



## Israeli Mathematical Olympiad for 5-6 grades

Final stage 2019

1. Assemble three numbers from the digits 1, 2, 3, 4, 5, 6, 7, 8, 9, so one of them will be the sum of the other two. Each digit must be used exactly once.
2. A class of 32 students went on a field trip. The students had to bring hats, sunglasses and water bottles. There was no student who has forgotten all these things, but:

Of the students who brought hats, 9 forgot sunglasses,

Of the students who brought sunglasses, 7 forgot water bottles,

And of the students who brought drinking bottles, 10 forgot hats.

How many students from the class brought everything needed for the trip?

Find all the options and justify your answer.

3. On the following picture: ABCD is a square, and BCEF is a parallelogram.

Which area is bigger: orange or blue?

Justify your answer.

4. In the magical forest lives a tribe of 150 people. Every day some of the people go hunting together, and some stay at the village. Each person each day decides whether to stay at the village or to go hunting that day.

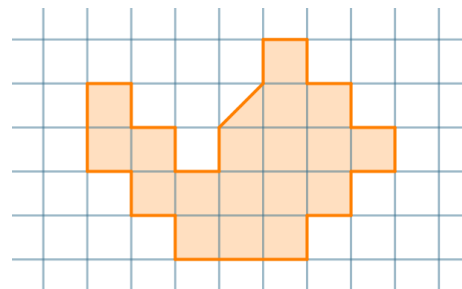
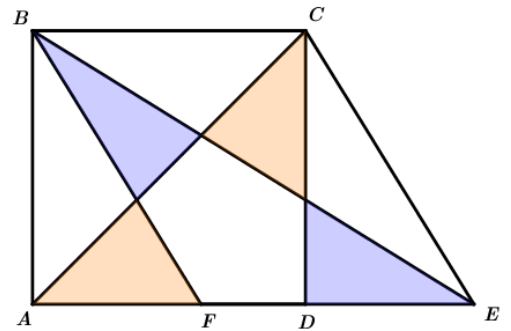
Each person each day decides whether to stay at the village or to go hunting that day.

Prove that after a week there would be at least 2 people that went hunting on exactly the same days for the whole week.

*Note: Even in the magical forest, the week is 7 days long.*

5. Rachel has three cards with different digits, all larger than 0. Rachel made all the possible three-digit numbers from these cards and calculated the sum of all those numbers. Prove that the sum is divisible by 37.

6. Cut the following figure into two congruent (equal) parts:



**Good luck!**