

**Age 11+ Level ★★★
Worksheet 1****1. Rain**

On Aisha's holiday, 11 days had some rain.
A morning rain was always followed by a clear afternoon.
An afternoon rain was always preceded by a clear morning.
A total of 9 mornings and 12 afternoons were clear.

How many days had no rain at all?

2. Almost Constant Digits

How many ten-digit numbers are there which contain only the digits 1, 2 or 3, and in which any pair of adjacent digits differs by 1?

3. Perfect Score

100 children took part in a Mathematics competition consisting of four problems.

90 children solved the first problem
85 solved the second
80 solved the third
75 solved the last problem

What is the minimum number of children who could have answered all the questions correctly?

4. Nine or Ten?

Convince yourself that when you roll two dice you are more likely to score 9 than 10.

If I roll 3 dice, which is more likely, a total score of 9, or a total score of 10?

5. Counting Socks

A box contains two white socks, three blue socks and four grey socks. Rachel knows that three of the socks have holes in them, but does not know what colour these socks are.

She takes one sock at a time from the box without looking.
How many socks must she take for her to be certain she has a pair of socks of the same colour without holes?

These problems are adapted from UKMT (ukmt.org.uk) and WMC (competition.ac) problems.