

**Quiz 10** April 6, 2001, *Statistics for Business*

1. Billy rolls a four-sided die 50 times. With each roll he records the number of spots on the uppermost face (i. e., 1, 2, 3, or 4). Which of the following statements is true regarding the **BINS** assumptions?

- A) The assumption of independence is violated as the outcome of one roll affects the outcome of the next roll.
- B) The assumption of binary outcomes is violated.
- C) The assumption of a fixed number of trials is violated.
- D) All of the BINS assumptions are violated.
- E) None of the BINS assumptions is violated.

2. A Binomial distribution has its *smallest variability* when  $\pi = 0.5$ .

- A) True
- B) False

3. Consider 4 Bernoulli trials with success probability  $\pi = 0.2$ . What is the probability of observing *at least one* success?

- A)  $4(0.2)^1(0.8)^3$
- B)  $(0.8)^4$
- C)  $1 - (0.8)^4$
- D)  $\sqrt{4(0.2)(0.8)}$
- E)  $4(0.2)$

4. Consider a Binomial distribution with 3 trials and success probability  $\pi = 0.5$ . What is the chance of getting *exactly one* success? Show your work.

Answers: 1. B, 2. B, 3. C, and 4.  $3/8 = 0.375$  from

$$\frac{3!}{1!(3-1)!}(0.5)^1(1-0.5)^{3-1} = \frac{3 \times 2 \times 1}{1(2 \times 1)}(0.5)^3 = \frac{3}{8} = 0.375$$