

2.3E EXERCISES

1. Construct truth-functional paraphrases of the following sentences and symbolize those paraphrases in *SL*, using the following symbolization key:

P: The Red Sox improve their pitching.

G: The Red Sox have a good chance of winning the American League pennant.

Y: The Yankees will win the pennant.

F: The Red Sox falter.

T: The Twins win tonight.

M: The Mariners win tonight.

A: The Angels win tonight.

I: The Indians win tonight.

S: The Indians' starting pitcher can go the full nine innings.

N: The Angels move into first place.

H: The rain stops within an hour.

G: The game will be postponed.

R: The Royals are in the running for the pennant.

- a. If the Red Sox improve their pitching they have a good chance of winning the American League pennant.
 - *b. The Yankees will win the pennant if the Red Sox falter and the Twins lose tonight.
 - c. If the Twins and the Mariners both lose tonight the Angels will move into first place.
 - *d. Assuming the rain stops within an hour the game will not be postponed.
 - e. The Indians will win tonight provided their starting pitcher can go the full nine innings.
 - *f. The Angels will move into first place only if the Twins and the Indians both lose tonight.
 - g. Assuming either the Twins or the Mariners win tonight, the Royals will be out of the running for the pennant.
 - *h. The Red Sox have a good chance of winning the pennant if and only if the Mariners and the Angels and the Twins all lose tonight.
 - i. The Royals are out of the race for the pennant and the Yankees will win the pennant if and only if the Twins win tonight and the Mariners and the Angels both lose tonight.
 - *j. The Red Sox have a good chance of winning the American League pennant but the Yankees will win the pennant if either the Red Sox falter or the Twins, the Angels, and the Mariners all win tonight.
2. Construct truth-functional paraphrases for the following, then provide a symbolization key and use it to symbolize your paraphrases in *SL*.
 - a. Either George or Emily will graduate with honors.
 - *b. Both George and Emily will graduate with honors or neither will.
 - c. At least one of George, Emily, Donna, and Fred will graduate with honors.
 - *d. If Donna graduates with honors so will Fred, and if Bob graduates with honors so will Emily.

- e. Either they (Fred, George, Emily, and Donna) will all graduate with honors or none of them will.
 - *f. Either Fred won't graduate with honors or Emily and Donna both will.
 - g. Fred and George will graduate with honors if and only if Donna and Emily graduate with honors.
 - *h. Either George or Emily will graduate with honors but they won't both graduate with honors.
 - i. George won't graduate with honors but Fred will, and Donna will graduate with honors if and only if Emily does.
 - *j. If Emily and Donna don't both graduate with honors then neither George or Fred will graduate with honors.
- 3.** Construct a truth-functional paraphrase of each of the following sentences, then provide a symbolization key and use it to symbolize your paraphrases.
- a. If Felice vacations in Bermuda so will Clarence.
 - *b. Veronica will vacation in Bermuda only if both Clarence and Robert will also do so.
 - c. If either Felice or Veronica vacation in Bermuda they both will.
 - *d. Clarence will vacation in Bermuda only if Robert does and neither Felice nor Veronica do.
 - e. If Veronica vacations in Bermuda then Clarence will but Felice won't.
 - *f. Robert will vacation in Bermuda if and only if Clarence does, and Veronica will vacation in Bermuda if and only if Felice does.
 - g. Veronica will vacation in Bermuda if and only if Clarence doesn't, and Felice will vacation in Bermuda if and only if Robert does.
 - *h. Felice will vacation in Bermuda if and only if Veronica does and Robert doesn't, and Veronica will vacation in Bermuda if and only if Robert does and Clarence doesn't.
- 4.** For each of the following, provide a truth-functional paraphrase and then symbolize your paraphrases in *SL*, indicating what sentence each of the sentence letters you use symbolizes.
- a. *Casablanca*, *The Lion in Winter*, *Witness for the Prosecution*, *The Third Man*, and *Charade* will all be shown at this year's classical film festival.
 - *b. If Phil sees *Casablanca* he will enjoy Bogart's and Bergman's performances but he won't hear Bogart say "Play it again, Sam".
 - c. Phil will see *The Lion in Winter* only if Marion will and both of them will see *Charade*.
 - *d. Eric will see *The Lion in Winter* if and only if Betty does and if they see it they will love it.
 - e. If *Witness for the Prosecution* and *The Lion in Winter* are both screened at 8:00 pm, Marion and Phil will see *Witness for the Prosecution* and Eric and Betty will see *The Lion in Winter*.
 - *f. Phil will see *Charade* if and only if Audrey Hepburn and Cary Grant are both in it, and they are.
 - g. If it's the case that if Eric likes Katherine Hepburn then he'll see *The Lion in Winter*, then if Marion likes Eric she will see *The Lion in Winter*.
 - *h. If Claude Rains, Sydney Greenstreet, and Peter Lorre were in the movie Betty saw last night then she saw *Casablanca*.
 - i. Neither Betty nor Eric like James Coburn but they do both like Audrey Hepburn and if Audrey Hepburn is in *Charade* they will both see it (and she is).

5. Construct a truth-functional paraphrase of each of the following arguments, then provide a symbolization key and use it to symbolize your paraphrase of the argument in *SL*.
 - a. If Betty sees *Casablanca* and *The Third Man* then she won't see either *Witness for the Prosecution* or *The Lion in Winter*. She will see *Witness for the Prosecution* but she won't see *The Lion in Winter*. So either she won't see *Casablanca* or she won't see *The Third Man*.
 - *b. If Phil likes either Joseph Cotton or Orson Wells he will like *The Third Man*, if he sees it. If he likes either Peter O'Toole or Katharine Hepburn he'll like *The Lion in Winter*, if he sees it. He doesn't like either Joseph Cotton or Orson Wells, but he does like Katharine Hepburn. So if he sees *The Lion in Winter* he will like it.
 - c. Phil will see *The Third Man* if and only if he likes both Joseph Cotton and Orson Wells, and he will see *Witness for the Prosecution* if and only if he likes both Marlene Dietrich and Charles Laughton. He doesn't like either Joseph Cotton or Orson Wells, but he does like Marlene Dietrich and Charles Laughton. So Phil will see *Witness for the Prosecution*.
 - *d. Betty will see either *The Lion in Winter* or *Witness for the Prosecution*. Marion will see *Casablanca* and *Charade*. If Betty sees *Witness for the Prosecution* Eric won't, but he will see *Casablanca* if Marion does. Betty won't see *Witness for the Prosecution*, and she will see *The Lion in Winter* if and only if Phil does. So Phil will see *The Lion in Winter*.

6. Construct truth-functional paraphrases of each of the following passages. If a passage is an argument, present your paraphrase of the argument in standard form. Provide symbolization keys for your paraphrases of these passages and symbolize your paraphrases in *SL*.
 - a. Fred will go to New York only if he can get a first class air ticket and get tickets to a Yankees game. Fred will go to Chicago only if he can travel by train and get tickets to a White Sox game. He can't get a first class air ticket and he can't get tickets to a White Sox game, so he won't go to either New York or Chicago.
 - *b. If Lisa goes on vacation it will be to either Toronto, Montreal, Quebec, or Vancouver. If she goes to Toronto she will visit the University of Toronto; if she goes to Montreal she will eat great French food; if she goes to Quebec she will visit the Plains of Abraham; and if she goes to Vancouver she will go whale watching. She won't visit the University of Toronto; she won't eat great French food; and she won't go whale watching. So if she goes on vacation she will visit the Plains of Abraham.
 - c. Alice will go to Vienna if but only if Burt is willing to go with her and Burt speaks German. If Alice does go to Vienna she will take the Orient Express to Istanbul, unless Burt refuses to travel by train. Burt is willing to go with Alice to Vienna and he does speak German, but he won't travel by train. Hence if Alice goes to Vienna she will not take the Orient Express to Istanbul.
 - *d. Ben will go either to Duluth or to Kansas City. If it is the case that when Ben travels he travels by train, then if he travels to Duluth there is a train to Duluth and if he travels to Kansas City there is a train to Kansas City. Ben travels only by train and there is no train to Duluth. So Ben will travel to Kansas City and there is a train to Kansas City.
 - e. Charles Todd's mysteries are good mysteries. A good mystery has memorable characters, a plot that keeps the reader in suspense, and contains enough factual information to allow the reader to actually learn some interesting things; and Charles Todd's mysteries have all of these features.