CSC7072: Databases, fall 2015

Dr. Kim Bauters

set/logic/probability introduction

set/logic/probability introduction

class test information

the class test will take place on:

Friday 13th November

test will be on ER modelling

test will take place during normal lecture hours, so 11am – noon

tutorial on 3th November

set/logic/probability introduction

sets and set notations

what is a set?

collection of *well-defined*, *distinct* objects

set/logic/probability introduction

sets and set notations

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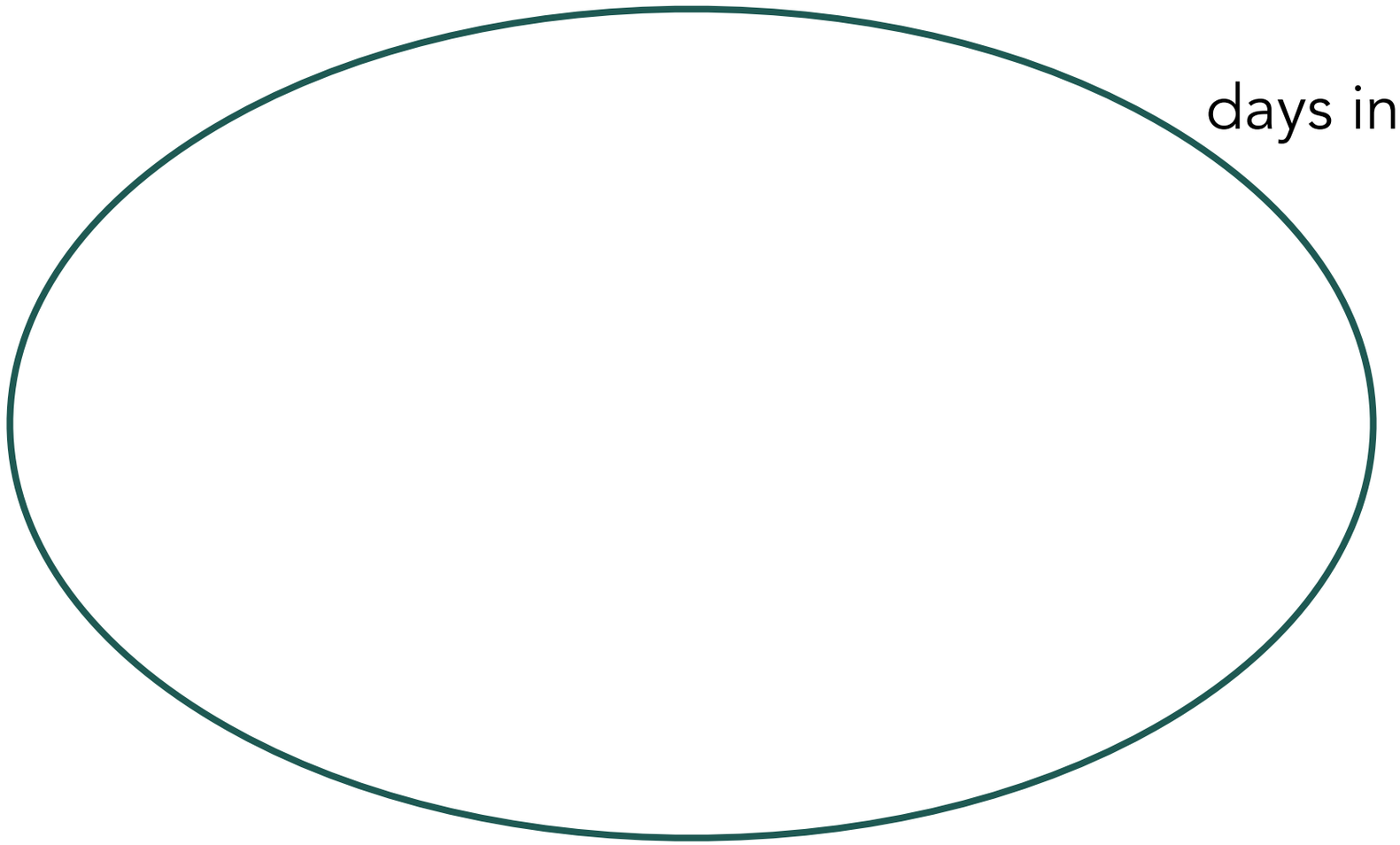
collection of *well-defined*, *distinct* objects



set/logic/probability introduction

sets and set notations

what is a set?

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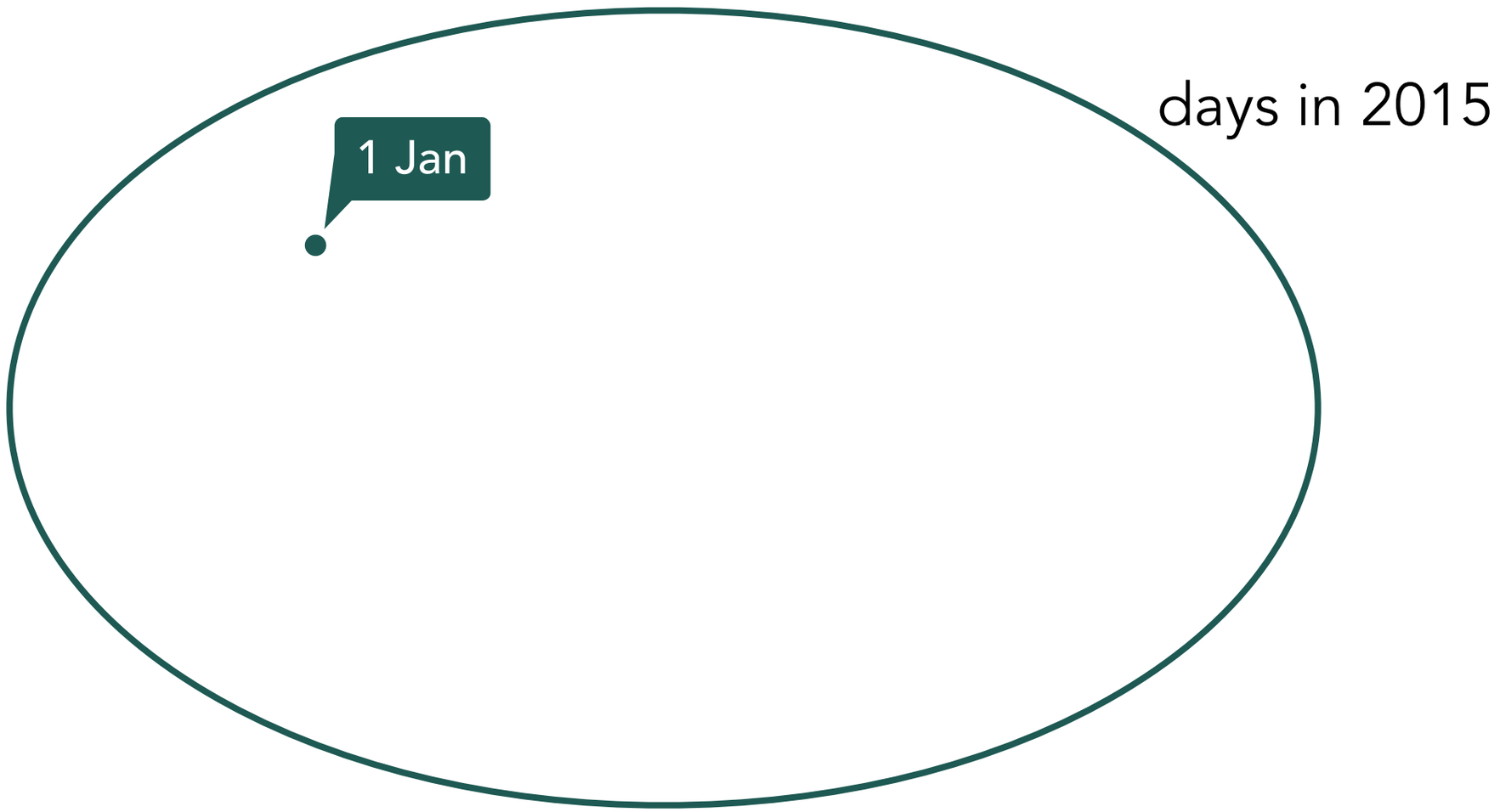

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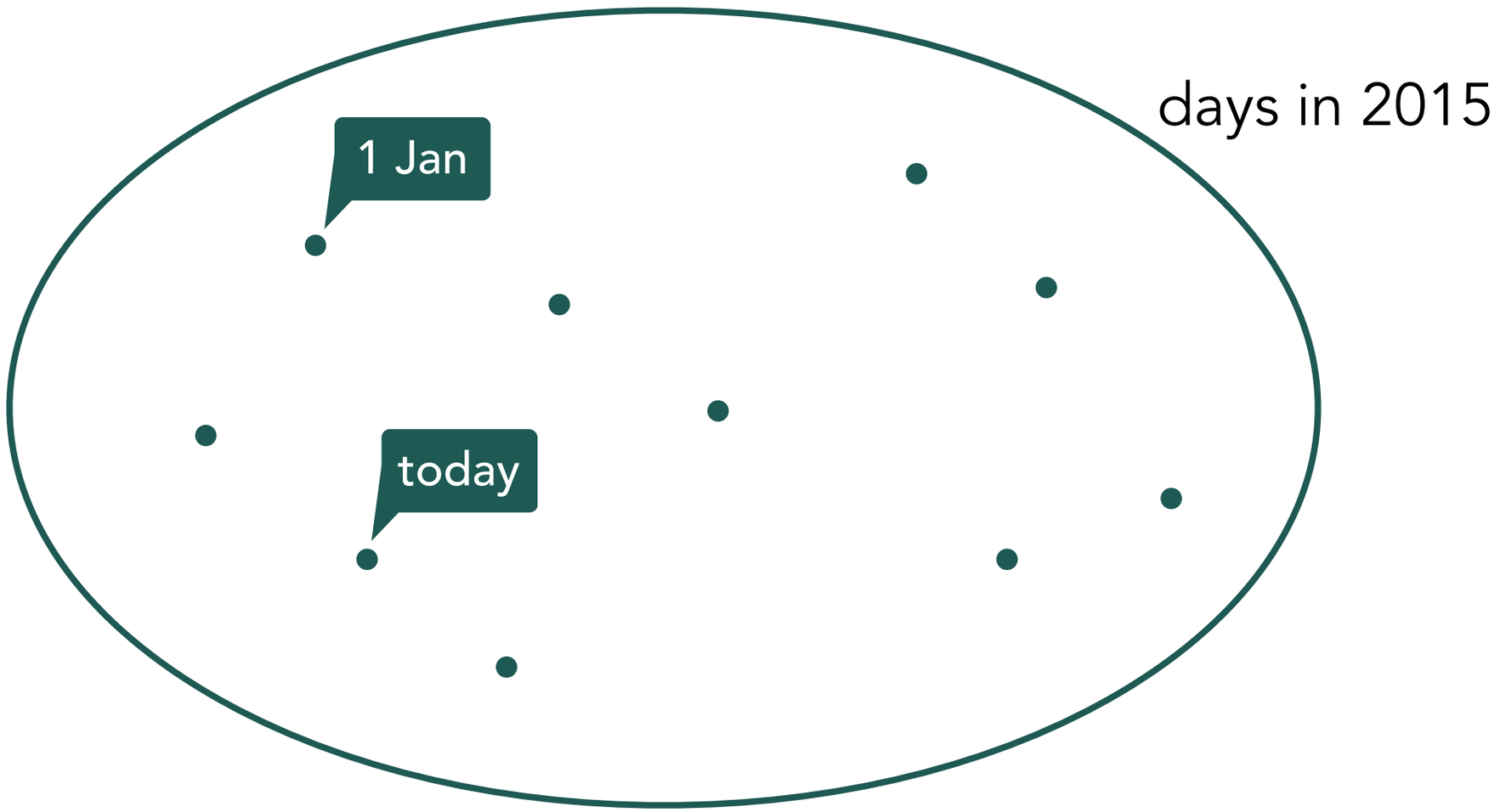
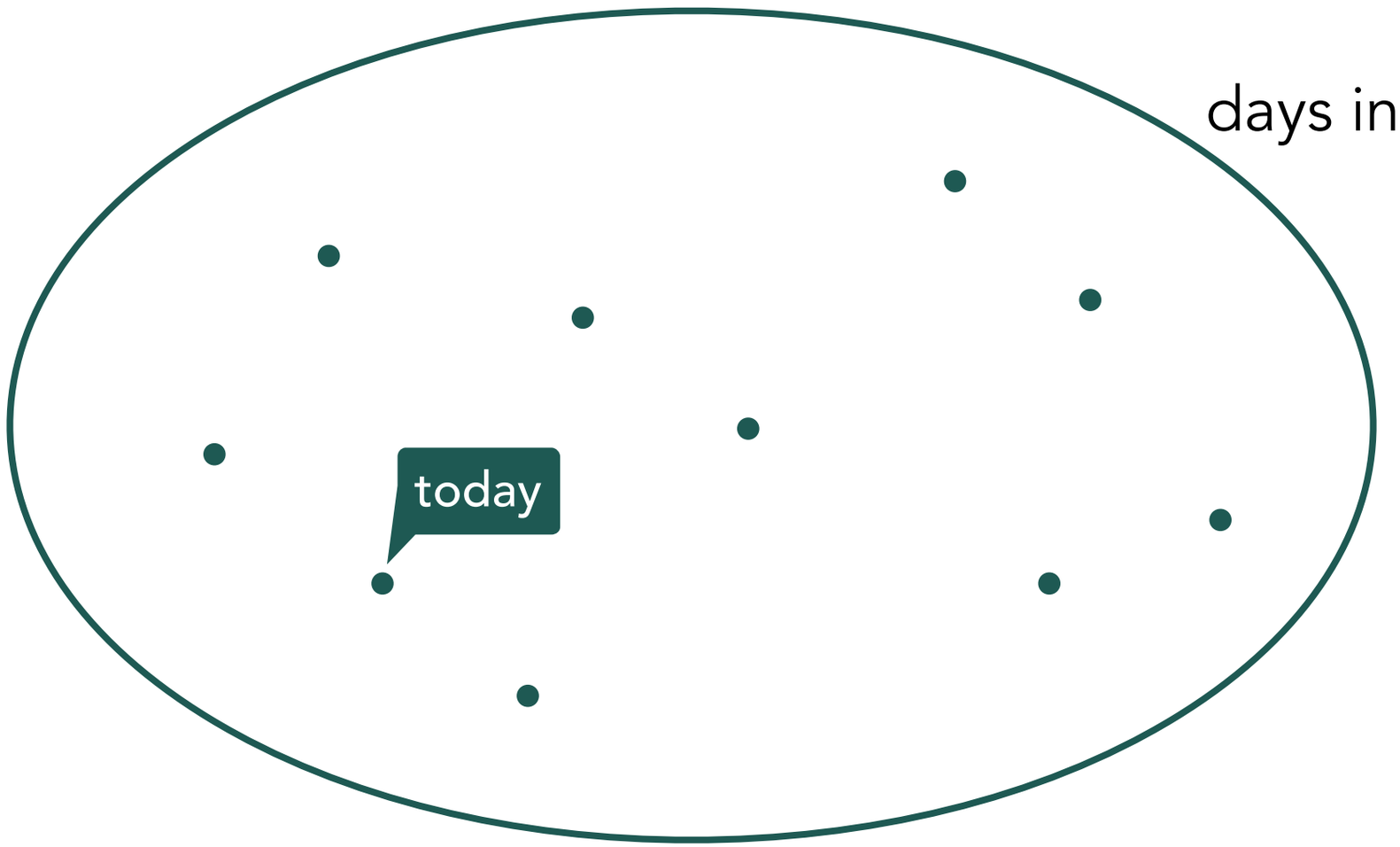


set/logic/probability introduction

sets and set notations

what is a subset?

a set contained in another set, denoted $A \subseteq B$



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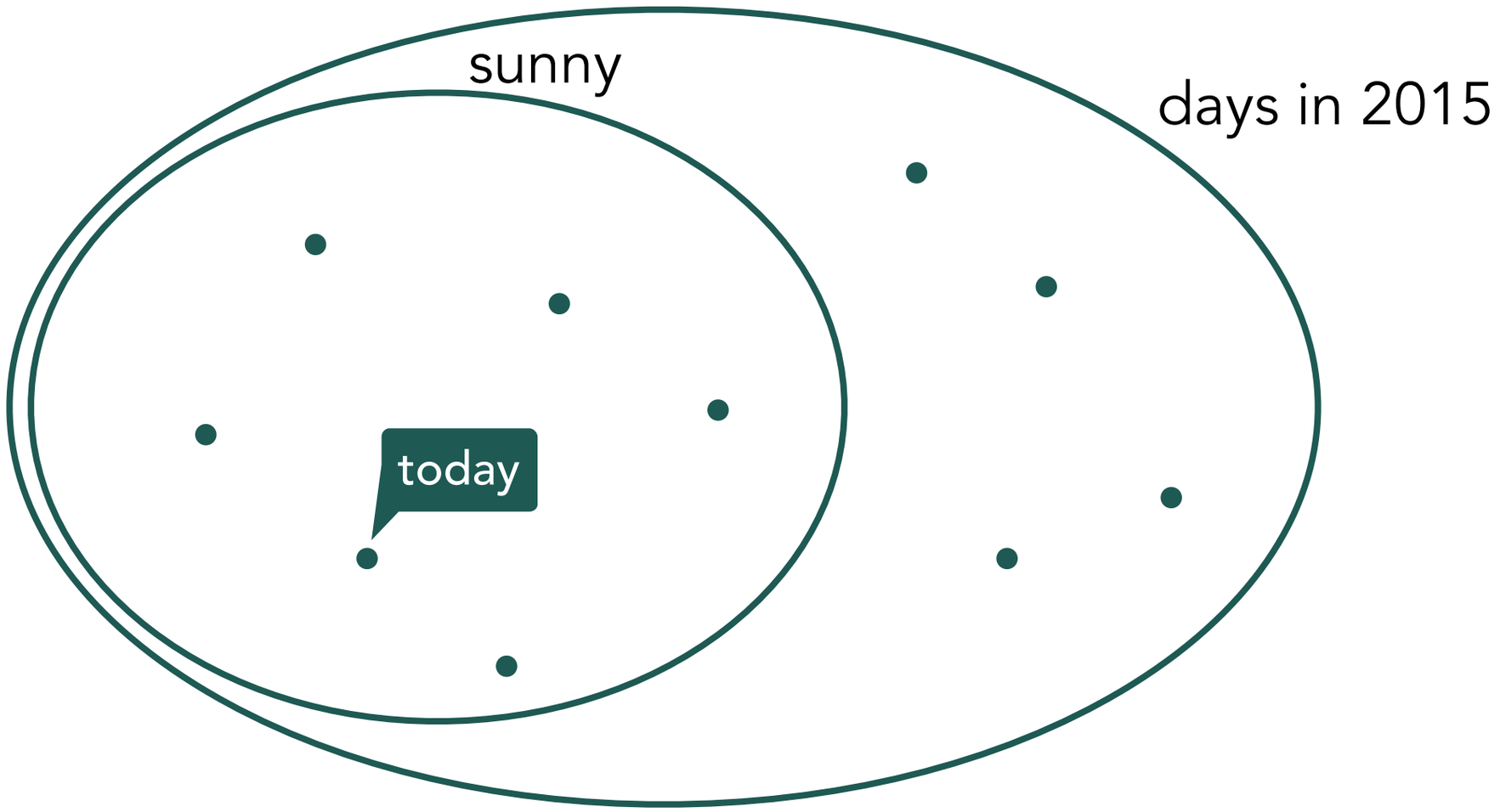

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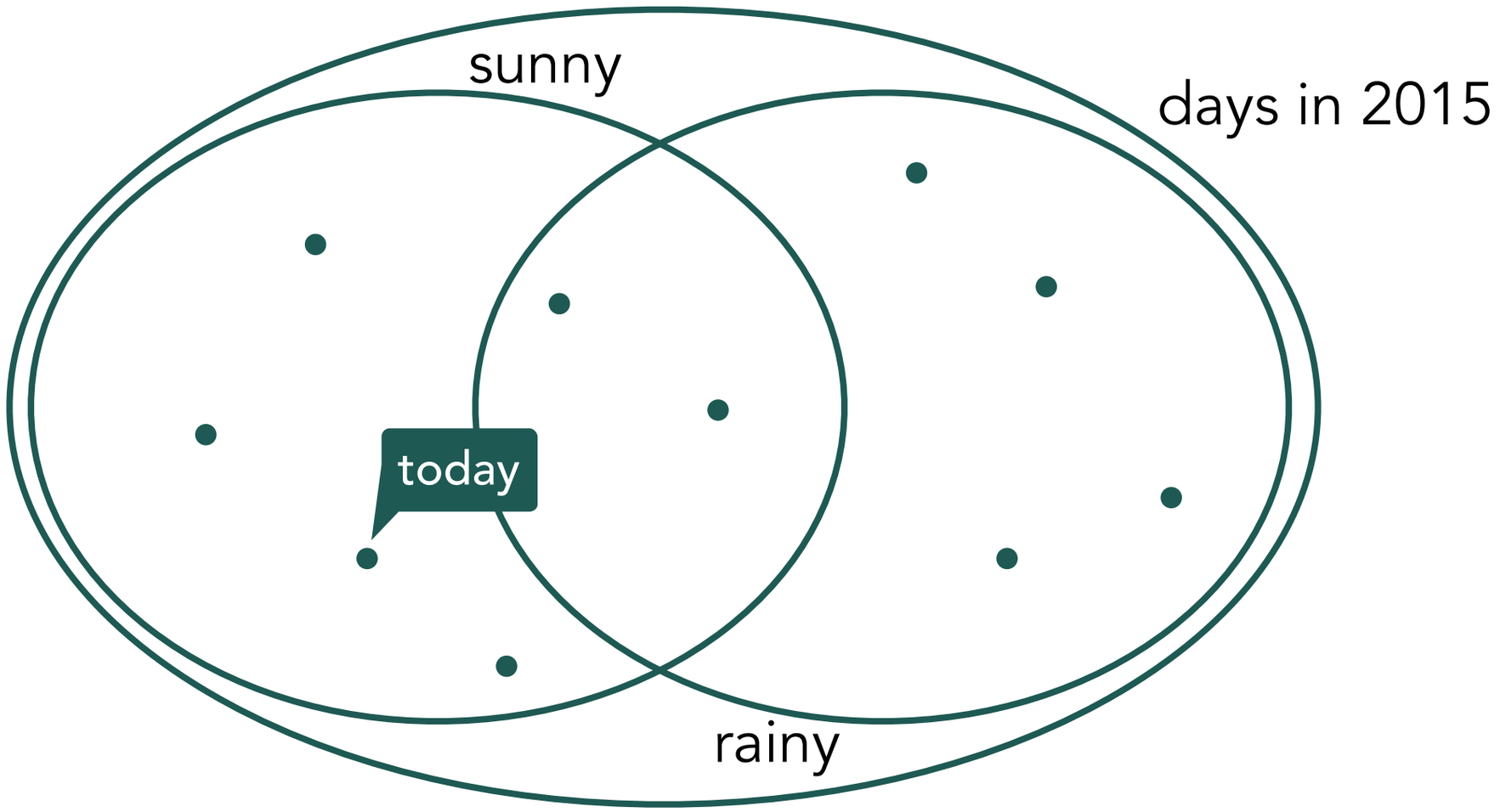
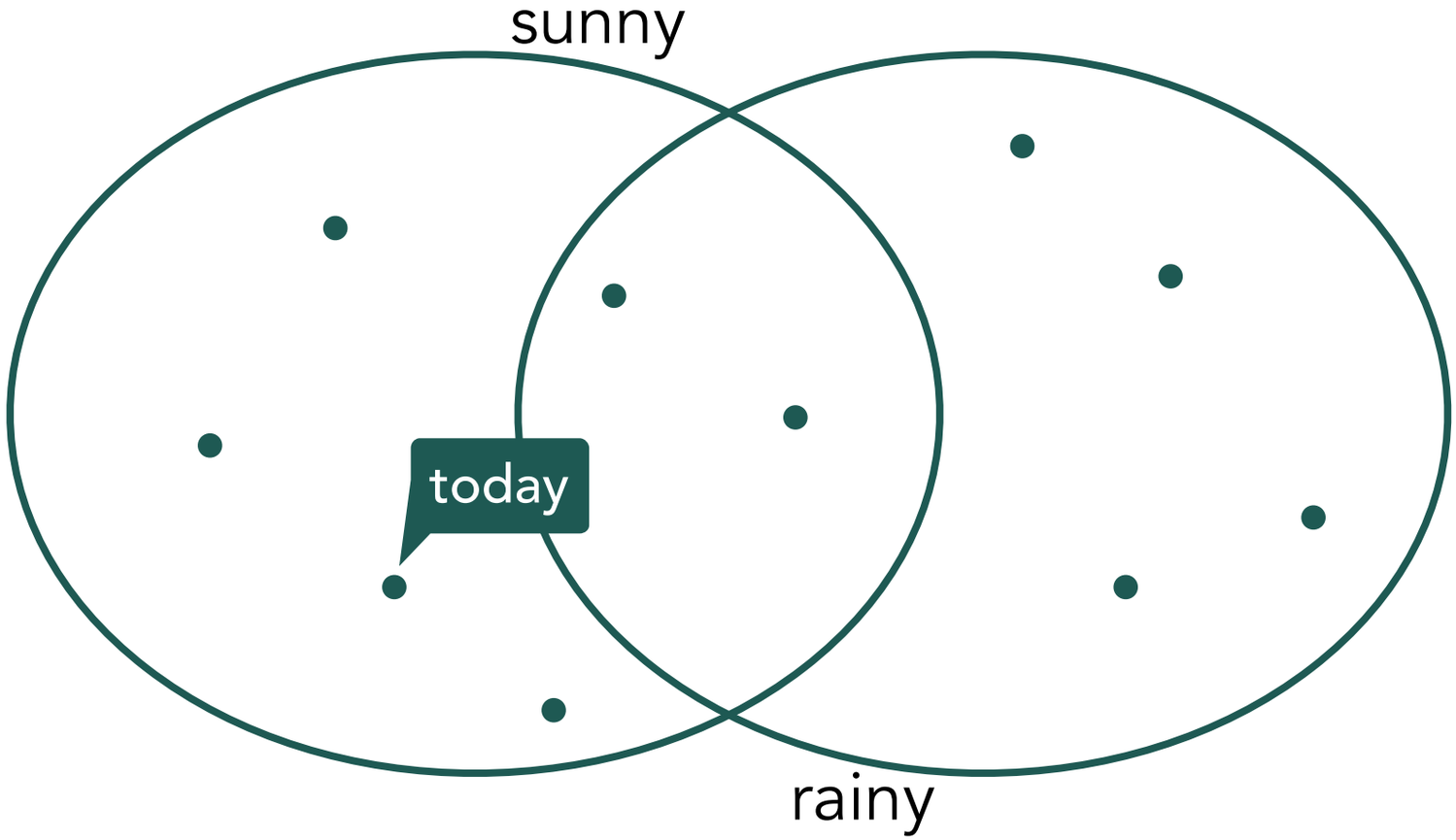


set/logic/probability introduction

sets and set notations

what is an intersection?

a set containing all elements in A that are also in B, $A \cap B$

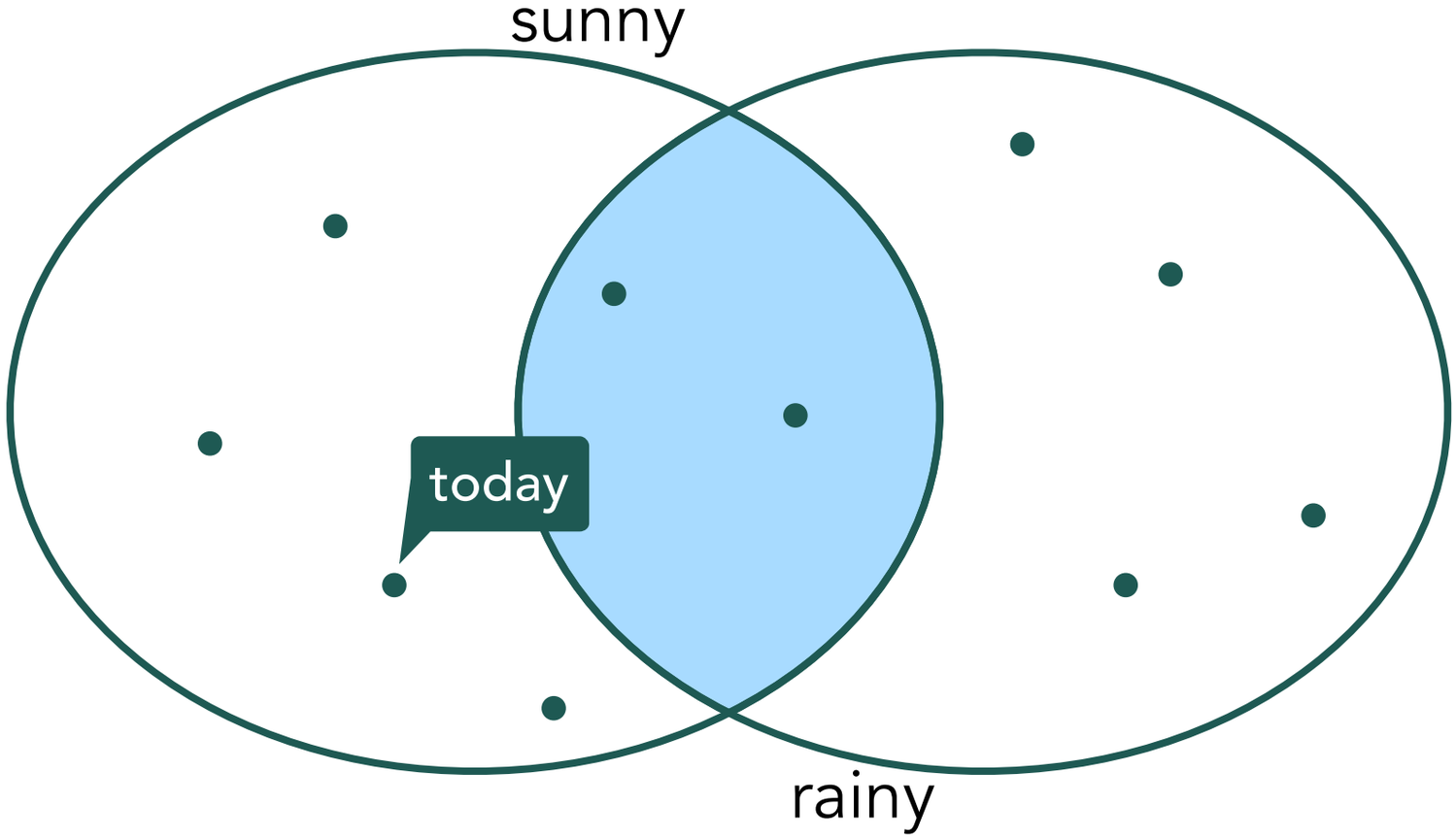


set/logic/probability introduction

sets and set notations

what is an intersection?

a set containing all elements in A that are also in B, A ∩ B

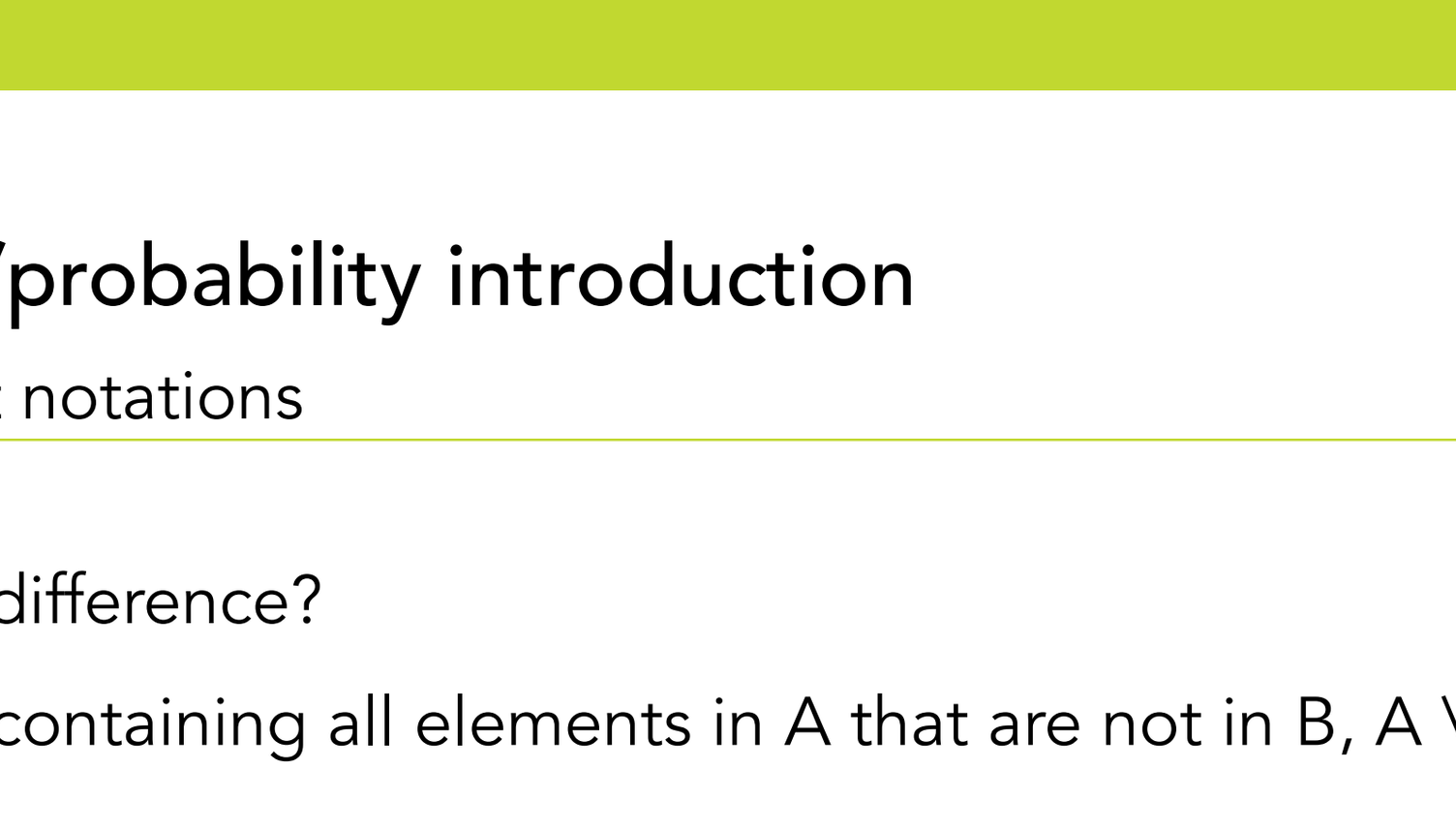


set/logic/probability introduction

sets and set notations

what is a difference?

a set containing all elements in A that are not in B, A \ B



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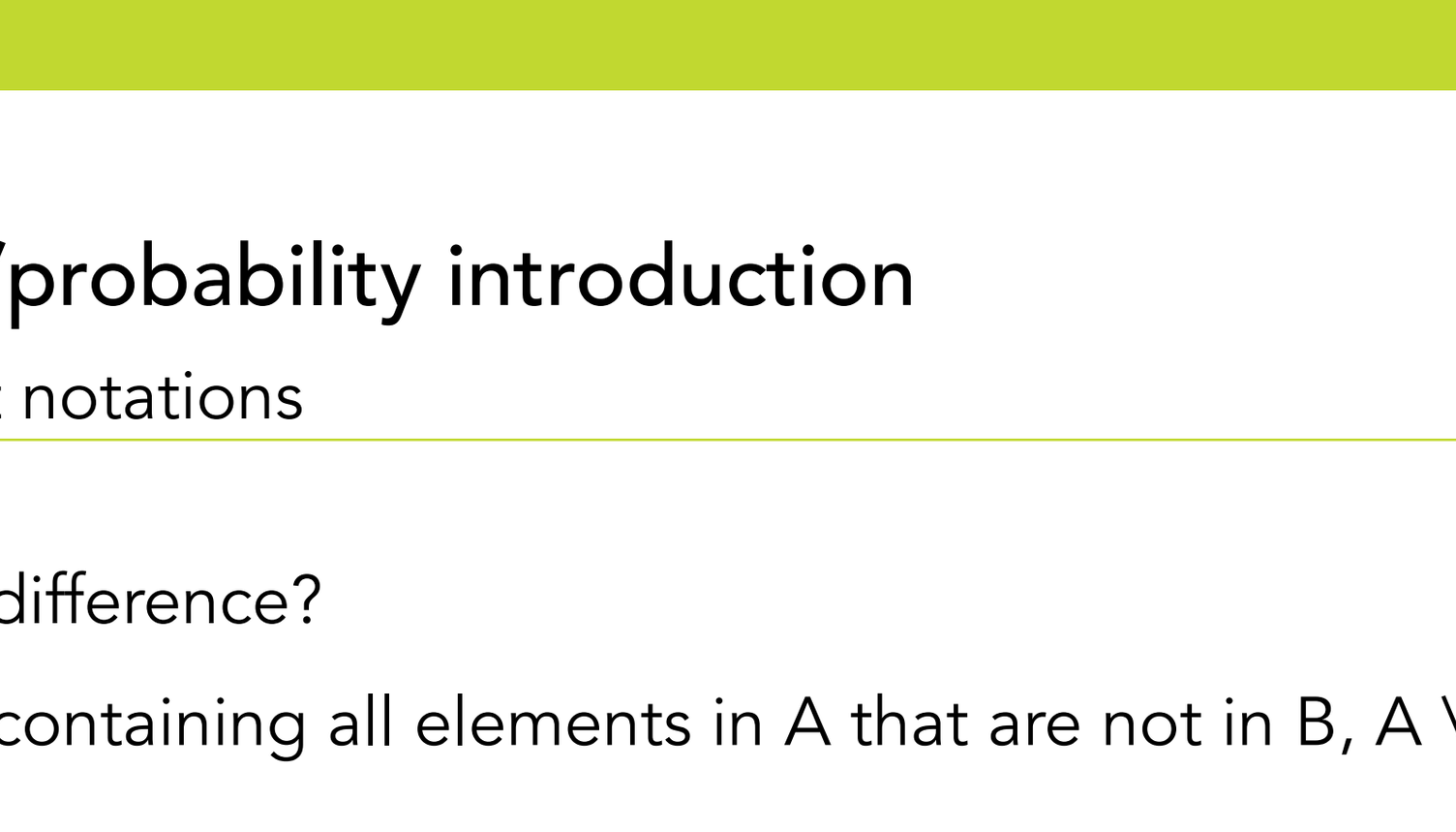
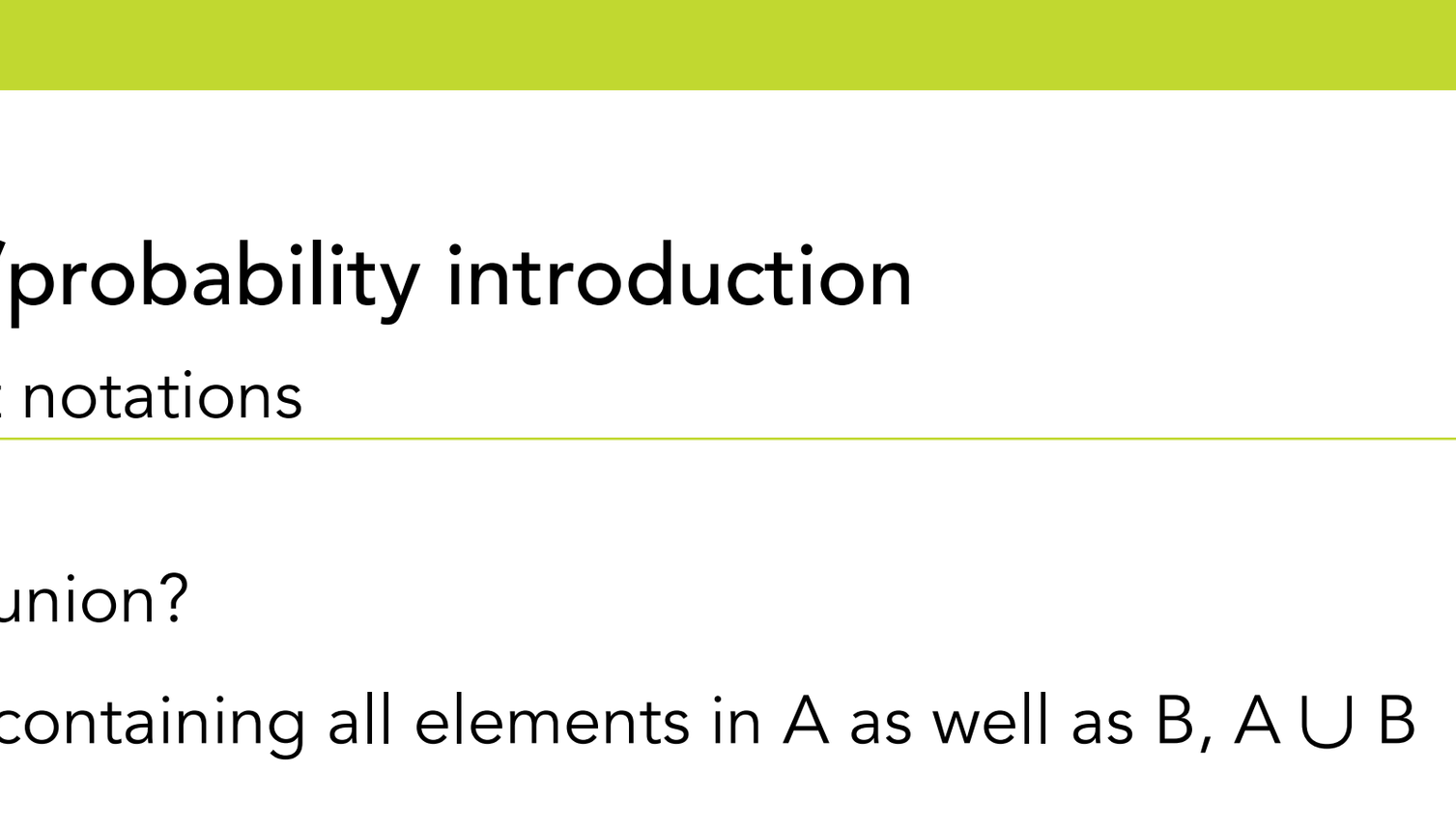


set/logic/probability introduction

sets and set notations

what is a union?

a set containing all elements in A as well as B, A ∪ B



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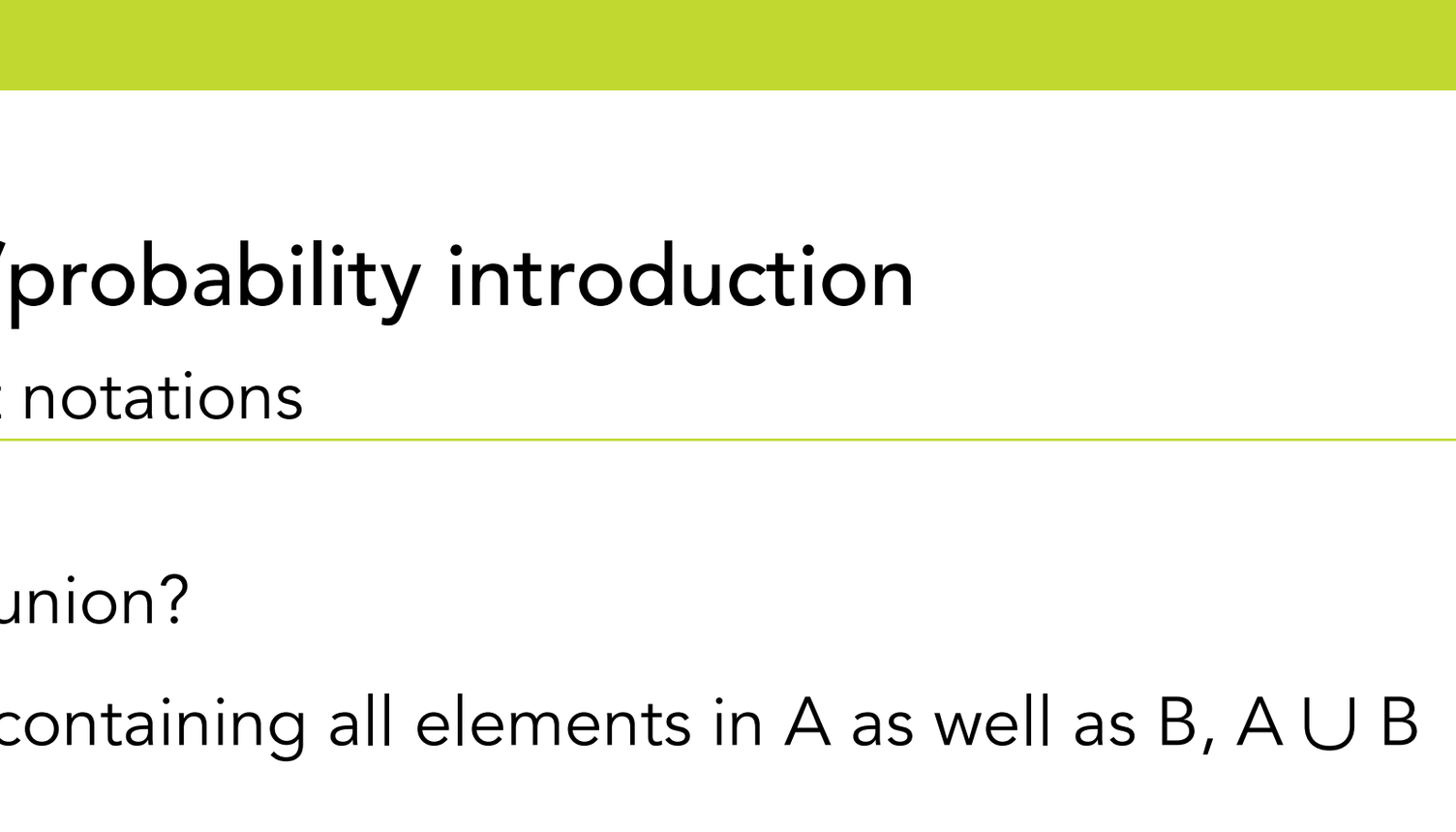
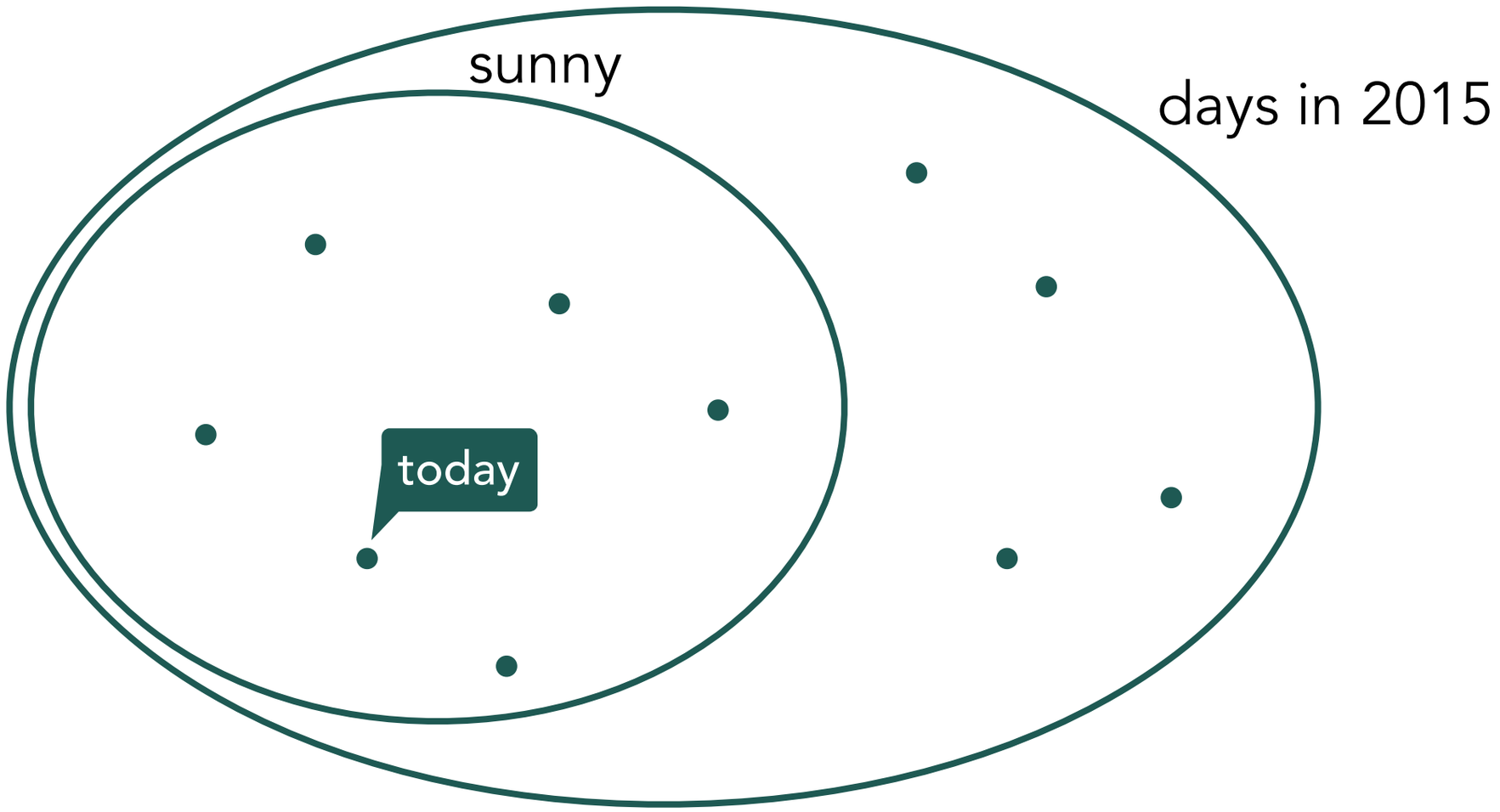


set/logic/probability introduction

sets and set notations

what is a complement?

a set contained all elements not in A, denoted A^c



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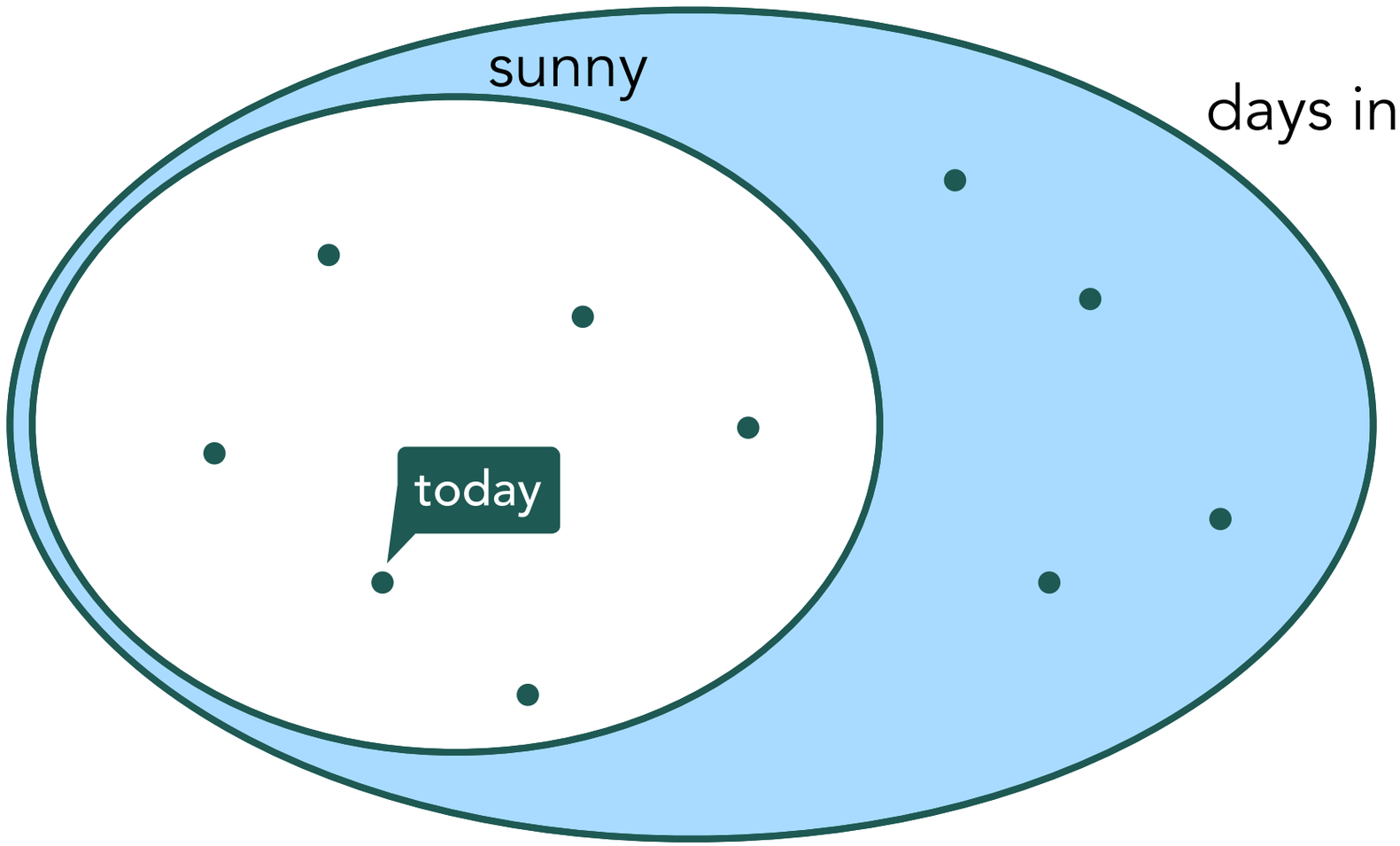

set/logic/probability introduction

observation

an interesting observation …

every operation on sets:

- *applies to a single or a pair of sets (= input)*
- *gives a set as response (= output)*

this underlines the close link between sets and tables

set/logic/probability introduction

symbolic logic: essentials

symbolic logic

closely related to sets:

sunny — this is a *proposition* representing all sunny days

rainy — this is a *proposition* representing all rainy days

sunny and rainy

sunny ∧ rainy

intuitively: all days that were both sunny as well as rainy

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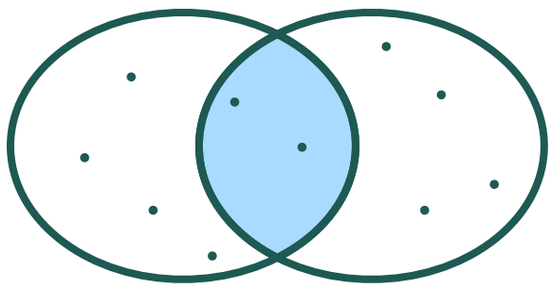

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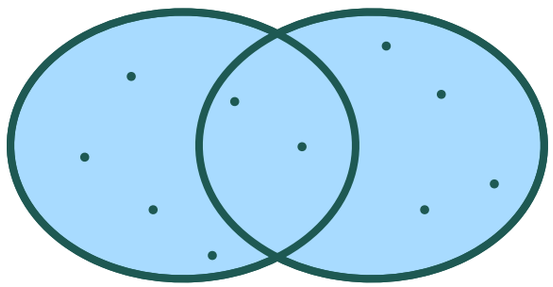

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not sunny

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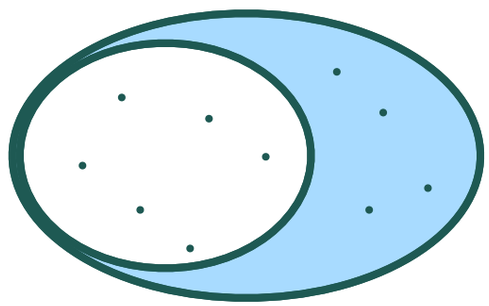

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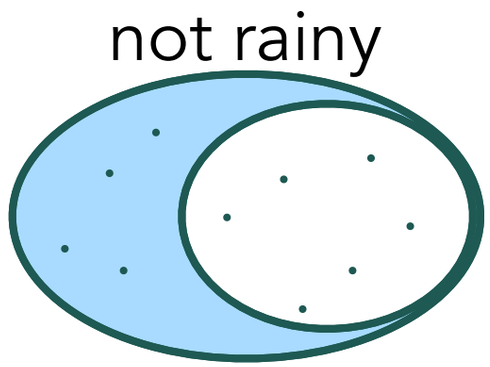

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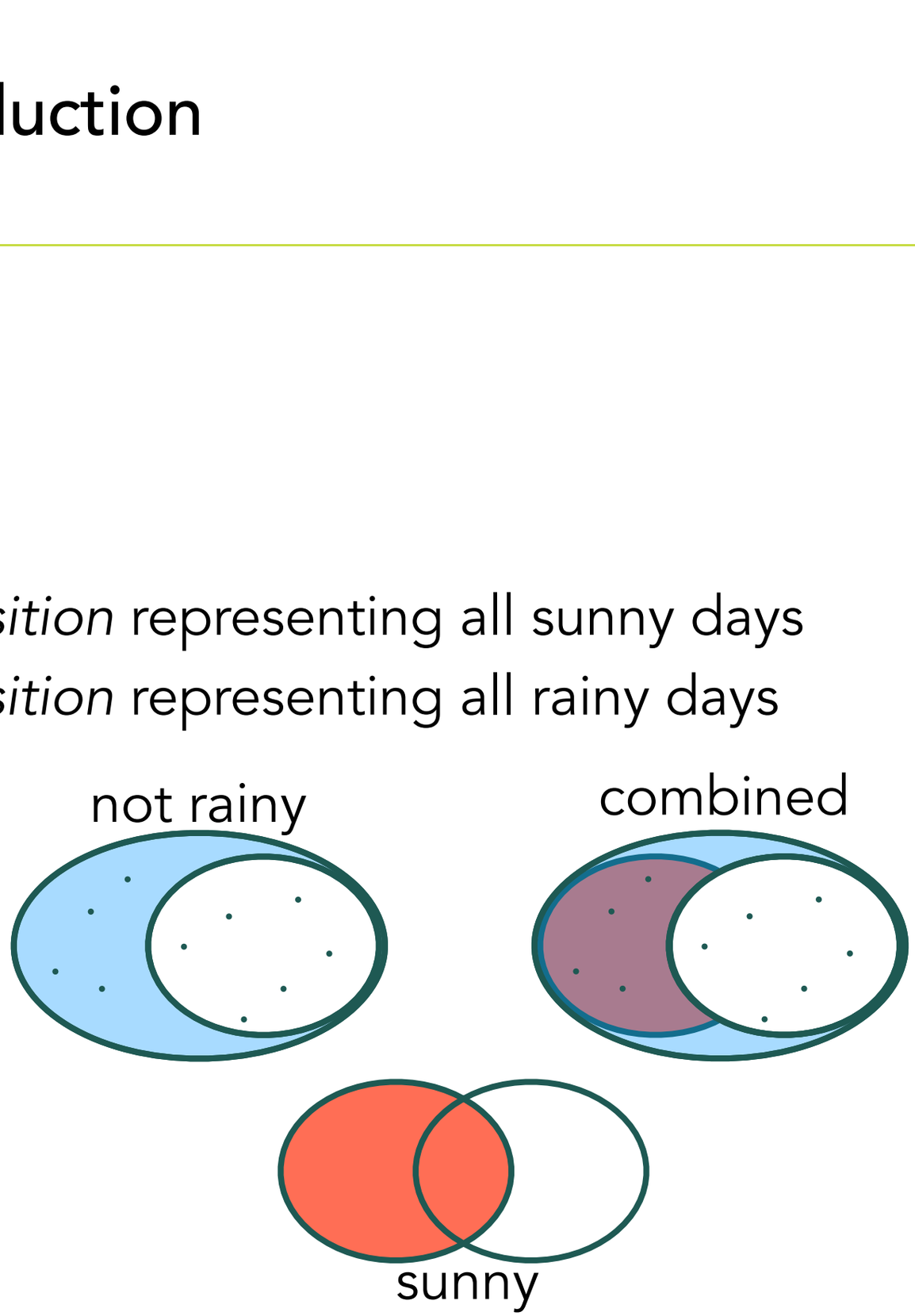

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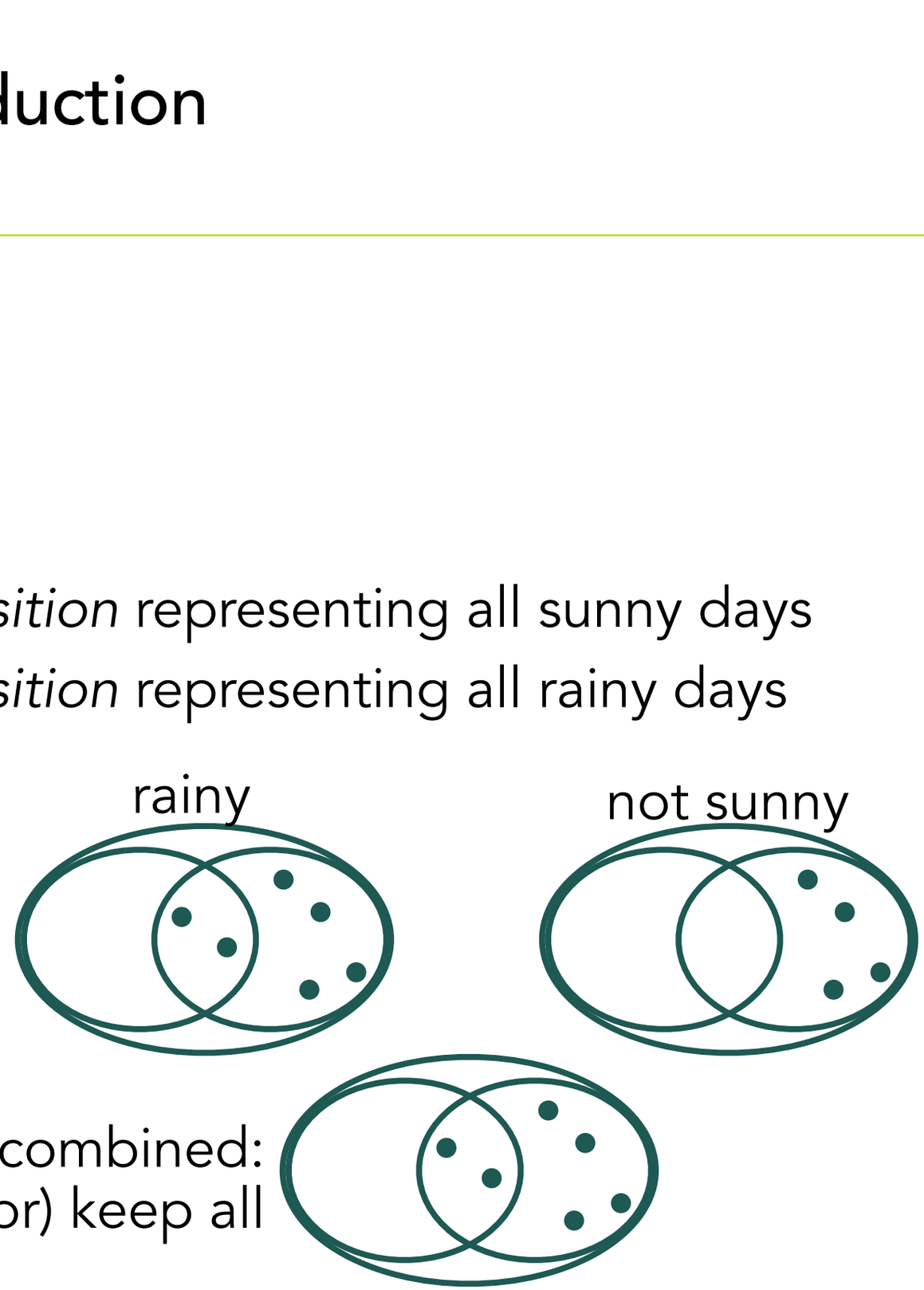

set/logic/probability introduction

probability theory

probability

measure of the likeliness that an event will occur

P(1) = 1/6

P(even) = 1/2

P(at least 5) = 1/3

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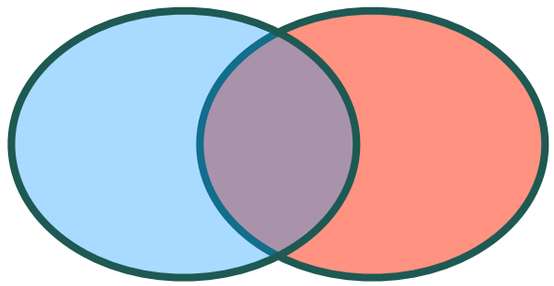
P(1 or 2) = P(1) + P(2) – P(1 and 2)



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