This morning, everyone noticed that a heavy box had appeared at the door of Room 24. The box is a rectangular prism, about 1m long by 60cm wide, and about 30cm thick. There is no explanation as to what this box is for or how it got there.

The box is much too heavy for the students or the teacher to move, so Mr. Goodyear hires the Acme Moving Company to move the box to the back of the classroom.

Sliding the box across the floor is not an option due to the delicate nature of the both the box and the floor. Therefore, the Acme movers can only move the box by flipping it along one side (reflection) or by turning it about one vertex (rotation).

For example:

Reflection (flip) across one side Reflection (flip) across one end

One-quarter rotation, clockwise One-half rotation, clockwise

Rotation centre

Rotation centre

The classroom is 10 metres long and 8 metres wide. Each desk is 1m square.

Each move (flip or turn) of the box costs $1.00. Desks can be slid out of the way, but each metre-long movement of a desk also costs $1.00.

Describe a sequence to move the slab from the door to the diagonally opposite corner of the room. Show how this can be done at the least cost.