Entrance exams - Mathematics 1st year 4-year course - requirements

1. position of numbers on the number line, signs of inequality, comparing numbers
2. operations with whole numbers, decimals, fractions (addition, subtraction, multiplication, division, powers, square roots)
3. solving equations (including word problems)
4. percentages
5. data processing and interpretation
6. working with graph
7. plane figures and their properties, perimeters and contents, Pythagorean theorem
8. solid

Examples:

1. Draw a horizontal number line and mark on it the exact images of the following numbers:

   -2^2 ; $\sqrt{0,04}$; $-3\frac{2}{5}$;

2. In the newly opened hotel, they booked $\frac{1}{6}$ of rooms on the first day and on the second day they booked 30% of those left after the first day. On the third day they booked half of what was left after the second day. How many rooms are there in the hotel when there were still 7 rooms left vacant at the end of the third day?

3. Calculate:

   $(0,4 - 3) \div \left(1\frac{1}{2} + \frac{6}{5}\right) =$

4. The teacher records how many students of both genders he tests on each day. This is what the table looked like in one week:

| sex/day	Monday	Tuesday	Wednesday	Thursday	Friday
boys	8	15	8	10	7
girls	11	3	10	14	4

a) What was the average number of students tested per day?
b) On Tuesday the teacher worked for 6 hours. How much time did he have on average per student? Give the figure in minutes.

Examples from entrance examinations from previous years:

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On the mat there is a construction made of cubes.

We complete this construction according to the following rules:

- the finished construction will create a cube

- only one cube may be moved in the completed construction

- any number of new cubes may be added to the construction
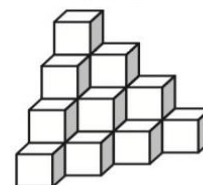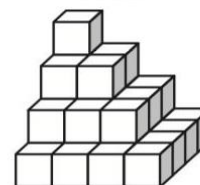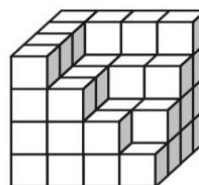
- there must be no gaps between neighbouring cubes
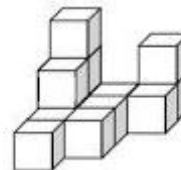
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Marta built a cube on the mat that had 4 cubes in each row.
When she removed several cubes from the cube, she created the 1st building. After removing the cubes, she created the 2nd building and finally created the 3rd building from that.

How many cubes did Marta have to remove from the 1st building to make the 2nd building?

   A) 14
   B) 16
   C) 18
   D) 20
   E) Different answer

Links to practice:

https://www.umimematiku.cz/

https://prijimacky.cermat.cz/

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