

Math Summer Camp - Preliminary test

This is just for students to gauge the theme of the math summer camp. This is not at all a form of entrance test and students should therefore not feel discouraged if they don't get to solving all problems. Upon completion, send screenshots of your solutions to my email (abdzub@hotmail.com) or on WhatsApp.

1. Factor each of the following integers into prime numbers (feel free to draw prime trees).

(a) 25.

(b) 420.

(c) 144.

2. A box contains a *red*, *blue* and *orange* ball. I reach in and grab two balls. What are all the possible combinations of balls that I may get?

3. Three young men; Alex, Bob and Sam, were accused of stealing shoes from the local shoe store. They made the following accusations:

- Alex : Bob is guilty and Sam is innocent.
- Bob : If Alex is guilty then so is Sam.
- Sam : I'm innocent, but at least one of Alex or Bob is guilty.

(a) Assume that all of these statements are true. Who is really guilty?

(b) Assume that all few these statements are false. Who is really lying?

4. Suppose a square has an area of 25. What is it's perimeter?

5. Find the greatest common divisor and lowest common multiple of the following pairs of integers

(a) 16, 24.

(b) 2, 33.

(c) 34, 56.