$\qquad$ TA Name: $\qquad$
$\qquad$

## Data 88S

Jan 26, 2024

1. (a) What is the chance of getting at least one ace (face with one spot) in four rolls of a fair dice?
(b) What is the chance of getting at least one double-ace (both faces with one spot) in 24 rolls of a pair of fair dice?
2. Let $A, B, C$ be events. We know by De Morgan's laws that $(A \cap B)^{c}=A^{c} \cup B^{c}$. What about $(A \cap B \cap C)^{c}$ ? Use the law for the intersection of two events to derive the expression for three events.
3. Let A be the event that you catch the bus to class instead of walking, $\mathrm{P}(\mathrm{A})=70 \%$

Let B be the event that it rains, $\mathrm{P}(\mathrm{B})=50 \%$
Let C be the event that you are on time to class, $\mathrm{P}(\mathrm{C})=10 \%$
(a) What is the chance of at least one of these three events happening?
(b) What is the chance of all three of them happening?
$\qquad$ TA Name: $\qquad$
$\qquad$

## Chapter 2, Exercise 5

4. There are $n$ students in a class. Assume that each student's birthday is equally likely to be any of 365 days of the year, regardless of the birthdays of others.
(a) What is the chance that at least one of the students was born on January 1?
(b) What is the chance that at least two students have the same birthday?

## Chapter 2, Exercise 4

5. A class has eight sections, five of which are in the morning and three in the afternoon. The instructor picks two sections at random without replacement.
Say whether each of the following statements is true or false, and justify your answer.
(a) The chance that the first section picked by the instructor is in the morning is 5/8.
(b) The chance that the second section picked by the instructor is in the morning is 5/8.
(c) The chance that both sections picked by the instructor are in the morning is $(5 / 8)(5 / 8)$.
