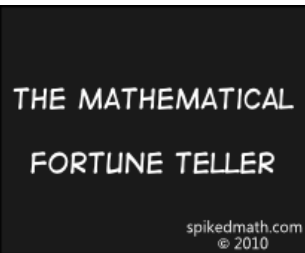


Coincidence and Uncertainty in Daily Life

- many events in our daily lives arise in terms of probabilities and statistics—even the basic interactions of molecules and subatomic particles
- we can use probability to move beyond a vague sense of disordered randomness and describe possible outcomes



Probability

- quantitative measure of the likelihood of an event
- mathematical foundation of common sense and good judgment
- 0 to 1 (or 0% to 100%)

Certain



1



The sun rising tomorrow

Very likely

Even chance



$\frac{1}{2}$



Getting 'tails' when you toss a coin

Not likely



$\frac{1}{6}$



Rolling a 6 on a dice

Impossible



0



Rolling an 8 on a dice

Law of Large Numbers

- small number of experiments can have random fluctuations
- repeat an experiment a large number of times: outcome tends to a probability with much greater certainty

