

Name \_\_\_\_\_

**13-8A Lesson Master****Questions on SPUR Objectives**

See Student Edition pages 934–937 for objectives.

**USES** Objective J

1. Since 1997, in the Powerball Lottery, a participant wins the jackpot by choosing five numbers from 1 to 55 (in any order) and also matching a red Powerball number from 1 to 42.
  - a. Find the probability of winning the jackpot. \_\_\_\_\_
  - b. How many times as likely are you to win a simpler lottery where six numbers are chosen from 1 to 55 than you are to win this lottery? \_\_\_\_\_
  
2. In the Connecticut Lottery before 2008, participants chose six numbers from 1 to 40, in any order. In 2008, the game expanded to use 44 numbers.
  - a. In how many ways can a player choose six numbers out of 40? \_\_\_\_\_
  - b. Find the probability of winning the pre-2008 lottery. \_\_\_\_\_
  - c. In how many ways can a participant choose six numbers out of 44? \_\_\_\_\_
  - d. Find the probability of winning the post-2008 lottery. \_\_\_\_\_
  - e. Find the probability of winning a much smaller prize by choosing five of the numbers correctly before 2008. \_\_\_\_\_ after 2008. \_\_\_\_\_
  - f. This lottery expanded in order to increase the size of the jackpots, which roll over from week to week if there is no winner. Explain how this change could increase the jackpots.  
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3. In the Virginia Lottery's "Pick 3" game, a three-digit number is chosen from 000 to 999. Participants can choose one of two versions: "Exact Match" where you must pick the exact three-digit number, or "Any Order" in which you win if your three digits come up in any order. For instance, if you play "Any Order" with the number "123," you win if the number chosen is 123, 132, 213, 231, 312, or 321.
  - a. Find the probability of winning the "Any Order" game. Assume you picked three different digits (like the example above). \_\_\_\_\_
  - b. Tickets for this lottery cost one dollar. In the "Exact Match" game, a winning ticket pays \$500. In "Any Order," a winning ticket pays \$80. Which game is more beneficial financially for the state? Explain.  
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