

## Exercise 4.1: Online Learning

Complete this exercise on Canvas as you arrive to class.

### Exercise 4.1: Online Learning

#### Setup:

- $n = 10$  days
- you choose umbrella or not
- then nature chooses weather
- payoffs:

	it rains	it's sunny
you take umbrella	1	0
you don't take umbrella	0	1

**Question:** What's your best strategy?

(Answer now on Canvas)

# Lecture 4: Online Learning

## Last Time:

- online allocation (cont.)
- approximation
- prophet inequality

# Lecture 4: Online Learning

## Last Time:

- online allocation (cont.)
- approximation
- prophet inequality

## Today:

- online learning
- goal: “no regret”
- follow the leader
- exponential weights
- perturbed follow the leader

## Exercise 4.2: Follow the Leader

### Exercise 4.2: Follow the Leader

#### Setup:

- follow-the-leader algorithm
- input:

	1	2	3	4	5
Action 1	$1/2$	1	0	0	1
Action 2	0	1	1	1	1

**Question:** What action does follow-the-leader choose in round 3?

And round 5?

(Answer on Canvas)