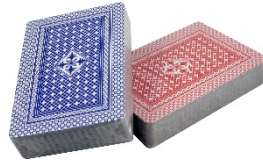Name: _____ Hour: _____ Date: _____

Can you get a pair of Aces or a pair of Kings?

Rules of the game. Five cards total: two aces and three Kings. The player chooses their first card and records the results, and then chooses their second card (without replacement) and records the result. **The player wins if they get a pair of Aces or a pair of Kings.**

1. Choose one person who is the dealer and one who is the player. Play the game 10 times.
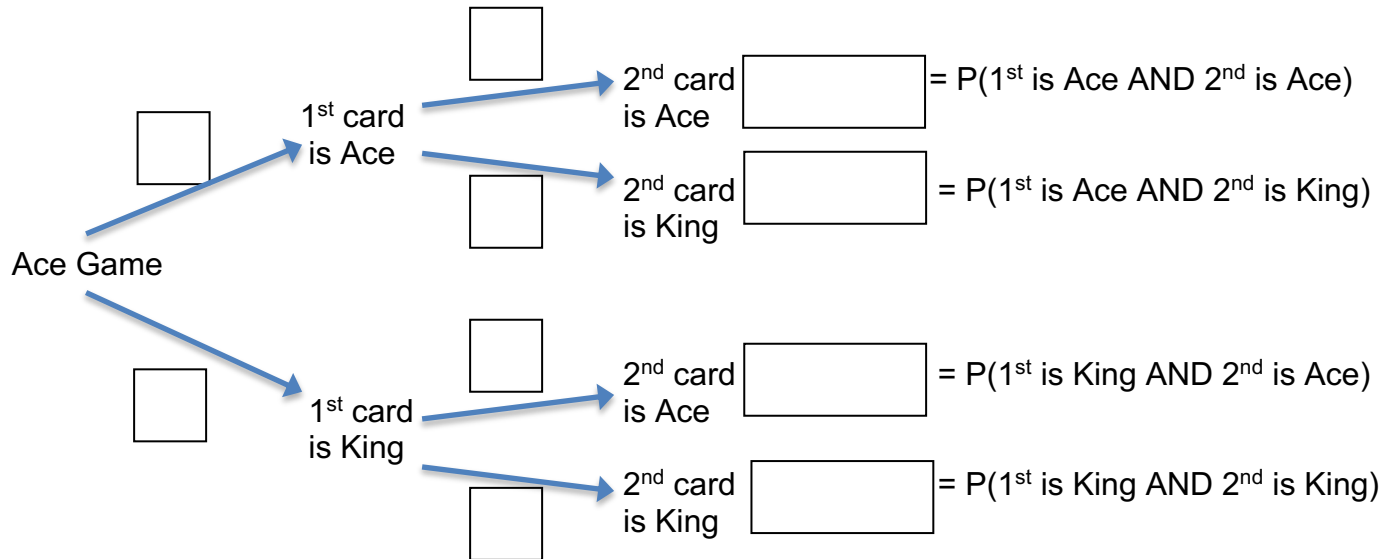
First card										
Second card										
Winner?										

Based on your 10 games, what is the probability of winning this game? _____

2. Go to the front of room to record the number of wins in 10 games.

Based on the whole class data, what is the probability of winning this game? _____

3. Let's try to use a Tree Diagram to calculate the theoretical probability. Fill in the blank boxes with the correct probabilities.

Ace Game

1st card is Ace

2nd card is Ace [ ] = P(1st is Ace AND 2nd is Ace)

2nd card is King [ ] = P(1st is Ace AND 2nd is King)

1st card is King

2nd card is Ace [ ] = P(1st is King AND 2nd is Ace)

2nd card is King [ ] = P(1st is King AND 2nd is King)

4. Find the theoretical probability of winning the game. _____

5. What is the probability that the 1st card was a King, given that the person won the game?

Conditional Probability and Independence

Important Ideas:

Check Your Understanding:

In the 2016 election, 30 states went to the Republican candidate and 20 states went to the Democratic candidate. Of the 30 states that went Republican, 29 were in the continental United States. Of the 20 states that went Democratic, 19 are in the continental United States. One state is selected at random.

a. Construct a tree diagram to model this chance process.

b. Find the probability that a randomly selected state is in the continental U.S. and went Republican.

c. If we select 4 states at random (with replacement) what is the probability that at least 1 of the states is in the continental U.S. and went Republican?

d. Given that a randomly selected state is not in the continental U.S., what is the probability that it went Republican?

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