My Solution:

1. We can prove: $\angle MON \uparrow, \angle O MN \downarrow, MN \uparrow$, suppose $OM \leq ON$ (Left Figure).

2. Suppose that $\angle A \leq \angle B \leq \angle C$,
   Case 1: $DE \geq DB$, (Middle Figure)
   \[ \angle a_1 \leq \angle a_2 \leq \angle a_3 \text{, so } BE \leq CF \leq AD \]
   We can also get $\angle a_2 \geq \angle a_3$ by the relationship of $\angle O MN$ and $MN$ in Step1.
   So $\angle a_2 = \angle a_3, AB = AC, AD = CF$ , $\triangle ADF \cong \triangle BFE$ ,
   \[ \angle a_1 = \angle a_2 = \angle a_3 = 60^\circ \]
   Case 2: $DE \leq DB$ (Right Figure), we also get $BE \leq CF \leq AD$.
   We can get $\angle b_1 \leq \angle b_2 \leq \angle b_3$ by the relationship of $\angle M ON$ and $MN$ in Step1.
   Then $\angle c_1 \leq \angle c_2 \leq \angle c_3$.
   We can also get $\angle c_2 \geq \angle c_1 \geq \angle c_3$ by the relationship of $\angle O MN$ and $MN$ in Step1.
   So $\angle c_1 = \angle c_2 = \angle c_3$ \Rightarrow $\angle b_1 = \angle b_2 = \angle b_3$,
   Then $\angle a_1 = \angle a_2 = \angle a_3 = 60^\circ$