19

LOGIC

2004A   6. (E) Bertha has $30 - 6 = 24$ granddaughters, none of whom have any daughters. The granddaughters are the children of $24/6 = 4$ of Bertha's daughters, so the number of women having no daughters is $30 - 4 = 26$.

2017A

6. **Answer (B):** The given statement is logically equivalent to its contrapositive: If a student did not receive an A on the exam, then the student did not get all the multiple choice questions right, which means that he got at least one of them wrong. None of the other statements follows logically from the given implication; the teacher made no promises concerning students who did not get all the multiple choice questions right. In particular, a statement does not imply its inverse or its converse; and the negation of the statement that Lewis got all the questions right is not the statement that he got all the questions wrong.

2000

8. **Answer (D):** Let f and s represent the numbers of freshmen and sophomores at the school, respectively. According to the given condition, $(2/5)f = (4/5)s$. Thus, $f = 2s$. That is, there are twice as many freshmen as sophomores.

2011B

8. **Answer (B):** Because the beach was not crowded on June 10, at least one of the conditions was not met. That is, the weather might have been cooler than $80\,^{\circ}F$ and sunny, at least $80\,^{\circ}F$ and cloudy, or cooler than $80\,^{\circ}F$ and cloudy. The first possibility shows that **(A)** and **(E)** are invalid, the second shows that **(C)** is invalid, and the third shows that **(D)** is invalid. Only conclusion **(B)** is consistent with all three possibilities.

2007B

9. **Answer (D):** The last s is the 12th appearance of this letter in the message, so it will be replaced by the letter that is

$$1 + 2 + 3 + \cdots + 12 = \frac{1}{2}(12 \cdot 13) = 3 \cdot 26$$

letters to the right of s. Since the alphabet has 26 letters, this letter s is coded as s.