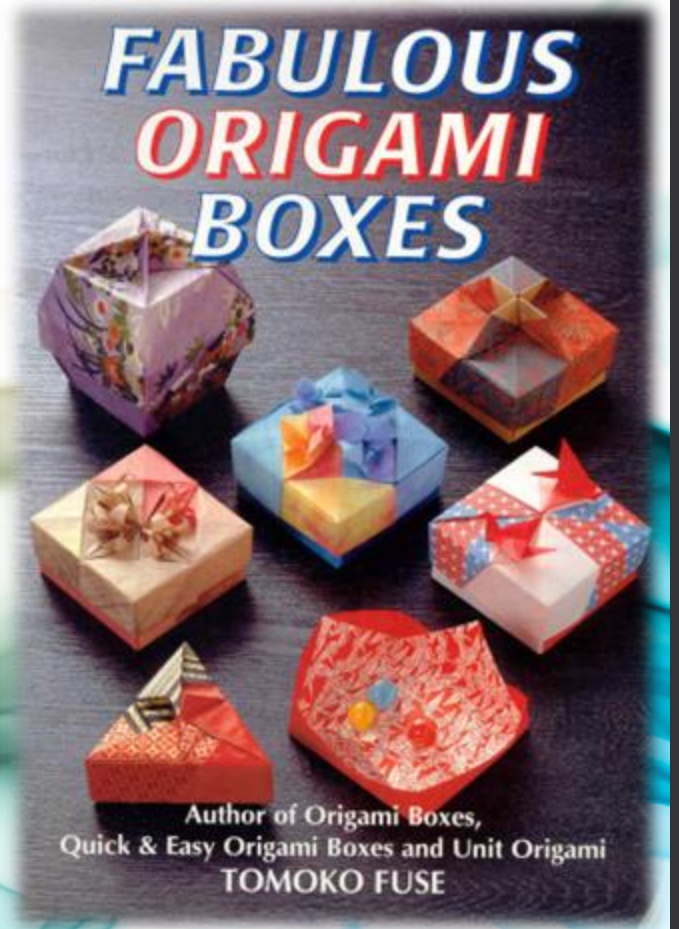
# *Plain Square Box* Design

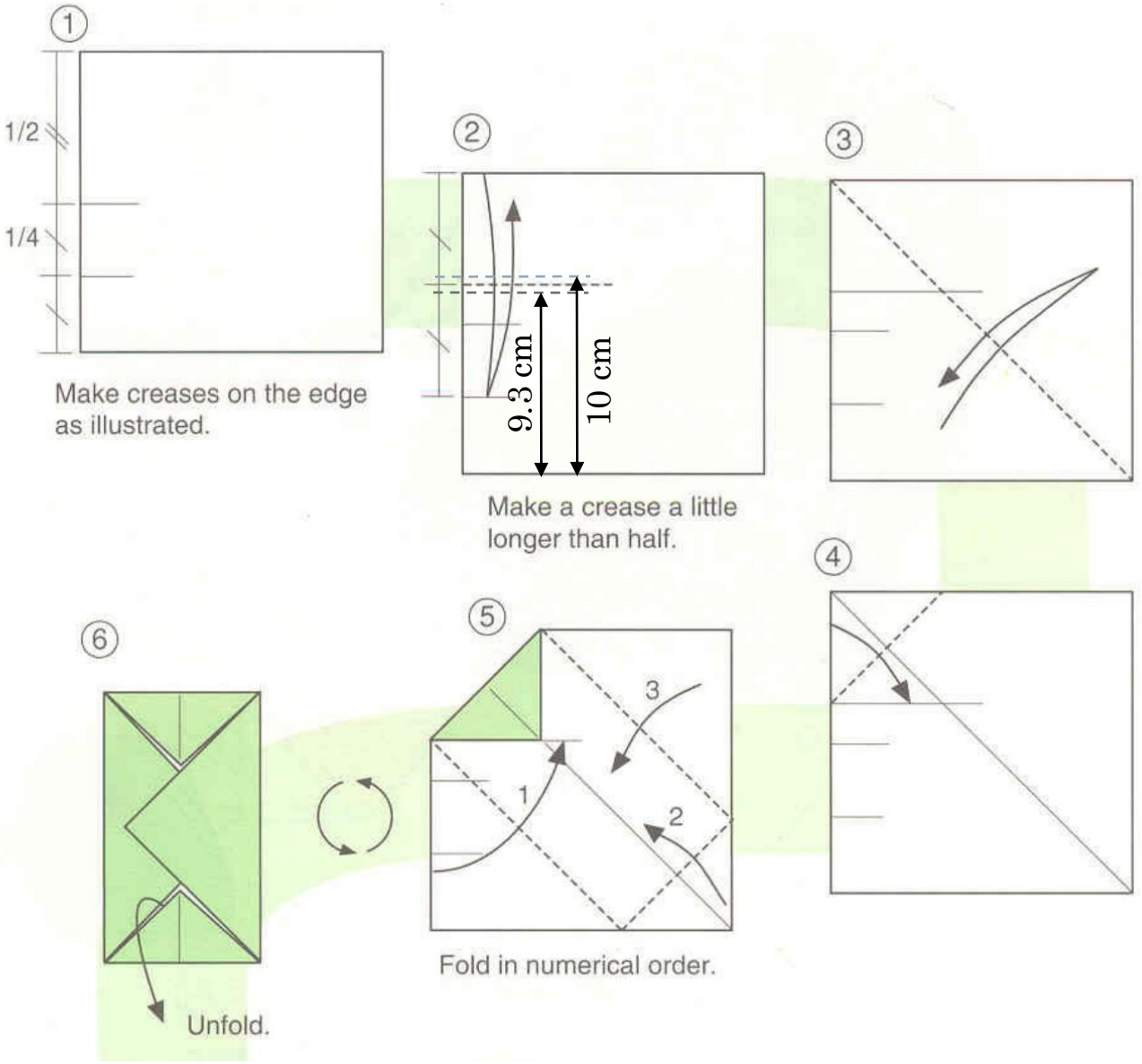


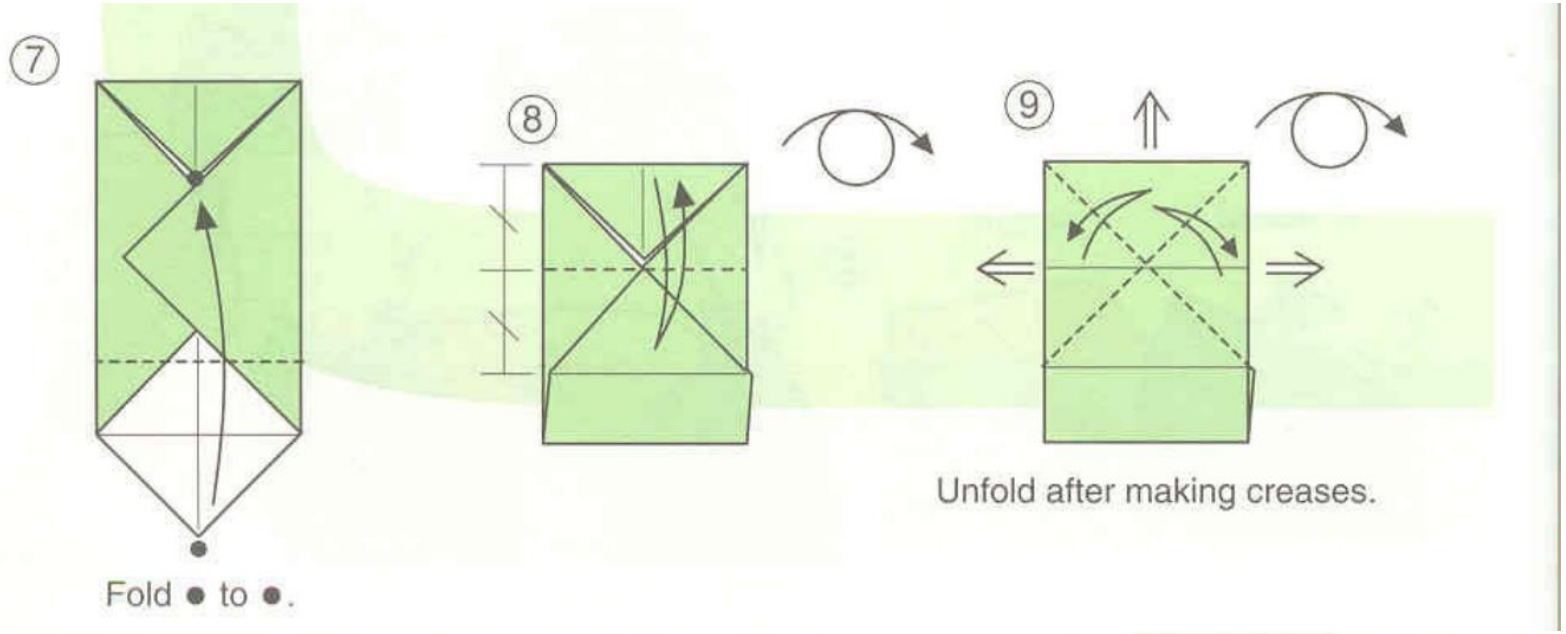

Steps lifted from :
Fuse, T. (1998). Fabulous origami boxes. Japan Publications Trading Company.

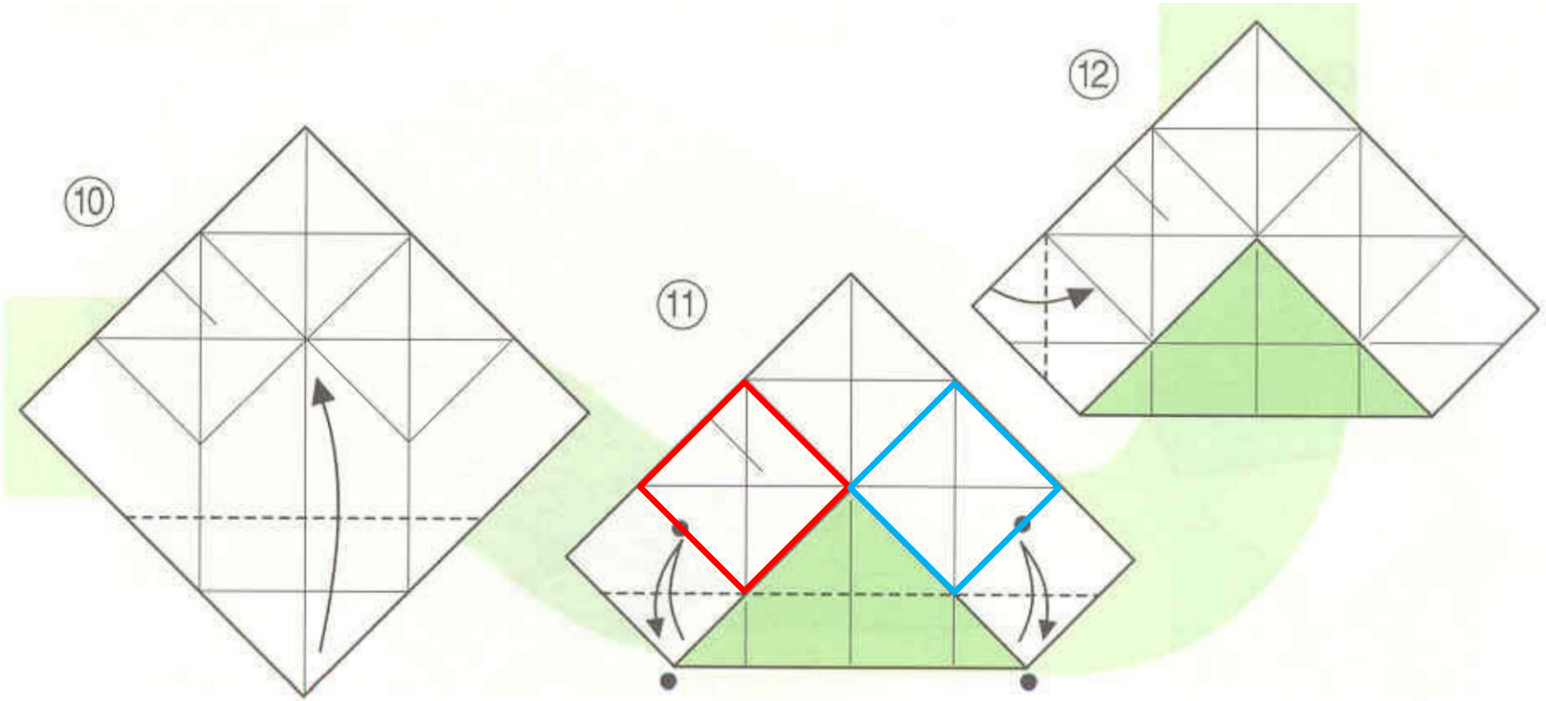
## Square Box *Plain*

**In Step 2, please note that no specific length in relation to the outer square, is specified for the crease to be made**. All that is said is that it is a "little longer than half".

I have found that measuring anywhere from 9.3 cm to 10 cm from the bottom left corner to the top, on a standard 15 cm x 15 cm origami square paper, allows for the "right conditions" as for a box to be folded. To see what happens if the crease is folded out of the range of 9.3 cm to 10 cm, please see the diagrams later on.

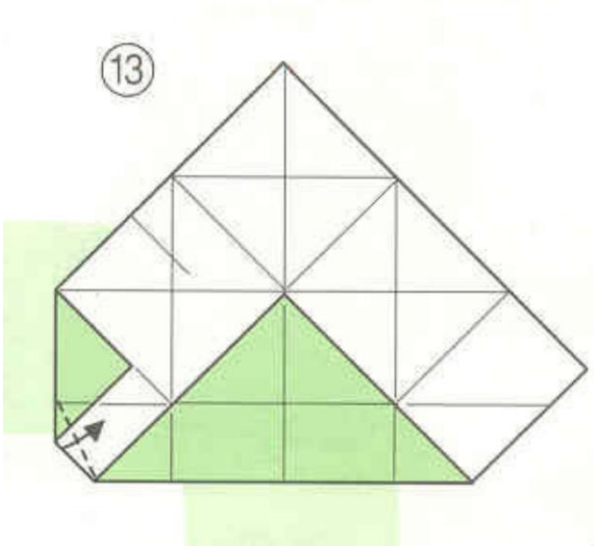


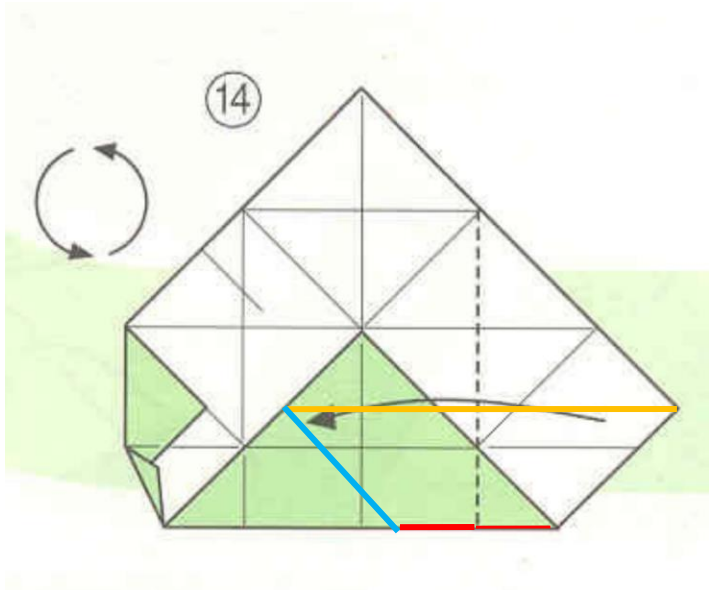


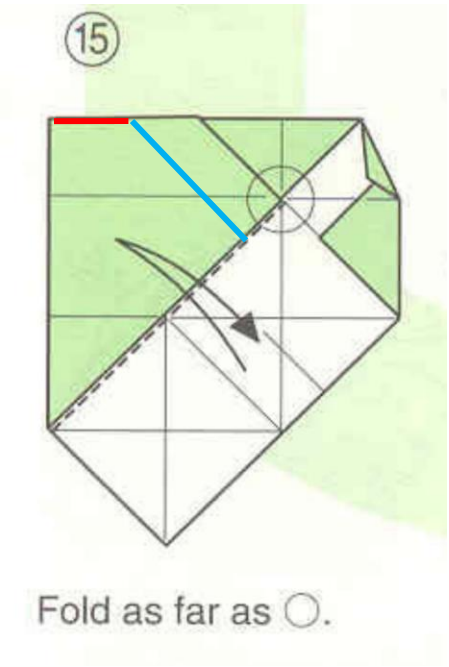




In Step 10, fold the bottom most point so that it is flush with the point that the arrow is pointed to.

In Step 11, fold the left and right points of the triangle just enough up so that the bottom left of the red square and the bottom right of the blue square, are intersected

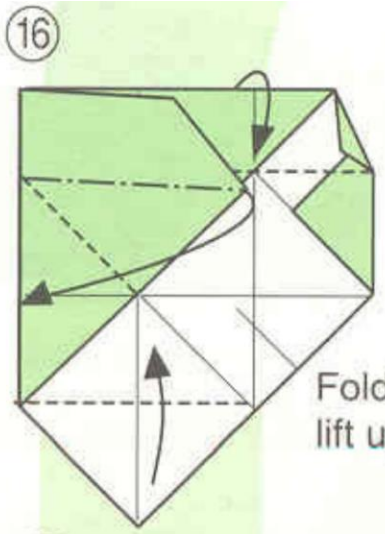


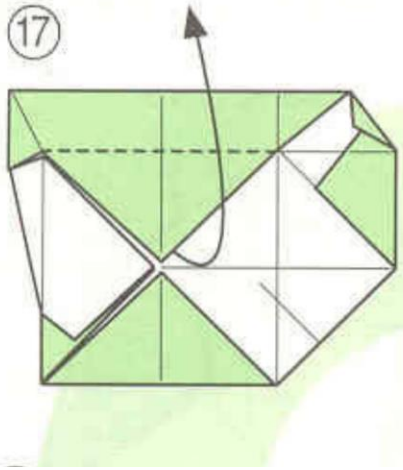



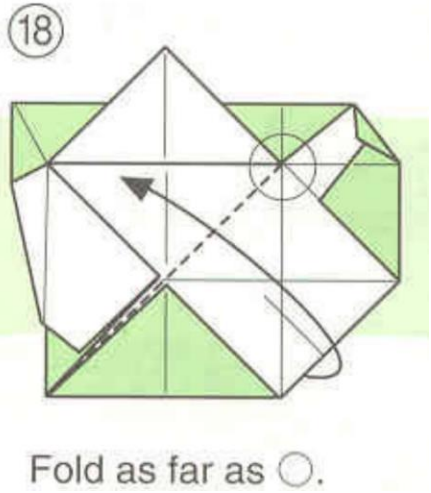

In Step 14, the circle arrows just mean to rotate the paper 180 degrees

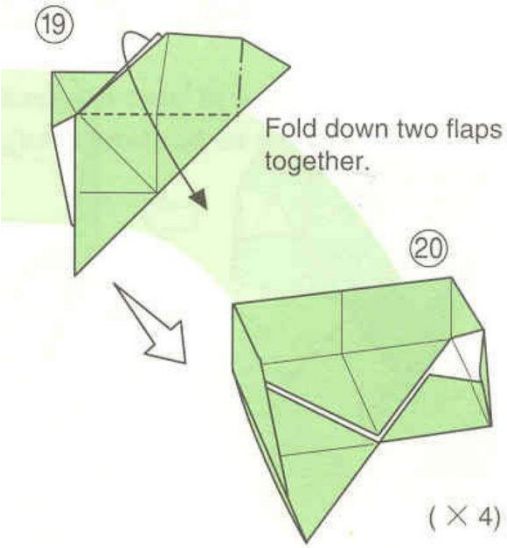
**In Step 15, the picture in the book is slightly wrong.** The lines in red and blue are the actual places where the long dashed and the shorter diagonal line going to the circled point, should be.



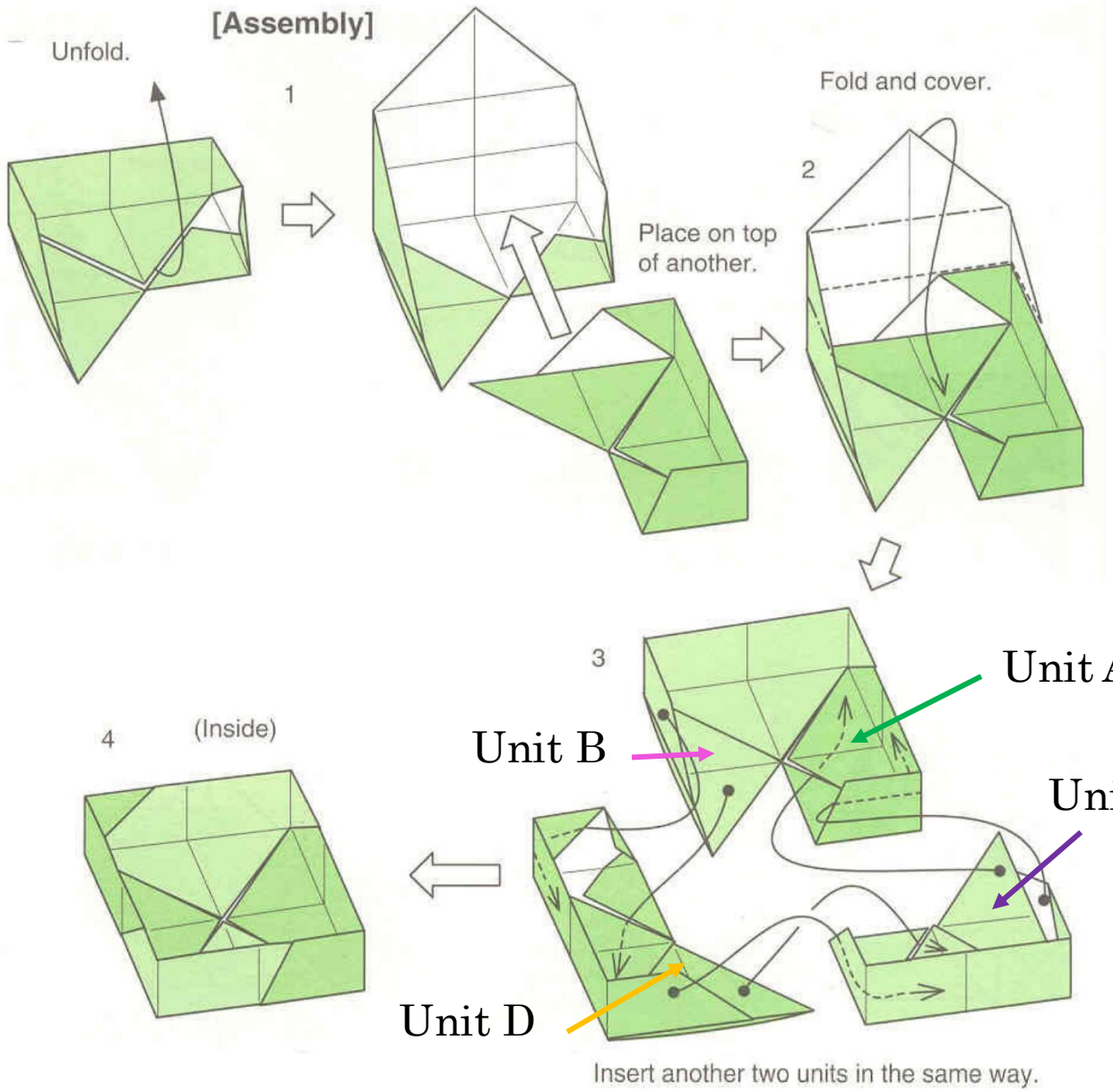

Step 16 is where the model becomes "3D" and the sides of the box unit start to be formed.



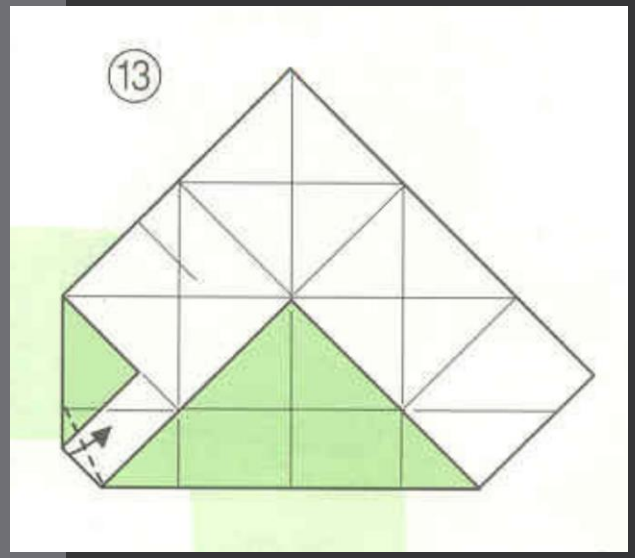
# Assembly (after forming 4 units per Steps 1-20 prior)

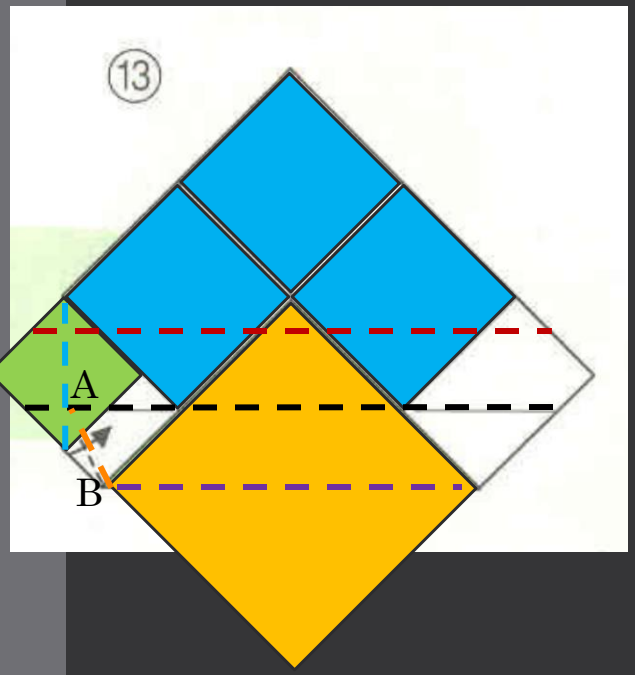



Step 3 is tricky (at least it was for me) and so will be separated into two parts, below:

3a) (do this step before 3b)
Assembly units Units C and D the same way as the assembled units (Units A and B) were done as per steps 1 and 2

3b) Lift flap of Unit A (joined to Unit B) and slide Unit C (which is joined to Unit D) *under* the Unit A flap. Similarly, lift the flap of Unit D and slide Unit B *under* the Unit D flap.



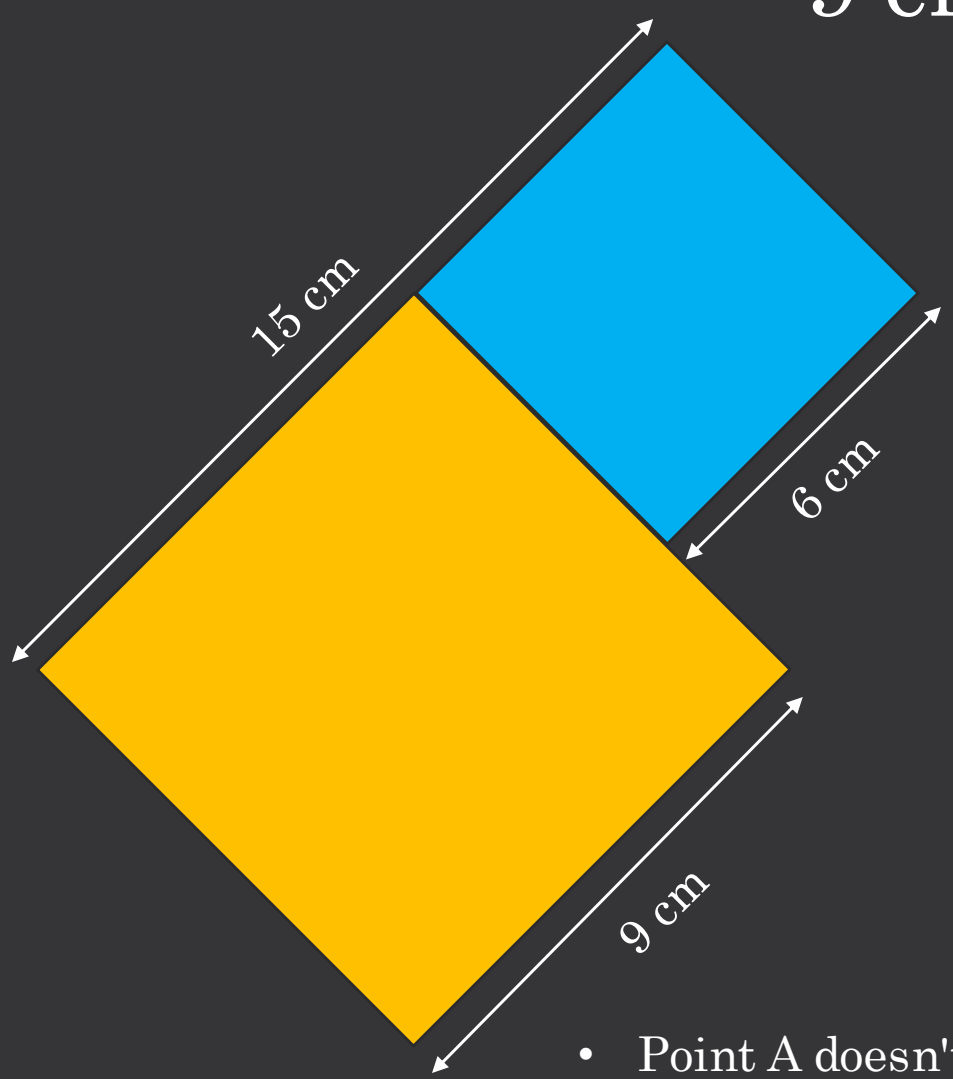



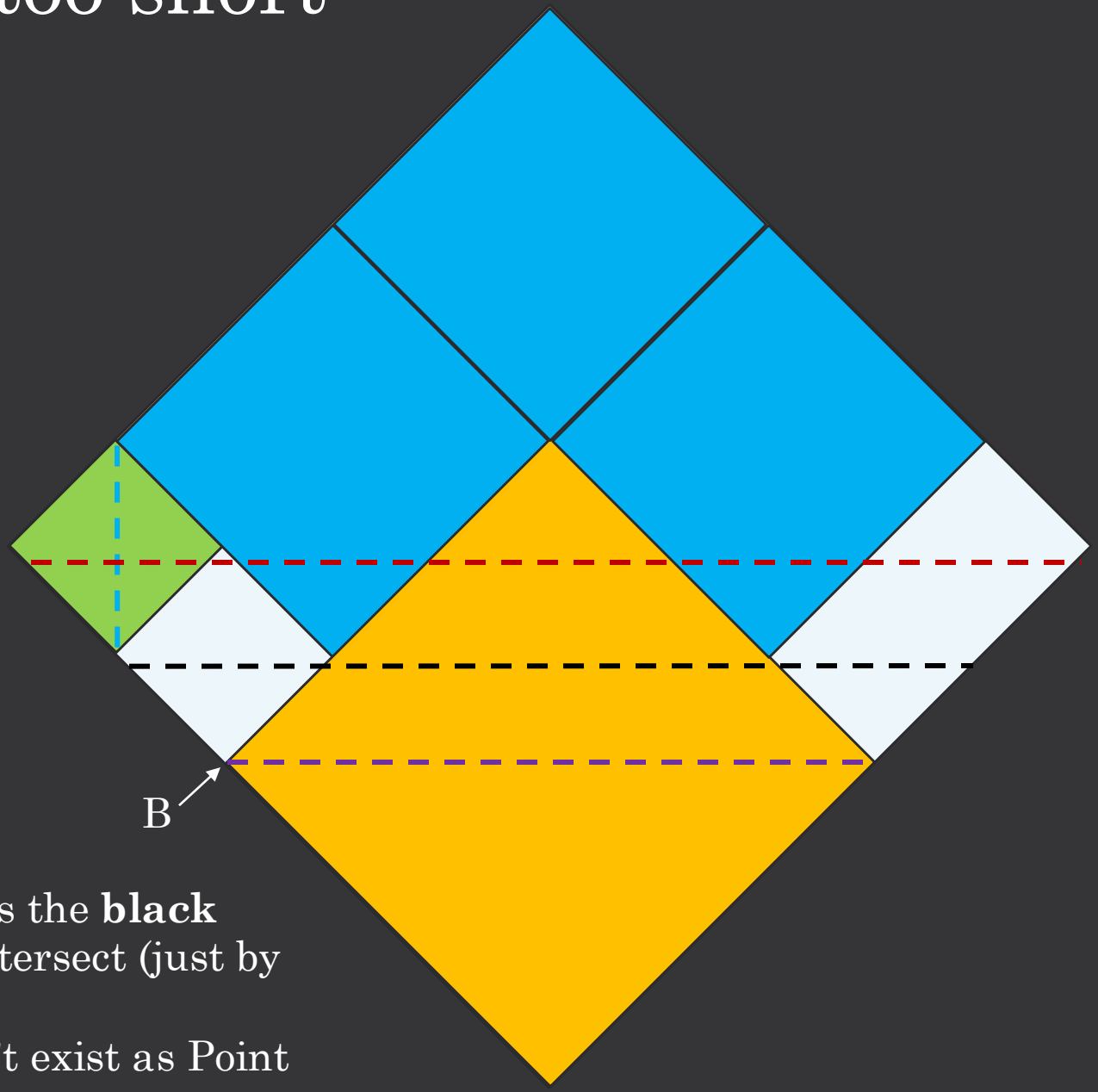

To clarify why the narrow ranges of 9.3-10 cm is the allowed length in Step 2, to make a workable square box, I try to diagram the relative sizes and positions of the creases on the paper that when unfolded would look like Step 13 on the left. The

1. The green square is folded so it is flush with the blue squares, not necessarily the yellow square
2. A blue line crosses the diagonal of the green square
3. A purple line crosses the diagonal of the yellow square
4. A red line is parallel to the purple line and moves up just enough so it crosses the bottom left edge of the blue square, first, and not the top left edge of the outer enclosing square (this is equivalent to saying the left point of the left most blue square must lie to the *left* of point B)
5. A **black** line lies in between the purple and red line
6. Point A is defined by the intersection of the blue and **black** lines
7. Point B is defined by the left endpoint of the purple line
8. An orange line connects points A and B

**So, given all of this, a heuristic for a 'permissible length' to make the initial fold in Step 1, is for all the colored lines to exist on the paper.**

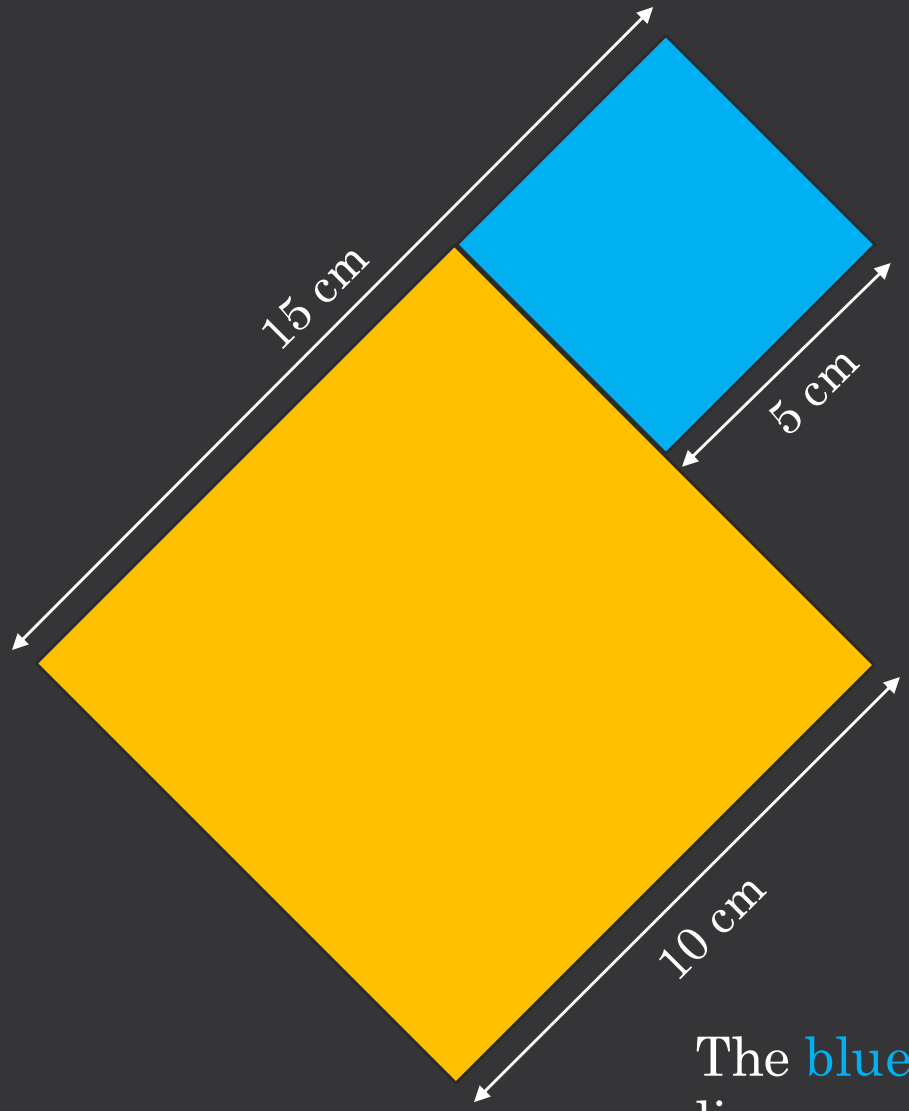
# 9 cm – too short

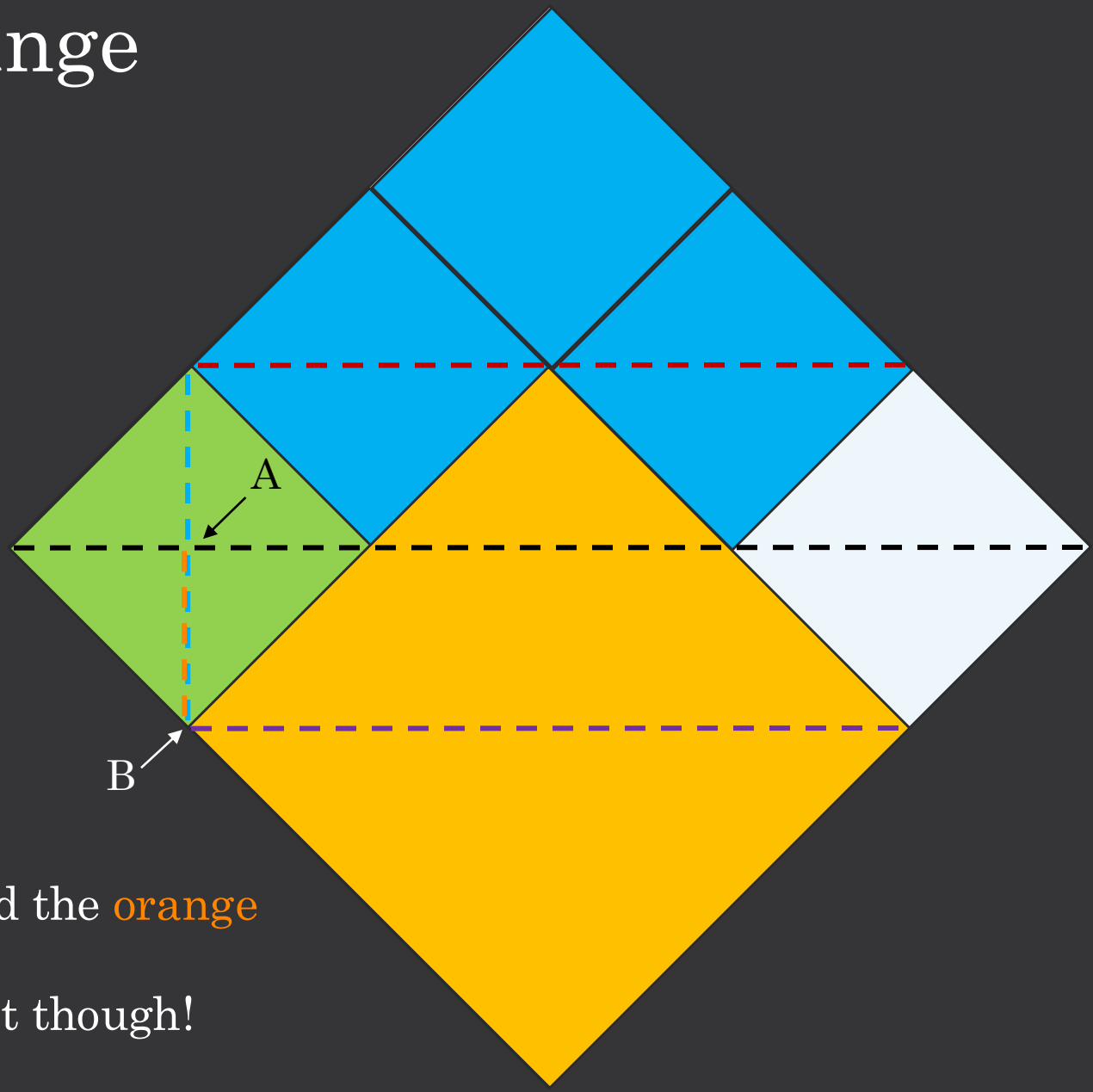



- Point A doesn't exist as the **black** and blue lines don't intersect (just by a hair!)
- The orange line doesn't exist as Point A doesn't exist

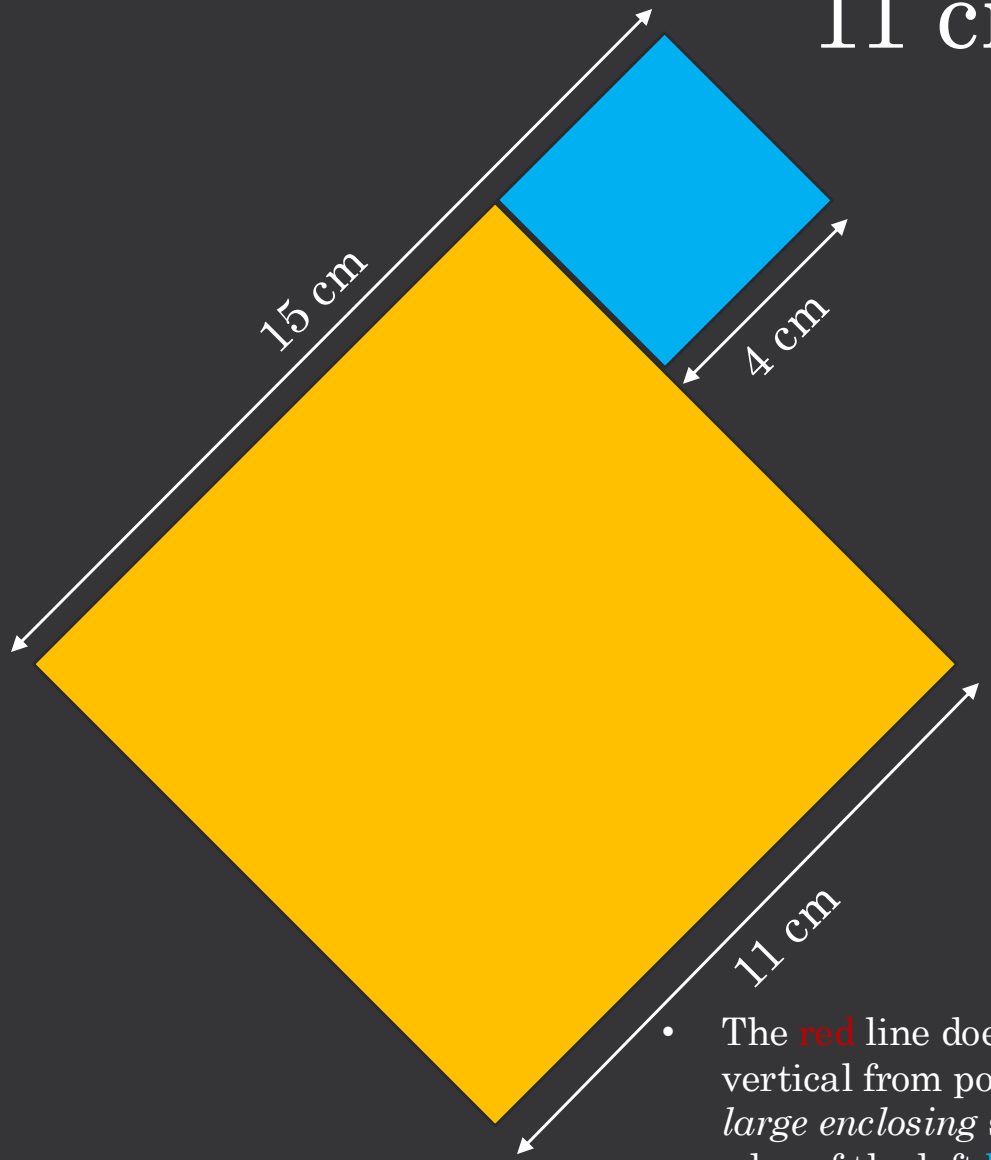
# 10 cm – at the end of OK range

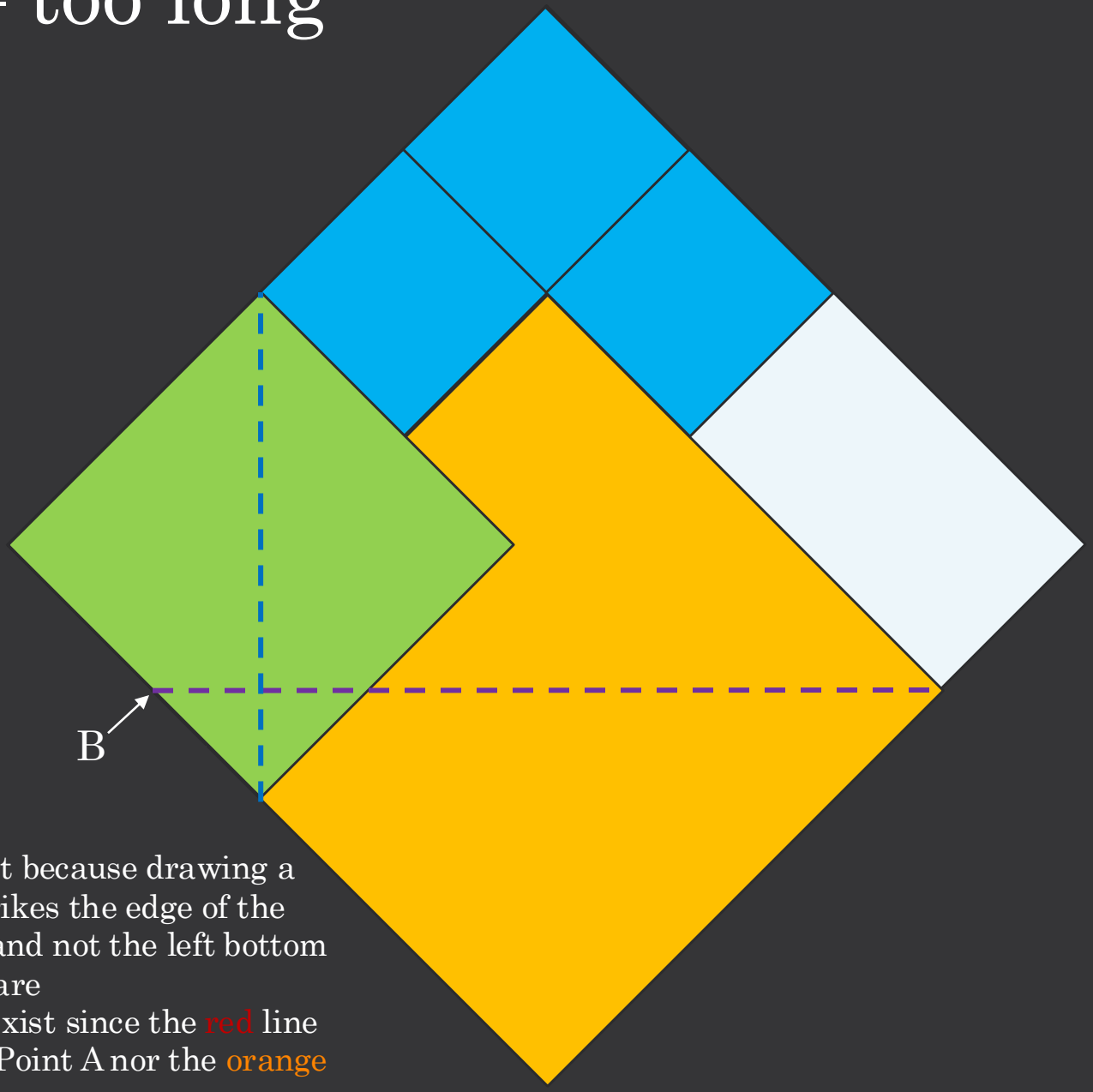



The blue line and the orange lines overlap.
All the lines exist though!

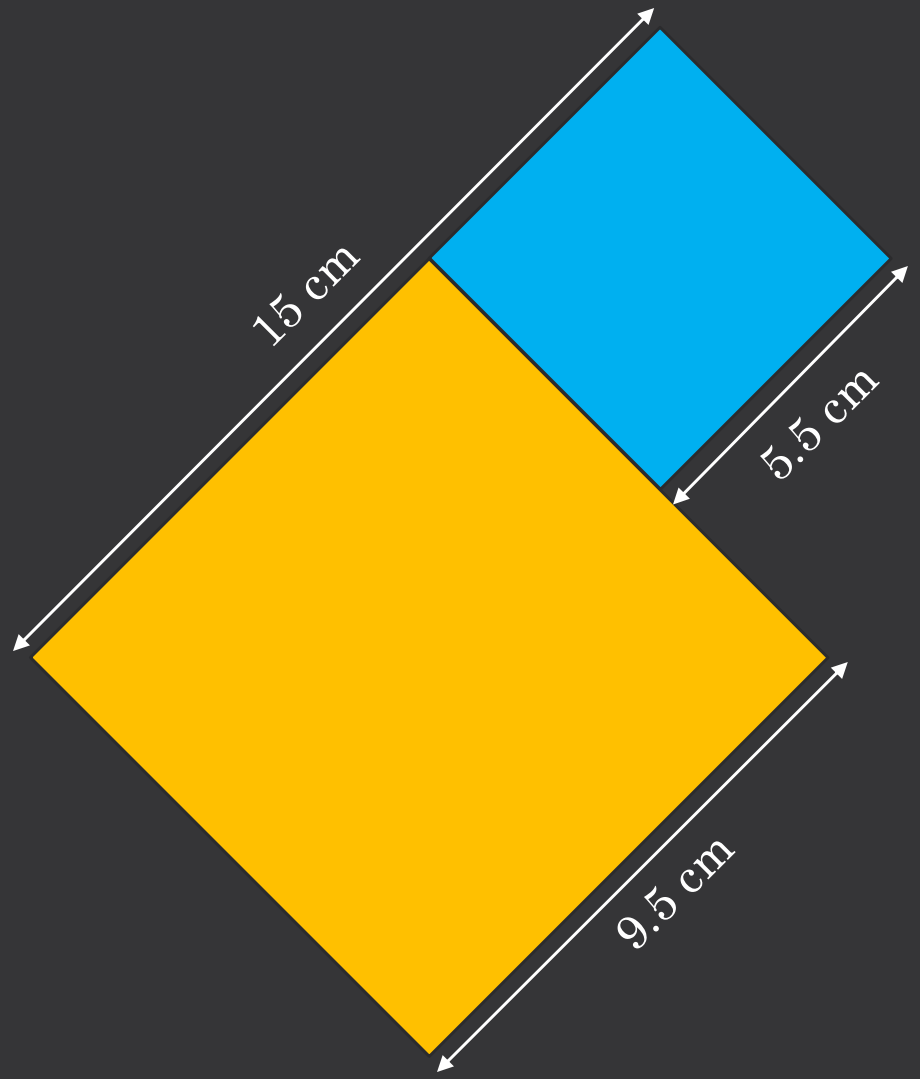
# 11 cm – too long

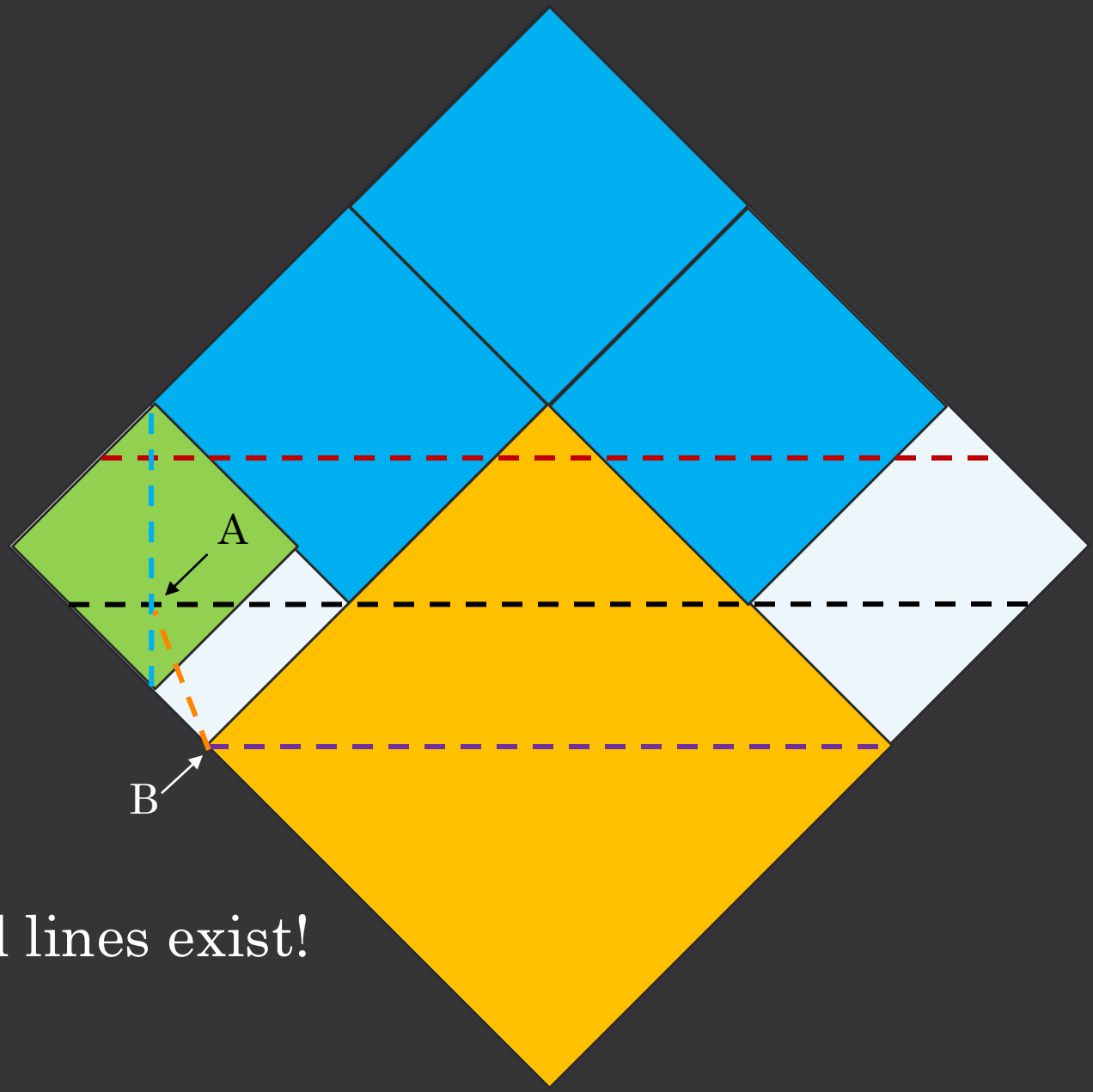



- The red line doesn't exist because drawing a vertical from point B strikes the edge of the *large enclosing* square, and not the left bottom edge of the left blue square
- The **black** line doesn't exist since the red line doesn't, so neither does Point A nor the orange line exist

# 9.5 cm – *in* the OK range!




All the colored lines exist!