Math 4a. Homework 11.

Problems marked with * are more difficult.

1. Solve the following equations:

a) $\left|x + \frac{1}{2}\right| = 3$

b) $\left|x - \frac{1}{2}\right| = 3$

c) $|2y| = 5$

d) $|2z + 2| = 6$

2. A cook put 3 tablespoons of salt into a pot with 4 liters of water and 2 tablespoons of salt into a pot with 3 liters of water. Which pot has saltier water?

3. There are three people (Alex, Brook and Robert), one of whom is a knight, one is a knave, and one is a spy.

The knight always tells the truth, the knave always lies, and the spy can either lie or tell the truth.
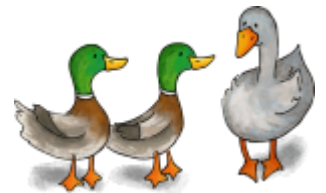
Alex says: " Robert is a knave."

Brook says: "Alex is a knight."

Robert says: "I am the spy."

Who is the knight, who is the knave, and who is the spy?

4. * 4 little ducklings and 5 little geese weight 4 kg and 100 g. 5 little ducklings and 4 little geese weight 4 kg. How much does one little goose weight?

5. Fill the empty spaces in the table:

a	b	$a - b$	$b - a$
20	7		
− 15	8		
30	− 9		
− 10	− 6		

6. Compute:

a) $$\cfrac{2 - \cfrac{1}{\frac{1}{2} + \frac{1}{4}}}{2 + \cfrac{1}{\frac{1}{2} + \frac{1}{4}}};$$

c) $$1 - \cfrac{1}{1 + \frac{1}{2}};$$
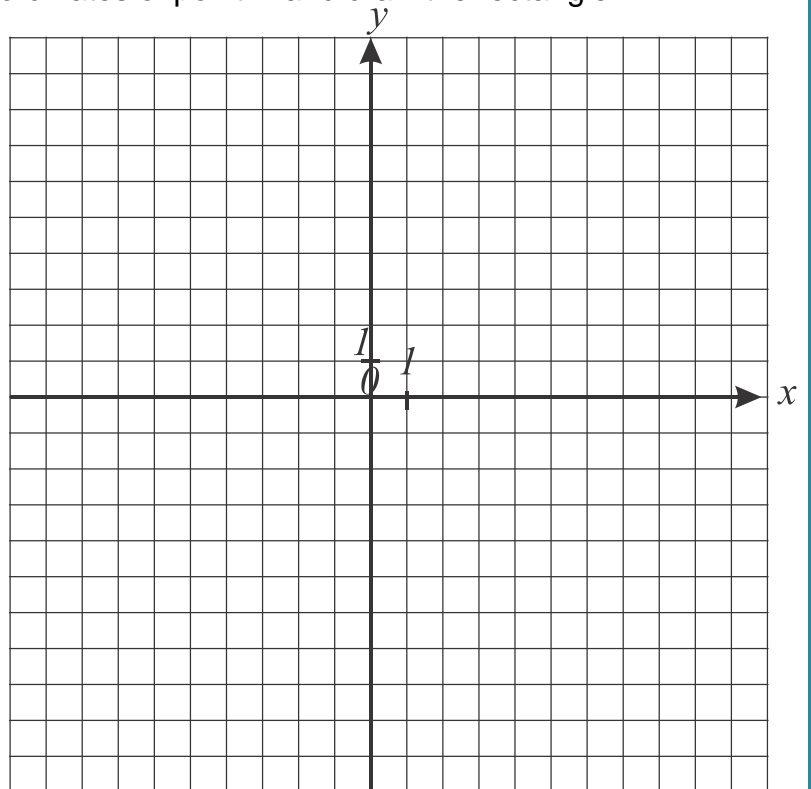
e) $$1 + \cfrac{1}{1 + \cfrac{1}{1 + \frac{1}{2}}};$$

b) $$\cfrac{4 + \cfrac{1}{\frac{1}{2} - \frac{1}{3}}}{4 - \cfrac{1}{\frac{1}{2} - \frac{1}{3}}};$$

d) $$2 + \cfrac{2}{1 - \frac{2}{3}};$$

f) $$3 - \cfrac{3}{3 - \cfrac{1}{1 - \frac{1}{3}}}.$$

7. ABCD is a rectangle. Find the coordinates of point D and draw the rectangle.

a. A(-9; 2), B(-9; 4), C(-3; 4)
b. A(0; 6), B(0; -2), C(5, -2)
c. A(9; 0), B(9, -5), C(2, -5)
d. A(-6; 0), B(-6;-7), C(0; -7)

8. There are singers and dancers in our class. $\frac{1}{5}$ of all singers also dance and $\frac{1}{4}$ of all dancers also sing. Are there more singers or dancers in our class?