Name: _____ Date: _____

BLM 2–4

Section 2.2 Theoretical Probability

1. Andre is drawing cards randomly from a deck of 52 cards and not returning them to the deck. His first two cards are aces. What is the theoretical probability that the next card he draws will be another ace?

2. Two coins are tossed at the same time. What is the theoretical probability that
a) both are heads?
b) neither are heads?
c) one is heads?

3. A card is selected from a deck of cards. Find the theoretical probability of each outcome. Express your answer as a fraction in lowest terms.
a) a red face card
b) a black face card that is a male (king or jack)
c) a numbered card that is an even number (Hint: an ace is an odd card.)
d) an odd spade
e) a red ace

4. Two dice are rolled. Find the theoretical probability of each outcome, expressed as a fraction in lowest terms.
a) the sum of the results is less than 5
b) both numbers on the dice are greater than 4
c) one of the numbers is a 5
d) both numbers are the same
e) both numbers are different

5. Refer to question 4. Add your answers for parts d) and e) together. Is the sum what you expected? Why or why not?

6. Two cards are selected from a deck of cards.
a) Explain why the theoretical probability of drawing two red spades is 0.
b) Explain why the theoretical probability of drawing a heart, a diamond, a spade, or a club is 1.

7. At a school assembly, there are 100 students in grade 9, 125 in grade 10, 225 in grade 11, and 170 in grade 12. Everyone at the assembly entered their name for a door prize. What is the probability that the prize will be won by
a) a grade 9 student?
b) a grade 11 or 12 student?
c) a grade 12 student, if all grade 11 students are disqualified from winning?

8. Connie made a square dart board with a side length of 20 cm. Inside the square is a triangle with base 10 cm and height 8 cm. She throws a dart and hits somewhere within the square.
a) What is the probability that Connie hit the triangle?
b) What is the probability that Connie did not hit the triangle?
c) Should your answers to parts a) and b) add to 1? Explain.