

**Age 11+ Level ★★★
Worksheet 2****1. Leap Monday**

In 2016, the 29th of February was a Monday. When will be the next leap year when the 29th of February is a Monday?

2. Factor Sum

Given any positive integer n , Paul adds together the distinct factors of n , other than n itself.

Which of the numbers 1, 3, 5, 7 and 9 can never be Paul's answer?

3. Powerful Finale

What is the last digit of 3^{2011} ?

4. Common Remainder

When 144 is divided by n , this leaves a remainder of 11.

When 220 is divided by n , this also leaves a remainder of 11.

What is the value of n ?

5. HCF Expression

If p and q are distinct primes less than 7, what is the largest possible value of the highest common factor of $2p^2q$ and $3pq^2$?

6. Trailing Zeros

The symbol $50!$ represents the product of all the whole numbers from 1 to 50 inclusive; that is, $50! = 1 \times 2 \times 3 \times \dots \times 49 \times 50$.

If I were to calculate the actual value, how many zeros would the answer have at the end?

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