Age 14+ Level ★
Worksheet 1

1. **Pythagorean Quadruple**
   Find distinct positive whole numbers a, b, and c, such that

   $$a^2 + b^2 + c^2 = 11^2.$$

2. **Powers of Four**
   If $4^x + 4^x + 4^x + 4^x = 4^{16}$, what is the value of x?

3. **Root 2017**
   Between which two whole numbers is $\sqrt{2017}$?

4. **Megabytes and Kilobytes**
   1 kilobyte is actually not 1000 bytes, it is 2^{10} bytes.
   1 megabyte is 2^{10} kilobytes.

   How many bytes are there in 1 megabyte?

5. **Power up to 1000**
   Find $x + y$, where $2^x \times 5^y = 1000$.

6. **The Power of the Sum**
   If $2^6 + 2^5 + 2^4 + 2^4 = 2^n$, find the value of n.

7. **The Square and the Root**
   What is the remainder when the square of 49 is divided by the square root of 49?