Math 5a, homework 21.

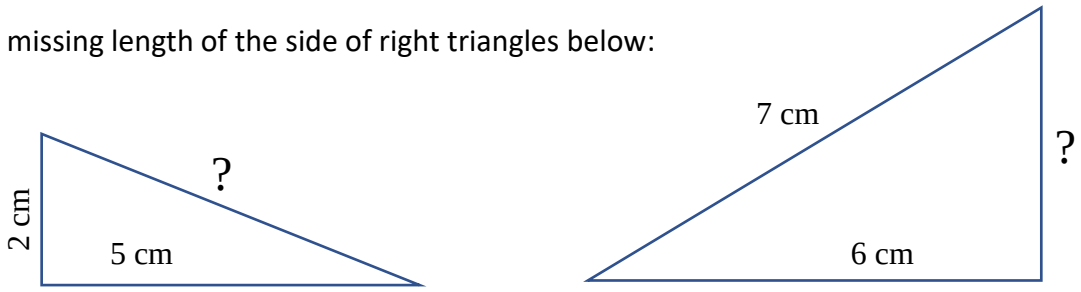
1. Prove that the value of the following expressions is a rational number.

   a. $\left(\sqrt{2}+1\right)^2+\left(\sqrt{2}-1\right)^2$
   b. $\left(\sqrt{7}-1\right)^2+\left(\sqrt{7}+1\right)^2$
   c. $\left(\sqrt{7}-2\right)^2+4\sqrt{7}$

2. Without using calculator compare:

   3. $3 \ldots \sqrt{11}$ 4. $11 \ldots \sqrt{110}$ 5. $22 \ldots \sqrt{484}$
   6. $5 \ldots \sqrt{20}$ 7. $17 \ldots \sqrt{299}$ 8. $\ldots \sqrt{1215}$

3. Find the missing length of the side of right triangles below:



4. Evaluate:

   a. $5\cdot\sqrt{4}\cdot 3$;
   b. $2\cdot\sqrt{9}+3\cdot\sqrt{16}$
   c. $\sqrt{13-3\cdot 3}$;
   d. $\sqrt{7^2-26:2}$
   e. $\frac{1}{2}\sqrt{5^2+22:2}$;
   f. $3\sqrt{0.64}-5\cdot\sqrt{1.21}$

5. Write without parenthesis and simplify the expressions:
   Example: $4(-x+3y)-2(x+5y)=-4x+12y-2x-10y=-6x+2y$

   a. $-8(-2a+5)$;
   b. $4(-x+3y)-2(x+5y)$
   c. $5(3c-2)+2(4-7c)$
   d. $2(5b-4c+3)$;
   e. $-2(6d-k)+3(4d-2k)$
   f. $3(-8+2y)-4(2y-6)$

6. There are a pencils in one box, and in the other box there are 20% more pencils then in the first one. How many pencils are there in two boxes? Write the expression to solve the problem. Solve the problem if $a = 55$