Accelerated math. Homework 22.

Problems marked with * are more difficult.

1. Solve the following equations:

a.
$$-4.3 - (1.8 - x) = 3$$

b. $\left(n+1\frac{1}{2}\right)-4\frac{2}{9}=-4\frac{8}{10}$

- c. (c-6) (4.5-c) = -1.5d. $1\frac{5}{6} - \left(k - \frac{7}{12}\right) + 2\frac{1}{12} = 0.$
- Solve the following equations, mark the answers on a number line, find the coordinate of the midpoint of the segment.
 Example:

$$|x-3| = 7$$

$$x-3 = 7$$

$$x = 7 + 3 = 10$$

$$x - 3 = -7$$

$$x = -7 + 3 = -4$$

$$-4 \quad 0 \quad 3 \quad 10$$

Coordinate of midpoint is 3.

a. |a-4| = 1;c. |c+1| = 2;b. |b-2| = 3;d. |d+3| = 4;

What do you notice?

- 3. *There are 2 different kinds of tea in a tea store. One costs 5 dollars a pound and another is 8 dollars a pound. How the owner should mix these two kinds of teas, to get 10 pounds of tea which will cost 6 dollars a pound?
- 4. Using ruler draw a triangle, draw three medinas in it (remember median is a segment in a triangle, which passes from a vertex to the midpoint of the opposite side.) Did all three of your medians intersect in one point? Cut your triangle, try to balance it on a sharpened pencil at the point of intersection of the medians. It should balance!
- 5. Write the following series of arithmetic operation as a single number expression and evaluate it.
 - 1) Rise $1\frac{1}{2}$ to the power 3.
 - 2) From the result of step 1 subtract $1\frac{3}{4}$.
 - 3) The resulting difference divide by $4\frac{7}{8}$.
 - 4) $2\frac{2}{3}$ divide by $10\frac{1}{2}$.



- 5) Result of step 4 multiply by $1\frac{5}{16}$.
- 6) From the result of step 3 subtract the result of step 5.
- On a grid (graph) paper draw a coordinate system. Mark the points A(0;2), B(2;6), C(8;8), D(6,4). Draw the quadrilateral. Find the coordinate of the intersection of the diagonals. Use ruler! Try to be accurate!
- 7. 140 g. of salt were dissolved in 5.6 I (1 liter of water weights 1000 g.). What is the concentration of the salt (amount of salt in 1 I of water or % of the mass of salt in the solution).
- *Equal amount of 3 solutions of salt were mixed together. The concentration of the first solution is 18% of salt, concentration of the second solution is 7%. What is the concentration of the third solution, if the concentration of the resulting mixture is 10%. (Which means that in 1000g. of the solution there is 100 g. (10%) of salt).
- 9. Compute (answer is 56), show your solution:

$$\frac{\left(1.75 \cdot 3\frac{2}{3} + \frac{1}{3} \cdot 1.75\right) : 0.1 \cdot \frac{4}{7} - 21\frac{1}{3}}{0.4 \cdot 4\frac{5}{6} \cdot 2.5 - 9 : \left(5\frac{4}{5} \cdot 0.1 + 1.42\right)}$$

- 10. Prove that if numbers a and b are both divisible by c, than their sum is also divisible by c.
- 11. Simplify the expressions:
 - a. $7x (8 + 4x 3x^2) + (5 3x^2)$
 - b. $6 + (2x^2 5x) (4x^2 + 6) + 5$
 - c. $5a(2a^2 + 4a 3)$
 - d. $0.8(7 8x + 9x^2)$