Lesson 10-5

Example 1

These cards are placed in a box.

A card is taken from the box and replaced. Then a card is taken from the box again. Find *P*(A, then A).

Solution

There are 7 cards in the box, and 2 of these are As. Because the first card is replaced, the second selection is independent of the first. There are 2 As in the box when the second card is chosen.

$$P(\text{A, then A}) = P(\text{A}) \cdot P(\text{A})$$
$$= \frac{2}{7} \cdot \frac{2}{7}$$
$$= \frac{4}{49}$$

Example 2

These cards are placed in a box.

A L G E B R A

A card is taken from the box and is not replaced. Then another card is taken from the box. Find *P*(A, then A).

Solution

Because the first card is not replaced, the second event is dependent on the first. On the first selection, there are 7 cards in the bag, of which 2 are As.

$$P(A) = \frac{2}{7}$$

On the next selection, there are only 6 cards in the bag. Assuming that an A card was removed, only 1 of the cards in the bag is an A.

$$P(\text{A after A}) = \frac{1}{6}$$

Multiply the two probabilities.

$$P(\text{A, the A}) = \frac{2}{7} \cdot \frac{1}{6} = \frac{2}{42} = \frac{1}{21}$$