ELEC 30 2/6/2018

C. Boncelet

Probability — branch of mathematics

Statistics — branch of science — learning from data

prob : stat $\Leftrightarrow$ calc : physics

Experiment —

Outcomes = heads, tails, 10V 120 lbs, ...

Ex. Exp = flip coin 3 times

Outcome = sequence of flips

hhh
hht
hth
htt
thh
tht
tth
ttt

Exp: flip coin 3 times, record # heads

Outcomes: 0 1 2 3

Events - sets of outcomes

outcomes a, b, c, d, e, f

$A = \{a, b, c\}$

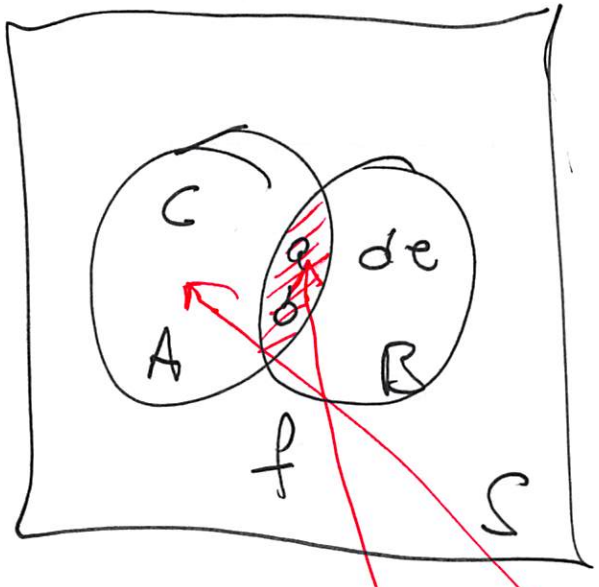
$B = \{a, b, d, e\}$

A = TRUE if exp results in outcome a OR b OR c

S = sample space
= set of all outcomes
$= \{a, b, c, d, e, f\}$

ϕ = empty set
$= \{\}$

Venn Diagram



$A = \{a\ b\ c\}$ $B = \{a, b, d, e\}$

$AB = A \cap B = \{a, b\}$

$A+B = A \cup B = \{a\ b\ c\ d\ e\}$

$\overline{A} = \{d\ e\ f\}$

$\overline{B} = \{c, f\}$

$A+B = AB + A\overline{B} + \overline{A}B$

$\overline{AB} = B\overline{A}$