney was a president and neither of the others was.

2. a. True. (Such an argument will always have at least one false premise.)
   b. False. Some do; some don't.
   c. True.
   d. False. Sometimes adding a premise converts an invalid argument into a valid one, and sometimes it does not. It depends on what you add.
   e. True. There can't be a possible situation in which it has all true premises and a false conclusion because there can't be a possible situation in which it has all true premises.
   f. True. There can't be a possible situation in which it has all true premises and a false conclusion because there can't be a possible situation in which it has a false conclusion.
   g. False. It might be valid, or it might be invalid.

3. a. False. Valid arguments with false premises aren't sound.
   b. True. An invalid argument isn't sound because it isn't even valid.
   c. True. The premises are all true, and it's valid, so its conclusion must be true too.
   d. False. If you add a true premise it will remain sound, but if you add a false premise it will become unsound.
   e. False. A valid argument is unsound if it has a false premise.
   f. False. If the conclusion is necessarily true the argument will be valid, but it still might have a false premise, and thus be unsound.

4. It has to be valid. For suppose it were not. Then there would be a possible situation in which A is true and C is false. Since the first argument is valid, B is true in this situation; but then since the second argument is valid, C is also true in that situation, contradicting our supposition that there is a situation in which A is true and C is false.

5. It has to be sound. It has to be valid for the same reason as in the previous example. And since the first argument is sound, A is true. So its premise is true.

6. We know that at least one of them is invalid, but we don't know which. If they were both valid, the first argument would have to be valid, as in exercise 4. So they aren't both valid. But there are cases in which the first is valid and the second invalid, and cases in which the first is invalid and the second valid, and cases in which they are both invalid.

First valid and second invalid:

A Polk was a president
B Polk or Lee was a president
C Lee was a president

First invalid and second valid:

A Polk was a president
B Polk and Lee were presidents
C Lee was a president

Both invalid:

A Polk was a president
B Nixon was a president
C Lee was a president

7. a. Polk was a president.
∴ Polk wasn't a president. [Naturally, the argument is invalid.]

b. Polk was a president.
∴ Either Whitney was a president or he wasn't.

This argument is valid; it cannot have all true premises and a false conclusion because it cannot have a false conclusion.

SECTION 5

1. a. Either McGovern or Nixon was president.
Either Nixon or Goldwater was president
∴ Either McGovern or Goldwater was president.

b. The original argument will do; it already has all true premises and a false conclusion.

c. VALID.

d. Either Whitney or Polk was a president.
Lee was not a president.
∴ Lee wasn't a president and Whitney was.

2. a. False.
b. False. This does not show that *no* argument with that form has true premises and a false conclusion.
c. False. You might not have looked hard enough.

3. a. VALID

b. INVALID If Polk and Lee were both presidents, Polk was a president.
Polk was a president.
∴ Polk and Lee were both presidents.

c. VALID

d. INVALID Lee or Polk was a president.
Polk was a president.
∴ Lee was a president.

e. VALID

f. VALID

g. VALID (This depends interpreting `or' inclusively; this is discussed in chapter 2 below.)

4. a. Yes. It shows the original argument invalid, and an invalid argument is not sound.

b. No. The original argument could still be invalid, or have a false premise, or both.

Example:

Original argument:	*"Found" argument:*
Lee was a president	Nixon was a president.
∴ Whitney was a president	∴ Kennedy was a president.

c. It shows neither.
Examples:

Original unsound argument:	*"Found" argument:*
Lee wasn't a president	Nixon wasn't a president.
∴ Whitney wasn't a president	∴ Kennedy wasn't a president.

Original sound argument:	*"Found" argument:*
Lee wasn't a president	Nixon wasn't a president.
∴ Lee wasn't a president	∴ Nixon wasn't a president.

5. a. Some arguments with this form are sound: the ones with true premises. But not all; some of them have false premises.
b. None are sound, since none are valid.
c. Some arguments with this form are sound: the ones with true premises. But not all; some of them have false premises.
d. None are sound, since none are valid.
e. None are sound, since none has a true premise.
f. Some arguments with this form are sound: the ones with true premises. But not all; some of them have false premises.
g. Some arguments with this form are sound: the ones with true premises. But not all; some of them have false premises.

6. Many logicians think that there are arguments that are valid, but not formally valid. An example is:

Herman is a bachelor
∴ Herman is unmarried

The validity of this argument comes from the meaning of the word '*bachelor*', and not from the form of the sentences in the argument.

As we have defined 'formally valid', any argument that is formally valid is automatically valid.