Math 5b, homework 8.

1. Draw any rectangle whose sides are in the ratio:
   $a.\ 1:2\ (1\ to\ 2);$ $b.\ 5:3\ (5\ to\ 3),$ $c.\ 1:1\ (1\ to\ 1)$

2. A total of 170 lessons are allocated for studying mathematics in the 7th grade.
   This time is divided between algebra and geometry in the ratio of 3 : 2.
   How many algebra lessons and how many geometry lessons are there in the school year?

3. The ratio of the number of boys to the number of girls in the school is 5 : 4.
   What fraction of all the students in the school are boys, and what fraction are girls?

4. Three pirates were dividing a bag of coins. The first took 3/7 of all the coins, the second took 51% of the remaining coins, and the third received 8 coins fewer than the second.
   How many coins were there in the bag?

5. Compare the values of the expressions:

   $a.\ (1+a)\cdot b\ and\ \ 1+ab\ \ \ when\ a=3\ and\ b=2.5$

   $b.\ (1-a)^2\ and\ \ 1-a^2\ \ \ when\ a=0.1$

   $c.\ \ a^2-b^2\ \ and\ (a-b)(a+b)\ \ \ when\ a=0.7\ and\ b=0.3$

   $d.\ \ a^2+b^2+2ab\ and\ \ (a+b)^2\ \ \ when\ a=1\ and\ b=0.5$

6. Which of the numbers 0, 10, 20, 25, 30 are permissible values for the variable x in the expression $\frac{25-x}{x}$?

7. Simplify:
   $a.\ \ \frac{3ab}{7xy}:\frac{2ab}{7by};$ $b.\ \ 4am:\frac{8mx}{2x^2};$ $c.\ \ \left(\frac{3a}{5b}:\frac{4a}{7b}\right)\cdot\frac{20}{21}$

   $d.\ \ \frac{2x}{3y}:\frac{7bx}{9ay};$ $e.\ \ 15n:\frac{5nx}{3y};$ $f.\ \ \left(\frac{25xy}{3ab}\cdot\frac{24b^2}{35x^2y}\right):\frac{1}{x}$

8. Represent as decimals:
   $\frac{2^4\cdot3^7\cdot5^3\cdot7^3\cdot11^1}{2^5\cdot3^7\cdot5^5\cdot7^2};$

9. Copy the picture to your notebook.