

PROBABILITY

21 AUGUST 2014



Lesson Description

In this lesson we:

- Revise how to find the probability of an event taking place
- Calculate and apply probability to different situations



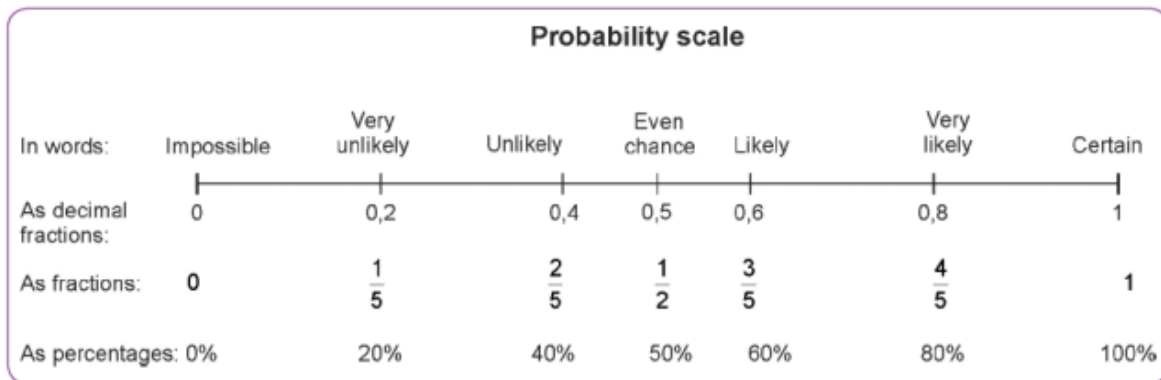
Summary

Probability is a measure of how likely something will happen. If it is impossible, the probability is 0. If it will certainly happen, we say the probability is 1. In everyday language we use the word chance instead of the word probability.

Probabilities are written in four different ways:

- Ratio
- Common fractions
- Decimal fractions
- Percentage.

We can represent probabilities in a diagram as the Probability Scale



(Solutions for All, Maths Literacy, Macmillan, Grade 10, Chapter 11, Page 193)

Calculating Probability

You can calculate the probability of some things like tossing a coin or rolling a dice or even selecting the correct number in a lucky draw quite easily. First you need to calculate all the possible results or outcomes. Next you count the number of ways you can get the result or outcome you want.

$$\text{Probability} = \frac{\text{Number of ways the desired result can occur}}{\text{Total number of possible results}}$$

Remember, the probability of something happening (called an event) does not mean that it will happen except when the probability is 1.

When you consider two events:

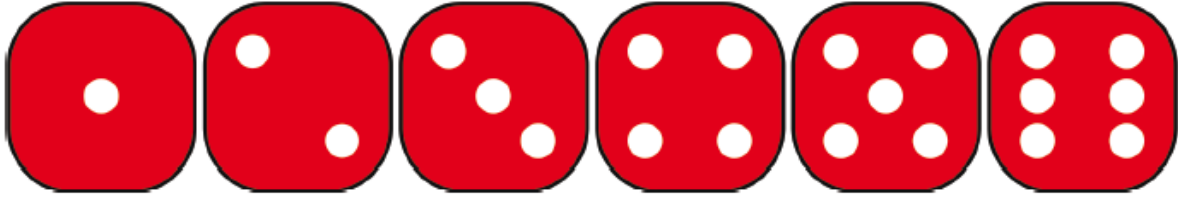
Multiply the probabilities when you want both to take place (And X)

Add the probabilities if you want either to take place (OR +)

**Test Yourself**

Refer to the diagram of cubic dice for the questions that follow:

A cubic dice has six faces, each with a different number on it.

**Question 1**

What is the probability that when you roll the dice it the number facing up is a five?

- A 0
- B 0,17
- C 0,33
- D 1

Question 2

What is the probability that when you roll the dice it the number facing up is a one?

- A 0
- B 0,17
- C 0,5
- D 1

Question 3

What is the probability that when you roll the dice it the number facing up is an even number?

- A 1
- B 0,17
- C 0,5
- D 0,6

Question 4

What is the probability that when you roll the dice it the number facing up is a prime number?

- A 0,17
- B 0,33
- C 0,5
- D 0,6

Question 5

What is the probability that when you roll the dice it the number facing up is a number less than five?

- A 1
- B 0,17
- C 0,5
- D 0,6



Improve your Skills

Question 1

Estimate the probability for each event listed below. State if the probability is: impossible, below average, a 50-50 chance, above average, certain, or if it is impossible to tell from the information given.

- a.) Event A: A cricket team will score 700 runs in a T20 international match
- b.) Event B: Heritage Day in South Africa is on the 2nd September, this year.
- c.) Event C: Heritage Day in South Africa falls on a Monday
- d.) Event D: It will rain on Heritage Day this year.

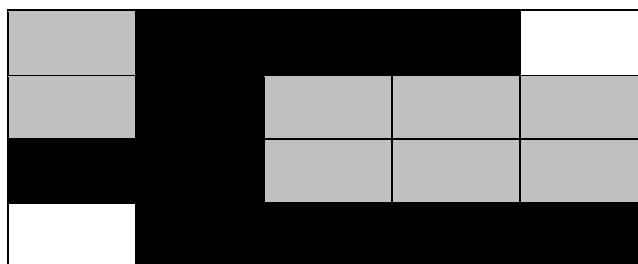
Question 2

Mr and Mrs Jones decide to have 3 children. What is the probability that:

- a.) their first child will be a girl?
- b.) they will have three boys?
- c.) they will have two girls and a boy in any order?

Question 3

Consider the diagram below which represents a card that is divided into three colours. The card is spun on a pivot and a dart is thrown towards the card.

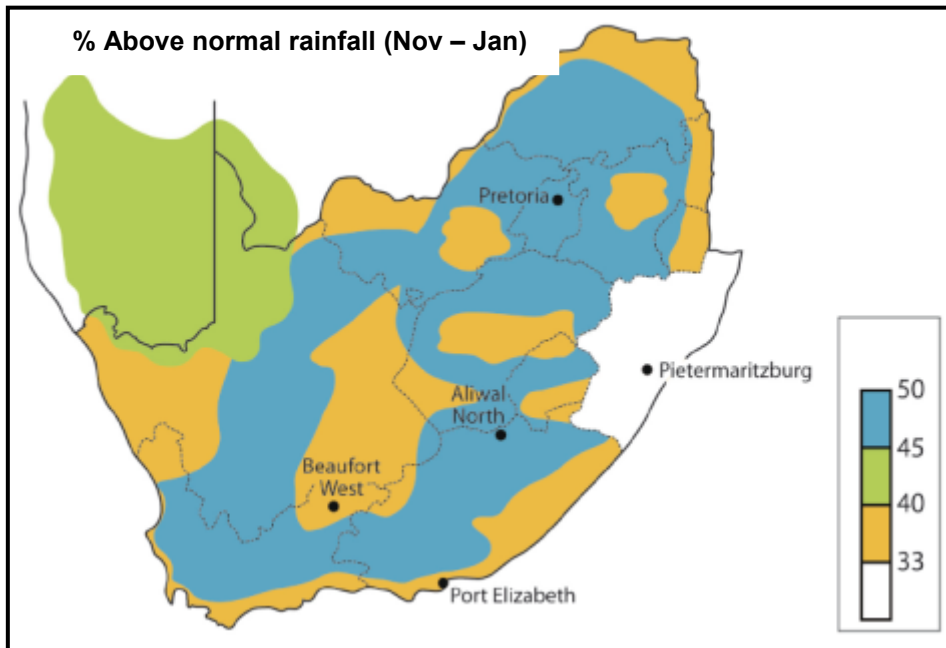


- a) What colour is the dart most likely to land on? Give a reason for your answer.
- b) What is the probability of the dart landing on the grey colour? Show your working.

notes for...

Question 4

The map shows the probability of below-normal rainfall in Southern Africa. The map shows the probability percentage on a scale from 0 – 100%.



- Explain what the forecast is for the orange-coloured areas.
- Will Pretoria have more or less rain than usual this summer?
- Are there any areas where people can expect the usual amount of rain this summer?

Question 5

(Adapted from September 2013, Eastern Cape, Paper 2, Question 5.2)

If Naziah makes 10 dozen of half-moon pastries of which 75% are filled with mince filling and the rest with chicken filling. Calculate the probability that you will choose two consecutive half-moons with chicken filling without replacing the first one. Write your answer in the simplest fraction.