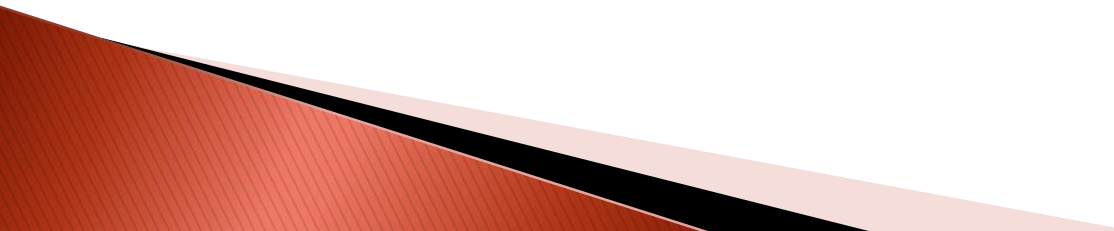




Probability

Learning outcomes

- ▶ Understand the language of probability
 - ▶ Place probabilities on probability scale
 - ▶ Predict and determine probabilities
 - ▶ Predict frequency of outcomes
- 

What is probability?

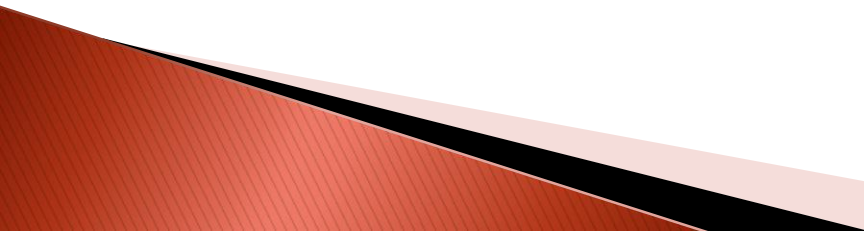
- ▶ Write down as many things as you can about probability
- ▶ You have 2 minutes

Every day examples

- ▶ Flipping a coin
- ▶ Rolling a die
- ▶ Choosing a t-shirt
- ▶ List some others???



Definitions

- ▶ **Trial**
 - The act of doing an experiment in probability
 - ▶ **Outcome**
 - One of the possible results of a trial
 - ▶ **Sample Space**
 - The set or list of all possible outcomes in a trial
 - ▶ **Event**
 - The occurrence of one or more desired outcomes
- 

The Likelihood Scale

Impossible

Unlikely

Evens

Likely

Certain

Which of the above best describes:

1. Class will get homework
2. Sun will rise tomorrow
3. No school tomorrow
4. It will snow in January
5. The next baby born in Ireland will be a girl

Probability Scale

Impossible

Unlikely

Evens

Likely

Certain

0

50:50

1

You will get
10 on a
single die

You will get
a head if
you flip a
coin

The sun will
rise

0%

50%

100%

Must add up to 1

Calculating probability

- ▶ Probability:
 - The numerical measure of the chance of an event happening
- ▶ Probability = $\frac{\text{number of desirable outcomes}}{\text{total number of all possible outcomes}}$
or
- ▶ Probability = $\frac{\text{desirable}}{\text{possible}}$

Exercise 1

If a card is chosen at random from a normal pack of 52, what is the probability of each of the following is chosen?

- A red card
- A spade
- A three
- A picture card



Exercise 2

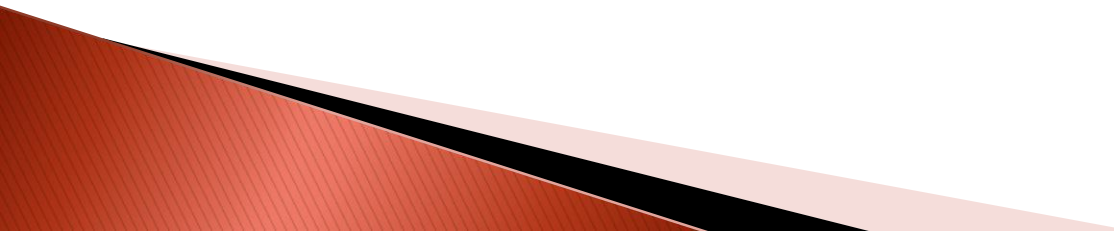
1. A pants is chosen at random. What is the probability that the pants is brown?



Expected Frequency

- ▶ Expected frequency = number of trials \times probability
- ▶ A coin is flipped 600 times. How many times would a tail be expected?
- ▶ $600 * .5 = 300$ Tails

Exercises

- ▶ Further class exercises
 - ▶ Discussions
 - ▶ Debates
- 

Re-cap

- ▶ What is probability?
 - ▶ Probability terms
 - ▶ Probability scale
 - ▶ Calculating probability
 - ▶ Expected frequency
- 