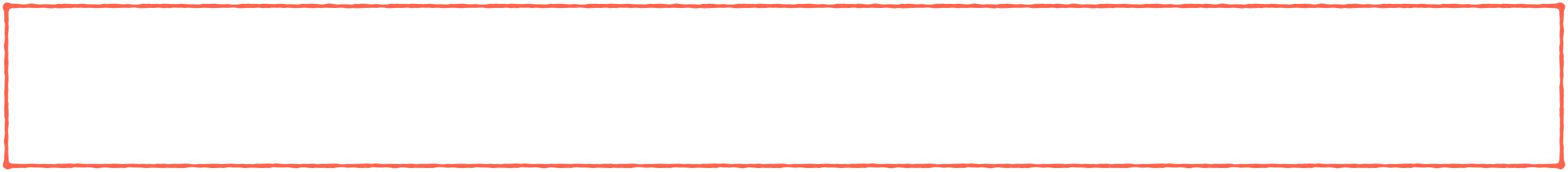




# probability of an event



## probability of an event

If A is an event in a discrete sample space A and  $O_1,O_2,O_3,\ldots$  are the individual outcomes comprising A, then  $P(A)=P(O_1)+P(O_2)+P(O_3)+\ldots$ 

### example

We flip a fair coin twice. What's the probability of obtaining at least one head?

The sample space  $S = \{HH, HT, TH, TT\}$ 

As the coin is fair, all outcomes are equally likely:  $P(HH) = P(HT) = P(TH) = P(TT) = \frac{1}{4}$ 

The event of obtaining at least one head is  $A = \{HH, HT, TH\}$ 

$$\implies P(A) = P(HH) + P(HT) + P(TH) = \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{3}{7}$$

## probability of an event

#### exercise 2

Roll two dice, each with numbers 1–6. Let X denote the first roll and Y the second roll.

- (a) Find the probability of P(X) = 1
- (b) Let  $Z = \min(X, Y)$  and find the probability P(Z) = 6
- (c) Let  $Z = \min(X, Y)$  and find the probability P(Z) = 3

6						
5						
4						
3						
2						
1						
	1	2	3	4	5	6