Subject 1. **Count the collisions!**

A very small ball collides against two walls forming an angle \( u \). How many collisions will occur?

You know:

- measure of the angle \( u \) (AOB angle in the figure);
- angle \( i \) of first collision (SA\(_1\)B angle in the figure).

You should find the **number \( n \) of collisions**.

*We suppose that the ball \( S \) is very small and the walls \( OA \) and \( OB \) are very long.*

If you know in addition the speed \( v \) of the ball and the length \( l \) of \( OA \) and \( OB \) walls, can you calculate the **time** needed for the ball to escape outside the triangle OAB?

*We assume that the speed of the ball changes its direction at each collision but does not change its magnitude. We also know the lengths of segments \( SA_1 \) and \( OA_1 \).*