But in right Δ BDC (angle of rectangle $= 90°$)
O is the midpoint of the hyp [BD].
[BC] shortest side $=$ OB (given)

So, Δ BDC is a semi-equilateral Δ

shortest side $= \frac{hyp}{2}$.

Then, $B\hat{D}C$ is side facing shortest side

$B\hat{D}C = 30°$.

Thus, $D\hat{B}C = 90° - 30°$

$\boxed{O\hat{B}C = 60°}$

So, Δ OBC is equilateral Δ

(isosceles $+$ $60°$).

. Δ MBN is isosceles at B (proved)

So, the height [BO] issued from main vertex

is also the bisector of $M\hat{B}N$

$M\hat{B}C = M\hat{B}O + O\hat{B}C$

$M\hat{B}O = 90° - 60°$

$M\hat{B}O = 30°$

4) $M\hat{B}C = M\hat{B}N + N\hat{B}C$

$N\hat{B}C = 90° - 60°$ ($2M\hat{B}O = N\hat{B}C$ bisector (MO))

$N\hat{B}C = 30°$

$O\hat{B}C = \cancel{2}N\hat{B}C + O\hat{B}N$

$60° = 2(30°)$

Thus, [BN) is the bisector of $O\hat{B}C$