

HOMEWORK 1,
September, 20 2020

*(Please, handwrite your homework on a separate piece of paper. Make sure to show all the steps in your solutions and write an explanation if possible. Show all your work to such extent so that a person who checks your homework could follow your thinking process without asking any questions. Try solving every problem in the homework. Problem solving skills are fundamental for any mathematician. Developing problem solving skills will take time and some effort. When you are working on a hard problem on your own, you are participating in a process of developing these skills. Attempt all the problems in your homework on your own before asking for help from the adults in your household or your teachers. Some problems are more difficult than the others. It is normal if you need to approach a problem several times to solve it. More difficult problems are marked with a *. If you didn't solve the problem, but tried, put your attempts on the paper. It will give me an indication the direction you were heading. Your homework solution is a necessary feedback to understand which material requires more attention.)*

1. Write the following expressions as expressions with fractions:

a. $a \div 4 - 5 + b \div c = \frac{a}{4} - 5 + \frac{b}{c}$ (example)

b. $(a \div 4 - 5) + b \div c =$

c. $a \div 4 - (5 + b) \div c =$

d. $(a + 7) \div (a - 7) =$

e. $(32 \div a) \cdot (x \div y) =$

2. Three shelves together contain 39 books. Second shelf has 3 books more than the first. The third has twice as many books as the first shelf. How many books are there on each shelf? *(Write an equation to solve this problem)*

3. Find the LCM and GCD of the following numbers:

- 12 and 32
- 16 and 10;
- 9 and 12;
- 365 and 30;
- 204 and 30

4. Two bells ring together at 10:45 a.m. One bell rings every 9 minutes and the other every 12 minutes. When will they next ring together?

5. A boy is buying candy. If he buys 11 pieces of candy, he will have 15 cents left. If he tries to buy 15 pieces of candy, he will be 21 cents short. How much does one piece of candy cost? *(You can solve this problem any way you like)*

6. Find the following sums (without using the calculator). *(Try to solve each question in the most efficient way. Show this way with arrows, parenthesis, or crayons, your choice. Show all steps.)*

a) $1 + 3 + \dots + 49$

b) $20 - 19 + 18 - 17 + \dots - 3 + 2 - 1$

c) $21 + 20 + 21 + 24 + 19 + 26$

d) $7 \times 19 + 7 \times 11$

7. *The list below shows the names of some numbers in an exotic (but real) language:

3 — re

11 — shine ikashma wan

22 — tu ikashma hotne

37 — arwan ikashma wan e tu hotne

47 — arwan ikashma tu hotne

93 — re ikashma wan e ashikne hotne

135 — ashkine ikashama wan e arwan hotne

a) What number is written in this language as tu ikashma wan e re hotne?

b) ** Please, write the following numbers in this language: 1, 5, 100, 200