

## Compound Probability Cont'd

*Review Problems*

- 1) Are the following events independent or dependent?
  - a) Suppose event A is “earned a bachelor’s degree” and event B is “earning more than \$100,000 per year”
  - b) Two 24 year old male drivers who live in the United States are randomly selected. Event A is “male 1 gets in a car accident during the year” and event B is “male 2 gets in a car accident during the year”
- 2) Suppose you have a bag containing 2 black marbles and 3 red marbles. You reach into the bag and randomly select a marble (with replacement). Then you repeat the process one more time. Are the two events dependent or independent? What is the probability of picking a red marble both times?
- 3) Suppose you have a bag of chips numbered 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9. Let E be the event “choose a number at most 2” and F be the event “choose a number greater than 7”. Draw a *Venn diagram* to represent this situation. Are these events mutually exclusive (or disjoint)? Find  $P(E \cup F)$ .
- 4) Suppose that a single card is selected from a standard 52-card deck. What is the probability of event A = “drawing a king” or B = “drawing a diamond”?
- 5) Suppose you have a bag containing 2 black marbles and 3 red marbles. You reach into the bag and randomly select a marble (without replacement). Then you repeat the process one more time. Are the two events dependent or independent? What is the probability of picking a red marble both times?

In general, an **Independent Event** occurs \_\_\_\_\_

and a **Dependent Event** occurs \_\_\_\_\_.

Explain this in your own words:

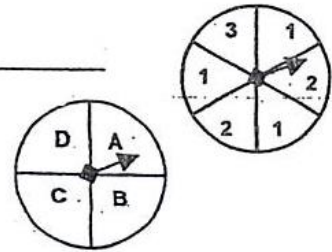
## Probability with Compound Events (Independent and Dependent) Practice

Describe the events by writing **I** for *independent event* or **D** for *dependent event*.

- Ann draws a colored toothpick from a jar. Without replacing it, she draws a second toothpick. \_\_\_\_\_
- John rolls a six on a number cube and then flips a coin that comes up heads. \_\_\_\_\_
- Susie draws a card from a deck of cards and replaces it. She then draws a second card. \_\_\_\_\_
- Seth draws a colored tile from a bag, replaces it; draws a second tile from the bag, replaces it; and then draws a tile a third time from the bag. \_\_\_\_\_
- You draw a red marble from a bag, and then another red marble (without replacing the first marble)? \_\_\_\_\_

Using the two spinners, find each **compound** probability.

- $P(A \text{ and } 2)$  \_\_\_\_\_
- $P(D \text{ and } 1)$  \_\_\_\_\_
- $P(B \text{ and } 3)$  \_\_\_\_\_
- $P(A \text{ and not } 2)$  \_\_\_\_\_



A box contains 3 red marbles, 6 blue marbles, and 1 white marble. The marbles are selected at random, one at a time, and are **not replaced**. Find each **compound** probability.

- $P(\text{blue and red})$  \_\_\_\_\_
- $P(\text{blue and blue})$  \_\_\_\_\_
- $P(\text{red and white and blue})$  \_\_\_\_\_
- $P(\text{red and red and red})$  \_\_\_\_\_
- $P(\text{white and red and white})$  \_\_\_\_\_

Suppose that two tiles are drawn from the collection shown at the right. The first tile is replaced before the second is drawn. Find each **compound** probability.



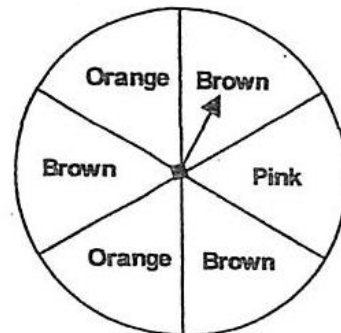
- $P(A \text{ and } A)$  \_\_\_\_\_
- $P(R \text{ and } C)$  \_\_\_\_\_
- $P(A \text{ and not } R)$  \_\_\_\_\_

Suppose that two tiles are drawn from the same collection shown above. The first tile is **not** replaced before the second is drawn. Find each **compound** probability.

- $P(A \text{ and } A)$  \_\_\_\_\_
- $P(R \text{ and } C)$  \_\_\_\_\_
- $P(A \text{ and not } R)$  \_\_\_\_\_

Use the spinner to the right for the next two problems.

- If you spin the spinner twice, what is the probability of spinning orange then brown? \_\_\_\_\_
- If you spin the spinner twice, what is the probability of spinning brown both times? \_\_\_\_\_



- Kevin had 6 nickels and 4 dimes in his pocket. If he took out one coin and then a second coin without replacing the first coin -
  - what is the probability that both coins were nickels? \_\_\_\_\_
  - what is the probability that both coins were dimes? \_\_\_\_\_
  - what is the probability that the first coin was a nickel and the second a dime? \_\_\_\_\_