Age 11+ Level ★
Worksheet 2

1. Suit Sequence

A pattern that repeats every six symbols starts as shown below:

♡ ♣ ♡ ◇ ♡ ♠ ♡ ♣ ♡ ◇ ♡ ♠ . . .

What are the 100th and 101st symbols in the pattern?

2. What a Coincidence!

Consider the arithmetic sequences:
$1998, 2005, 2012, ...$ and
$1996, 2005, 2014, ...$

Which is the next number after 2005 that appears in both sequences?

3. Triangular Clock

Trinni is fascinated by triangular numbers (1, 3, 6, 10, 15, 21…)

She found that she could rearrange the twelve numbers on a clock face 1, 2, 3, ..., 12 so that each adjacent pair added up to a triangular number.

She left the 12 in its usual place; what number did she put where the 6 would usually be?

4. Fibonacci Deduction

Leonard writes down a sequence of numbers. After the first two numbers, each number is the sum of the previous two numbers in the sequence.

The fourth number is 6 and the sixth number is 15.
What is the seventh number in the sequence?