Ω R
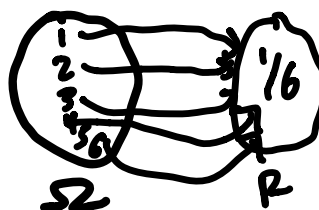
A prob. distro. maps events in the sample space to real numbers

$P(\Omega) = 1$ $p(A) \geq 0$ for all A

The <u>uniform distribution</u> is a kind of probability distribution where all events are equally likely. For all events A, if the distribution is uniform

$$P(A) = \frac{1}{|\Omega|}$$

Example: 6-sided die

Ω R

Independance!
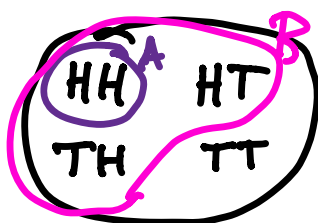If 2 events A and B are independent, then $P(A \cap B) = P(A) P(B)$

$$\frac{}{52}$$

Examples:
Pipes bursting + sunny day are ~~dependt~~

Sunny day + Brookly nets win?

$$P(\text{sunny day} \cap \text{nets win}) =$$
$$P(\text{sunny day}) \, P(\text{win})$$

A

$P(\text{two heads})$ is independent of
$P(\text{at least one head})$

B

$$P(HH) = \frac{1}{4} \quad P(\text{At least 1 head}) = \frac{3}{4}$$
$$P(\text{at least one head And two heads}) = \frac{1}{4}$$

$$P(A) P(B) = P(A \cap B)$$
$$\frac{1}{4} \cdot \frac{3}{4} \neq \frac{1}{4} \qquad \text{Not independent}$$

$P(200 \text{ lbs})$
$P(6 \text{ ft tall})$ Dependent

outcomes.txt

$X = $ Breaks

Breaks Port A

Breaks port A

Breaks Port B

Not Breaks Port A

Not Breaks Port B

Ω

Port A

$P(\text{Breaks} \cap \text{port A}) \overset{?}{=}$

$P(\text{Breaks}) \cdot P(\text{port A})$