Graph with 8 nodes and 11 edges
A cut of the graph
This cut has 3 cross edges
Node 5 has more internal edges (1) than cross edges (0).

Increase the number of cross edges by moving it to the blue side.
This cut has 4 cross edges
Node 7 has more internal edges (2) than cross edges (1).

Increase the number of cross edges by moving it to the yellow side.
This cut has 5 cross edges.
Node 3 has more internal edges (3) than cross edges (1).

Increase the number of cross edges by moving it to the yellow side.
This cut has 7 cross edges.

No local improvement is possible.

But as we will see, it is **not** a max cut!
Back to the original cut with 3 cross edges.

Now move nodes in a different order.
Node 7 has more **internal** edges (2) than **cross** edges (1).

Improve the number of cross edges by moving it to the yellow side (instead of moving node 5 to the blue side, as before).
This cut has 4 cross edges
Node 2 has more **internal** edges (2) than **cross** edges (1).

Improve the number of cross edges by moving it to the yellow side.
This cut has 5 cross edges
Node 7 has more **internal** edges (2) than **cross** edges (1).

Improve the number of cross edges by moving it to the blue side.

**NB:** Moving back!
This cut has 6 cross edges
Node 1 has more *internal* edges (2) than *cross* edges (0).

Improve the number of cross edges by moving it to the yellow side.
This cut has 8 cross edges.
Node 5 has more internal edges (1) than cross edges (0).

Improve the number of cross edges by moving it to the blue side.
This cut has 9 cross edges.

This is a max cut.

Why?

Hint: Disjoint triangles 1,3,8 and 4,6,7.