

Section 2.1: cont'd

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3:24 PM

experiment - process by which an observation (measurement) is obtained

simple event - the outcome observed on a single repetition of an experiment

examples: - roll a 6-sided die

outcomes: $E_1, E_2, E_3, E_4, E_5, E_6$

or just $1, 2, 3, 4, 5, 6$

- flip a coin

outcomes: T, H

event - a collection of simple events (aka compound event)

examples: roll a 6-sided die again

event of "not rolling a 1" = $\{2, 3, 4, 5, 6\}$

"rolling an even number" = $\{2, 4, 6\}$

mutually exclusive - two events are mutually exclusive if when one event occurs, the other event cannot occur (can't both happen at the same time)

example: rolling 6-sided die again

Are the following pairs of events mutually exclusive?

exclusive? ✓

- ① { rolling an odd number
rolling a 2 ✓

note: mutually exclusive events don't have to span the sample space - there can be extra events left over (rolling a 4 or 6)

- ② { rolling an odd number
" " " even " ✓

- ③ { rolling < 3
rolling ≥ 3 ✓

note: simple events are always mutually exclusive!

sample space: the set of all simple events

example: rolling a pair of 4-sided dice
what is the sample space?

sample space:

11	12	13	14
21	22	23	24
31	32	33	34
41	42	43	44

16 simple events

note: if the two dice are fair (equal chance of landing on any of the sides), then the probability of any single event is $\frac{1}{16}$