

MATHEMATICS ENRICHMENT CLUB.

Problem Sheet 8, June 20, 2016

1. Alex has 12 Tim-Tams of which 9 are original and 3 are the white type. Alex wants to share her Tim-Tams with 3 friends. She puts the Tim-Tams in a box and she and her 3 friends each randomly choose 3 Tim-Tams.

What is the probability that exactly one of them ends up with all 3 white Tim-Tams.

2. On a blackboard, there are 2016 integers, from 1 to 2016 (including 1 and 2016). You are allowed to remove two integers you like, but you have to add the arithmetic mean as a new number. (If you delete for example 10 and 11, you have to write 10.5 as the

Senior Questions

1. Arrange the digits from 1 to 9 in such an order that the first two digits form a number that is a multiple of 2, the first three digits form a number that is a multiple of 3, and so on.

Example: 123456789 doesn't work, because 12 is divisible by 2 and 123 is divisible by 3, but 1234 is not divisible by 4.

2. Let a, b be positive integers and p prime. Solve

$$(b - a) = 2ap^2$$