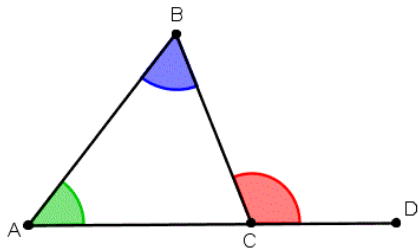


**MATH5: HOMEWORK 17,**

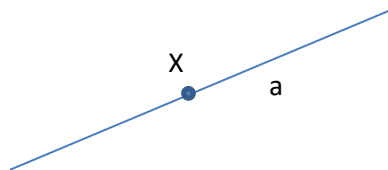
**March 2, 2025**

**Before starting the homework, I want you to play a game. You can also install the game on your mobile device and play on the bus and possibly brag to your fellow math enthusiasts. To play go to <https://www.euclidea.xyz>. You do not need an account to play. If at some point you become hooked up and reach high levels, the account will save your achieved level. Please complete the first level  $\alpha$ (Alpha), then proceed with the homework.**

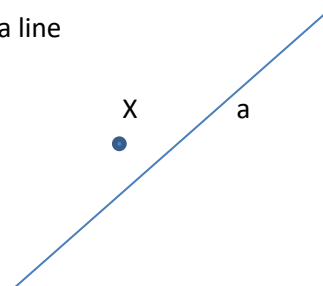
1. Name the angles and prove that **RED = GREEN + BLUE**. You may or may not need additional construction.



2. Using a ruler and a compass construct an equilateral triangle. You pretty much have to repeat the construction you have done in the game, but now on paper with a real compass, a real pencil and a real ruler.
3. Using a ruler and a compass construct (a), and (b). For both cases try to prove to me that the line you constructed is indeed perpendicular to a. Use triangle congruency rules I keep printing for you.
  - a. perpendicular line to a given line through a point on this line



- b. perpendicular line through a point outside of a line



4. Construct a rectangle with one side  $a=4$  and diagonal  $d=8$ .
5. By now you are a PRO in constructing an equilateral triangle. Please construct a regular hexagon with a side  $a=4$  for example. You would need to figure out how to continue constructing triangles to make a hexagon.
6. Open parenthesis, simplify:
  - a.  $(3x - a)(x + 1) = 3x(x + 1) - a(x + 1) =$
  - b.  $(2a + 3)(a - 1) =$
  - c.  $(a - 2b)(2a - b) =$