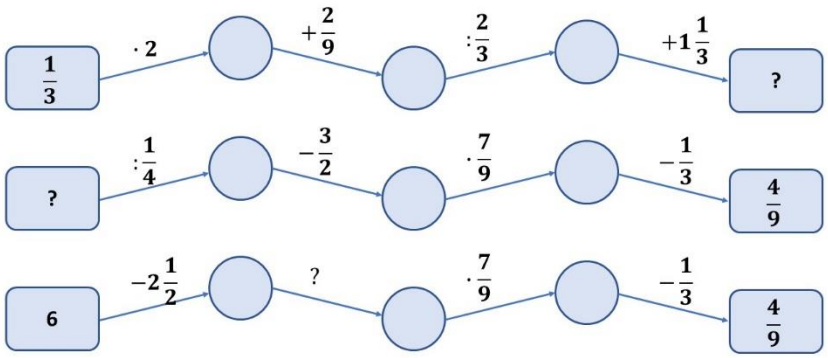
Math 4a. Homework 11.

1. What number (or operation) should be placed instead of “?”



2. Solve the following equations

   (*example*:

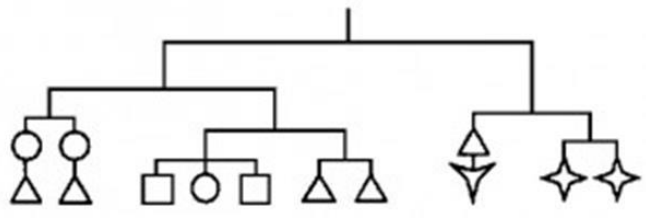
   $y + \frac{1}{3} = \frac{1}{2}$

   $y + \frac{1}{3} - \frac{1}{3} = \frac{1}{2} - \frac{1}{3}$

   $y = \frac{1}{2} - \frac{1}{3} = \frac{3-2}{2 \cdot 3} = \frac{1}{6}$

   $a)\quad b - \frac{1}{6} = \frac{1}{6}, \qquad b)\quad \frac{1}{6} + x = \frac{1}{2}, \qquad c)\quad c \cdot 4 = \frac{1}{5}, \qquad d)\quad a - \frac{4}{9} = \frac{1}{3}$

3. On the picture below, every arm of the balance is in equilibrium. (The horizontal bars are suspended at their midpoints.) Identical shapes have identical masses. The mass of the square is 1 kg. What are the masses of the other shapes?



4. There are three dungeon cells in a castle. A Princess is imprisoned in one cell, there is a dragon in the other and the third cell is empty. Each cell is labeled, but all labels are wrong. The label on the first cell says “there is the Princess here”, the label on the second cell says “The third cell is empty” and the label in the third cell says “There is a dragon here”. Which cell the brave Prince should open to save the Princess if he can only open one door?

5. Draw a number lines and mark the points with the following coordinates on it. For each exercise choose the best scale. Use a ruler!
   a. $A\left(\frac{1}{5}\right), B\left(\frac{3}{5}\right),\ C\left(-\frac{2}{5}\right), D\left(1\frac{2}{5}\right), E\left(-1\frac{1}{5}\right), F\left(\frac{1}{2}\right), G\left(-\frac{1}{2}\right);$
   b. $A(50), B(-75),\ C(150), D(200), E(-300), F(250);$
   c. $A(12), B(-3),\ C(10), D(-5), E(7), F(-10);$
6. 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?
7. Draw the 2 supplementary angles to each angle on the picture below. Can you tell without measuring, the measure of this supplementary angles? Measure them.