XIII Open Mathematical Olympiad For 5th Grade
Part B

You need to write down both solution and answer for these problems.

1. Two runners run one after the other at the same speed of 150 m / min, at the distance of 300 m from each other. There is a mountain on their way. When climbing uphill, both runners lowered the speed by 50 m / min; on the descent they increased their pace by 100 m / min; and after that returned to the original pace. What was the maximum distance between runners during this workout?

2. There is a chain of 13 links (each weighs 1 g), numbered in order: 1, 2, 3, ..., 13. Which link should be unfastened so that one can measure each weight of 1g, 2g, 3g, ..., 13g using the formed parts (including the unchained link) on the pan weights? Parts of the chain can be put on both scales of the weights. After specifying the link to unfasten, you need to specify how the required weights are obtained.

3. Grandma has three jars with capacities 7, 8 and 20 liters. Two smaller jars are filled with juice, and the big one is empty. Is it possible to split the juice equally into three banks? There are no additional devices, there are no scales on the jars either.

4. Gosha considers the month "successful" if there are exactly 4 Mondays and exactly 4 Tuesdays in it. Once Gosha said: "The current month is successful; by the way, the last month was also successful, and the next month will be successful, too." In what month could Gosha say that?

5. In soccer, any team gets 3 points for a win; 1 point for a draw; 0 points if it loses a game. In a round-robin tournament of 5 teams (each team played one game with every other team), “Meteor” got 4 points, while he scored 5 goals during the tournament and missed only two goals. Find the scores of all the matches played by “Meteor”.