Math 4b. Homework 11.
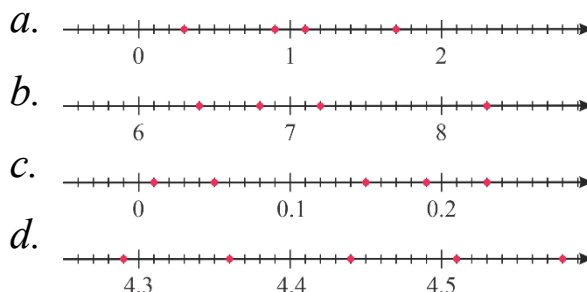
1. Evaluate:

$$\underbrace{\frac{1}{2} + \frac{1}{2} + \cdots + \frac{1}{2}}_{13\ times} + \underbrace{\frac{1}{4} + \frac{1}{4} + \cdots + \frac{1}{4}}_{7\ times} - \underbrace{\frac{1}{4} + \frac{1}{4} + \cdots + \frac{1}{4}}_{25\ times};$$

2. Which numbers are marked on the number lines:

   a.

   b.

   c.

   d.

3. The farmer brought a basket of apples to the market. To the first customer, he sold half of all his apples and half an apple more, to the second customer - half of the remainder and half an apple more, to the third - half of the remainder and half an apple more, and so on. However, when the sixth customer came and bought half of the remaining apples and half an apple, it turned out that, like the other buyers, all his apples were whole, and the farmer sold all his apples. How many apples did he bring to the market?

4. How will the product change if:
   a. one factor is increased 9 times;
   b. one factor is decreased 7 times;
   c. one factor is decreased 2 times, and the other is decreased 8 times;
   d. one factor is increased 4 times, and the other is increased 5 times;
   e. one factor is increased 12 times, and the other is decreased 4 times;
   f. one factor is increased 3 times, and the other is decreased 6 times;
   g. one factor is increased n times, and the other is increased 2 times;
   h. one factor is decreased t times, and the other is decreased 3 times?

5. 252 students from the school are going on a field trip. Several identical buses are ordered for them. However, it turned out that if buses with 6 more seats were ordered, one less bus would be needed. How many larger buses need to be ordered if, in both cases, all buses are expected to be filled with no empty seats?

6. Evaluate:

   a. $6\frac{6}{11} \cdot \frac{3}{4} : 2\frac{2}{5} \cdot 2\frac{1}{5};$

   b. $9\frac{1}{3} : \frac{7}{8} \cdot \frac{7}{16} : \frac{4}{27}.$

7. A cube is cut into 27 identical smaller cubes by making two cuts parallel to each of the three pairs of cube's faces (similar to Rubik's cube).
   a. How many small cubes will have three faces painted?
   b. How many small cubes will have two faces panted?
   c. How many small cubes will have one face painted?
   d. How many small cubes will not have painted faces at all?