

Set Theory & Combinations

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Intro to Set Theory

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- A branch of mathematics
- Collects objects into *sets* and studies the properties

What's a set?

- A **set** is a collection of objects

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$$S = \{s_1, s_2, s_3, \dots s_n\}$$

- The objects can be anything
- We usually use variables or units of observation

Elements in or not

- We can say whether an object is in a set or not:

$$s_{13} \in S$$

Elements in or not

- We can say whether an object is in a set or not:

$$s_{13} \in S$$

- Or not:

$$q_1 \notin S$$

Subsets

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- We can also define non-proper subsets:

$$L \subseteq S$$

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- Though Austin might be close...

$$Z = \{\emptyset\}$$

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- R represents all the possibilities of a (single) roll of a die
- We can define sets for the even possibilities and the odd possibilities

$$E = \{2, 4, 6\} \quad O = \{1, 3, 5\}$$

Compliments

- A *compliment* is that together, they contain all the elements of the relevant universe

$$E = O^C \quad ; \quad O = E^C$$

Universe

- Board examples of how to draw sets

Properties

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