

**Age 11+ Level ★★
Worksheet 1****1. Find from Factors**

A certain number has exactly eight factors including 1 and itself. Two of its factors are 21 and 35. What is the number?

2. One Short

A positive whole number less than 100 has remainder 2 when it is divided by 3, remainder 3 when it is divided by 4 and remainder 4 when it is divided by 5.

What is its remainder when it is divided by 7?

3. Grandma's Cake

Grandma bakes a cake for her grandchildren who are going to visit her. She has forgotten whether 3, 5 or all 6 of her grandchildren will visit.

She wants all of the cake to be eaten by her grandchildren and would like each grandchild to get the same amount of cake.

To prepare for all three possibilities, what is the smallest number of pieces into which she should cut the cake?

4. Ones, Twos and Threes

Each digit of a positive integer is 1, 2 or 3. Each of these digits occurs at least twice in the number.

What is the smallest such integer that is not divisible by 2 or 3?

5. Red Card Blue Card

Sally has 5 red cards, numbered 1, 2, 3, 4 and 5, and 4 blue cards, numbered 3, 4, 5 and 6.

Can you find a way in which Sally can line the cards up so that the colours alternate, and so that the number on each red card is a factor of every number next to it?

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