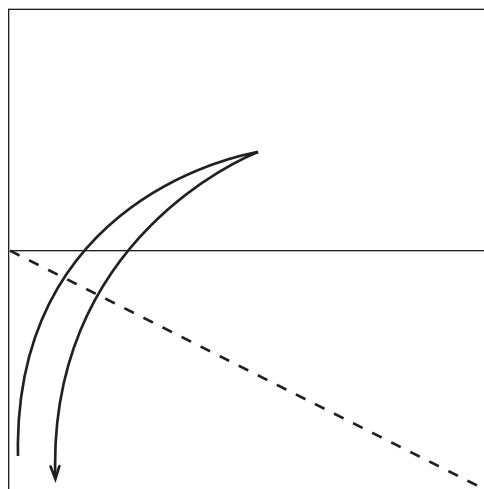
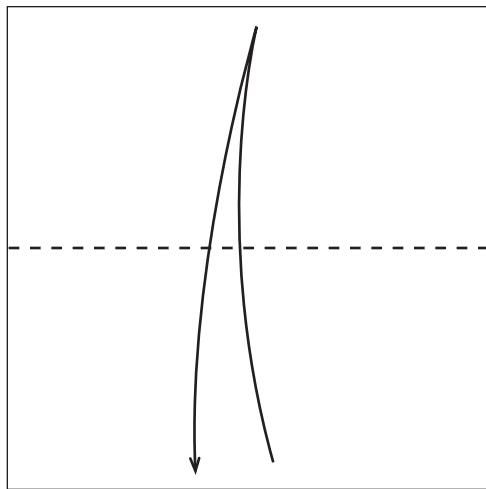


Folding Golden and Platinum Rectangles

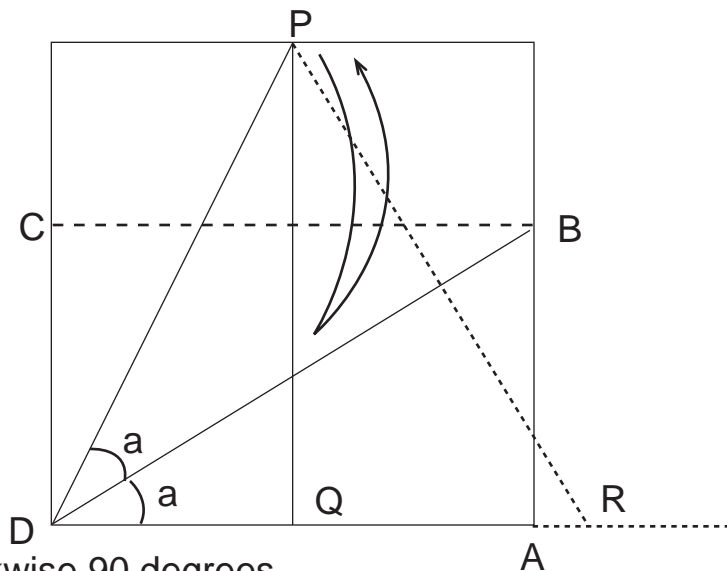
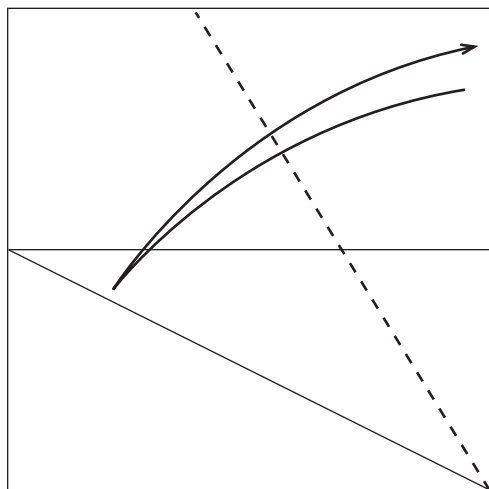
by Leong Cheng Chit

A Platinum Rectangle is one in which the diagonals cross at 72 degrees. This rectangle has interesting properties, following from the fact that its length divided by half the length of a diagonal gives the Golden Ratio.

The following provides a way of folding a Platinum Rectangle starting from a Square. A Golden Rectangle is first folded. The Golden Rectangle is one in which its length and its width have the proportion of the Golden Ratio.

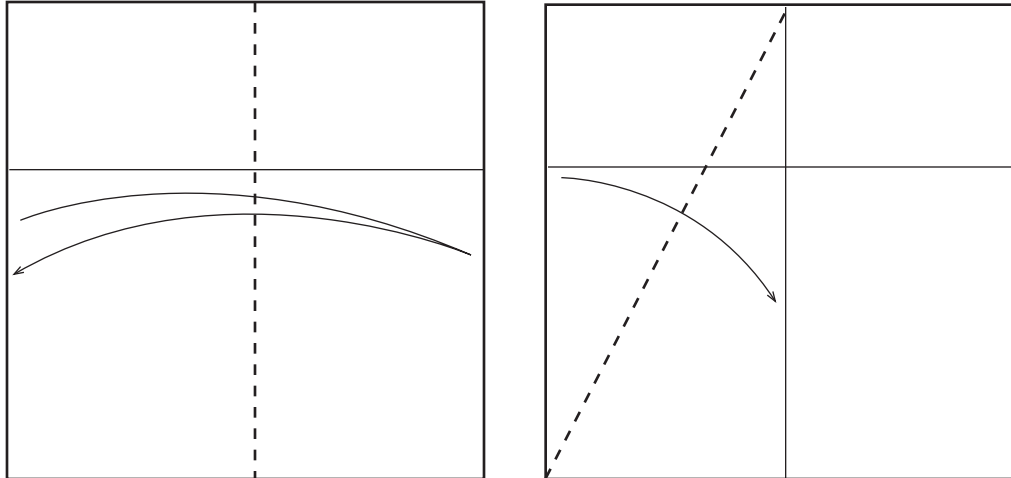


1. Start from a Square, fold and unfold.
2. Fold and unfold.

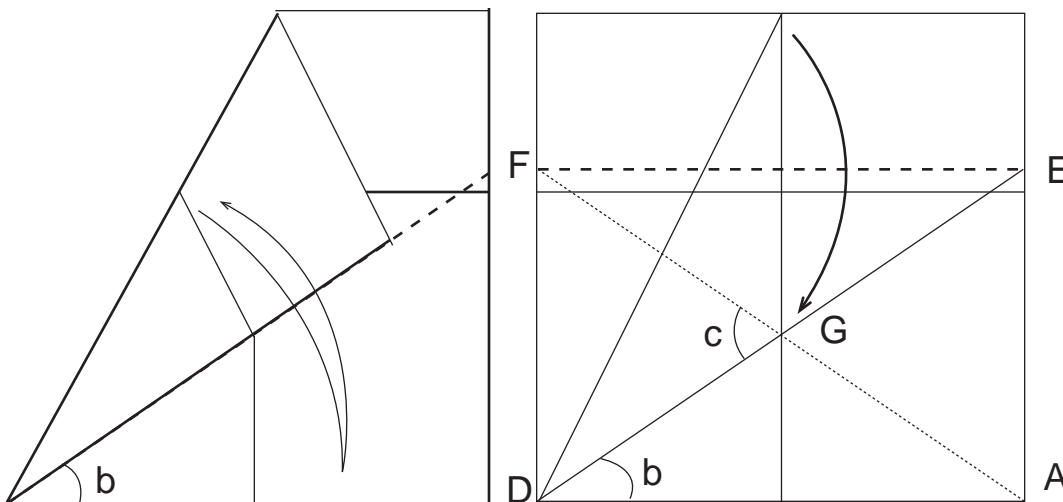


3. Fold and unfold. Turn clockwise 90 degrees.
4. Fold and unfold. ABCD is a Golden Rectangle.

PROOF: Let side of Square = 2. Therefore, $DR = DP = \sqrt{5}$. Angle $ADB = QPR = a$. Therefore, Triangles ADB and QPR are equal. Hence, $AB = QR = \sqrt{5} - 1$. Hence, $ABCD$ is a Golden Rectangle.



5. Fold and unfold to crease vertical central line. Step 1 repeated.
6. Fold to bring top left hand corner of the Golden Rectangle to centre line. Step 2 repeated.



7. The angle "b" is 36 degrees. Fold and unfold. Then unfold to 5.
8. Valley fold horizontally where previous fold crosses right vertical side of Square. The result $A E F D$ is a Platinum Rectangle. "c" is twice "b" or 72 degrees.

PROOF: $DA:GD = \text{Golden Ratio}$. Since the proportion of a diagonal to a side of a regular pentagon is the Golden Ratio, triangle GDA is a corner of a regular pentagon. The diagonals of a regular pentagon divide each corner into 3 equal angles of 36 degrees. Therefore, angle "b" is 36 degrees.