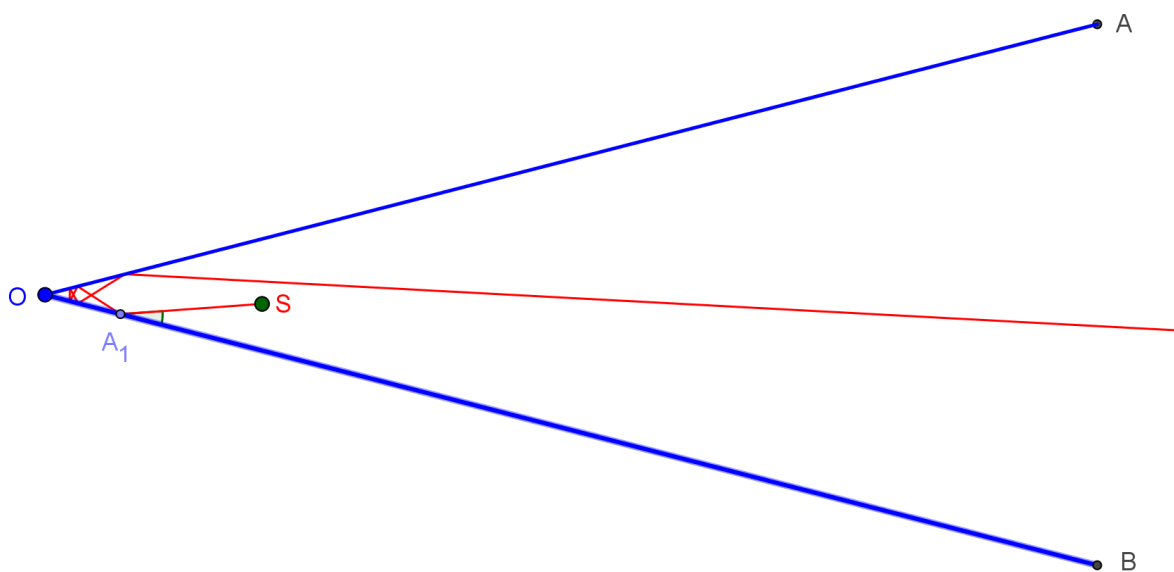## Subject 1. **Count the collisions!**

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_1B 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.