UNIT 20 EXERCISES 11-15

LOGIC

2010A

12. In a magical swamp there are two species of talking amphibians: toads, whose statements are always true, and frogs, whose statements are always false. Four amphibians, Brian, Chris, LeRoy, and Mike live together in this swamp, and they make the following statements.

> Brian: "Mike and I are different species."
> Chris: "LeRoy is a frog."
> LeRoy: "Chris is a frog."
> Mike: "Of the four of us, at least two are toads."

How many of these four amphibians are frogs?

(A) 0   (B) 1   (C) 2   (D) 3   (E) 4

2015A   13. A league with 12 teams holds a round-robin tournament, with each team playing every other team exactly once. Games either end with one team victorious or else end in a draw. A team scores 2 points for every game it wins and 1 point for every game it draws. Which of the following is *not* a true statement about the list of 12 scores?

(A) There must be an even number of odd scores.

(B) There must be an even number of even scores.

(C) There cannot be two scores of 0.

(D) The sum of the scores must be at least 100.

(E) The highest score must be at least 12.

1999   14. Four girls — Mary, Alina, Tina, and Hanna — sang songs in a concert as trios, with one girl sitting out each time. Hanna sang 7 songs, which was more than any other girl, and Mary sang 4 songs, which was fewer than any other girl. How many songs did these trios sing?

(A) 7   (B) 8   (C) 9   (D) 10   (E) 11