Math 210 Finite Mathematics

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7.2 Probability

Definition 1: Relative Frequency

Suppose we repeat an experiment n times and an event E occurs m times. The relative frequency of E is

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Definition 2: Simple Event

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Example 1

NIU was surveyed and the following info was found:

	Undecided	Liberal Arts	Health	Business	Total
Upper-classmen	12	46	24	88	170
Lower-classmen	60	15	7	8	110
Total	72	61	31	116	280

If one NIU student is selected at random, what is the probability that

1. an upper-classmen is selected?

2. an undecided lower-classmen is selected?

3. a liberal arts student is selected?

Definition 3: Probability Distribution

A table that lists the probability of each simple event

Probability Distrubtion

Simple Event	Probability

1. Probability Function $P(s_i)$
2.
3.
4.

Definition 4: Uniform Sample Space

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Example 2: Rolling One Die

Suppose you roll one die and record the number.

1. What is the sample space?

2. List all simple events

3. What is the probability of each simple event?

4. Find the probability distribution

Probability Distrubtion

Simple Event	Probability

5. What is the probability of rolling an odd?

Example 3

Create a probability distribution for the sum of two dice.

Example 4

Using empirical data create a probability distribution for 3 dice.

Example 5

A group of people were asked to name their favorite class.

Class	Math	English	Sociology	Music	Economics
Frequency					

1. Find the probability distribution

2. Is this a uniform sample space?

3. What is the probability that a student selected randomly has English or Music as their favorite class?