



## Warm Up

### How to Find the Probability of “At Least One?”

---

The **RULE OF COMPLEMENTS** include the following:

- The complement of “at least one” success is “no” successes.
- Events that are complements of each other are disjoint events (they have nothing in common).
- The total probability of complements is 1.
- Symbolically written as:  $P(A) + P(\text{not } A) = 1$  or more simply  $P(A) + P(A') = 1$
- Equivalently written as:  $P(A) = 1 - P(\text{not } A)$  or more simply  $P(A) = 1 - P(A')$
- Alternatively written as:  $P(\text{not } A) = 1 - P(A)$  or more simply  $P(A') = 1 - P(A)$

Assume that we have a fair coin (the probability of a heads and a tails is identical or  $1/2$  for each), and assume that the outcome of each flip of the coin is **independent** of the outcomes of previous or subsequent flips (**the outcome of one coin flip doesn't affect the outcome of a different coin flip**).

1. What is the probability that we get “no heads” in 4 flips of the coin?
2. What is the probability that we get “at least one head” in 4 flips of the coin?
3. Does that mean that getting at least one head is a sure thing?
4. What is the probability associated with a “sure” event?

---

**MAIN IDEAS:** List the Main Ideas for Today's Lesson

---