Equations and Formulae

**Age 14+ Level ★★
Worksheet 1**

1. **Simultaneous Multiplying**

   If $a \times b = 2$, $b \times c = 24$, $c \times a = 3$ and a, b, and c are all positive, what is the value of $a + b + c$?

2. **Well Read**

   In Miss Quaffley's class, one third of the pupils take a teddy bear to school. Last term, each boy borrowed 12 books from the library, each girl borrowed 17 books, and each teddy bear borrowed 9 books.

   In total 305 books were borrowed.
   How many girls are there in the class?

3. **Square to a Rectangle**

   Kevin had some square patio tiles which he arranged to make a square. He decided to change it into a rectangle by making one of the sides 3 tiles shorter, and the other side 4 tiles longer.

   To make this change, Kevin only needed to buy one extra tile.
   What are the lengths of the sides of the rectangle?
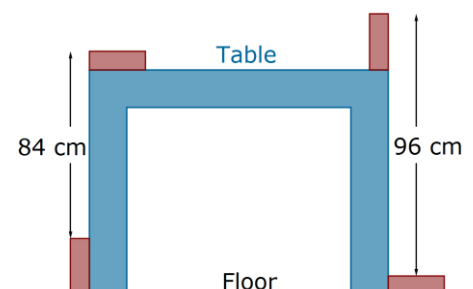
4. **Black and White Socks**

   There are 20 black socks and n white socks in a drawer. When a sock is taken from the drawer, the probability that it is white is $\frac{1}{n}$.

   What is the value of n?

5. **Table Height**

   Four identical blocks of wood are placed touching a table in the positions shown.

   How high is the table?

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