

MATH 210 FINITE MATHEMATICS

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7.3 Rules of Probability

Definition 1: Properties

- 1.
- 2.
- 3.
- 4.
- 5.

Example 1

Let E and F be two events of an experiment. Suppose $P(E) = 0.6$, $P(F) = 0.5$, and $P(E \cup F) = 0.85$. Find

1. $P(F^c)$
2. $P(E^c)$
3. $P(E \cap F)$

4. $P(E^c \cap F^c)$

5. $P(E \cup F^c)$

Example 2

A card is drawn from a well-shuffled standard deck of 52 cards.

1. What is the probability it is not a 5?
2. What is the probability that is a king or a heart?
3. What is the probability that it is a spade or a heart?

4. What is the probability it is a face card or a red?

Example 3

1089 adults were asked "How serious a threat is climate change?" The results are:

Answer	Very Serious	Serious	Somewhat Serious	Not at all
Responses (%)	38	46	15	1

What is the probability that a person chosen at random

1. answered with a serious threat?
2. answered with a very serious threat or a somewhat serious threat?
3. showed some concern?

Example 4

A pair of dice is rolled and the number that appears upper most on each die is observed.

1. What is the probability a double is NOT thrown?

2. Find the probability the sum is at least 7.

Example 5

Among 500 freshmen pursuing a business degree at a university, 345 are enrolled in an economics course, 204 are enrolled in a mathematics course, and 127 are enrolled in both an economics and a mathematics course. What is the probability that a freshman selected at random from this group is enrolled in each of the following?

1. an economics and/or a mathematics course
2. exactly one of these two courses.
3. neither an economics course nor a mathematics course.