

SCHOOL OF MATHEMATICS AND PHYSICS

Relative velocity

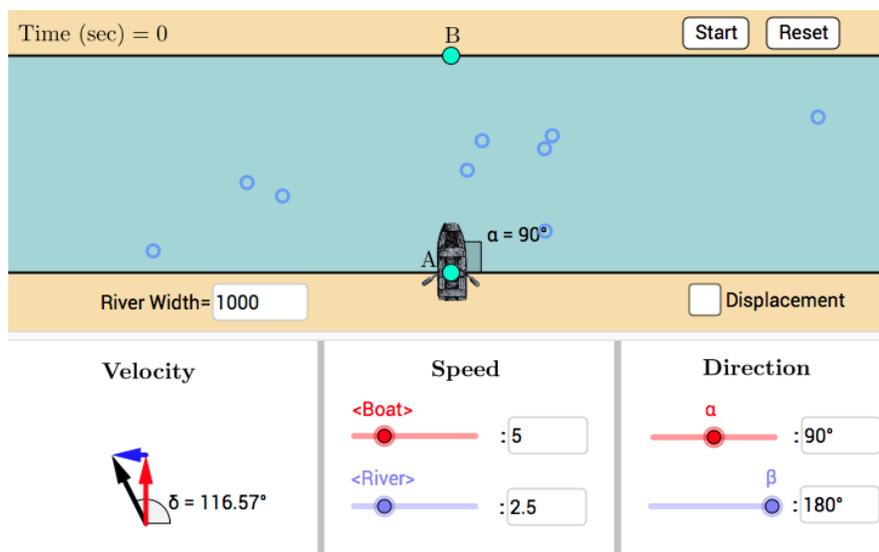
Problem

A river flows due West at a speed of 2.5 metres per second and has a constant width of 1 km. You want to cross the river from point A (South) to a point B (North) directly opposite with a motor boat that can manage a speed of 5 metres per second.

- a) If you head out pointing your boat at an angle of 90 degrees to the bank, how long does it take to cross the river? After reaching the bank, how far will the boat be from point B ?

To help you answer these questions, use the simulation from the link below. Click on the link below or type the URL into your browser's address bar.

https://teaching.smp.uq.edu.au/scims/Calculus/Relative_velocity.html



- b) In what direction should you point your motor boat to travel directly from point A (South) to point B (North)? How long does it take in such case?

Use the above simulation to help you answer these questions. Change the direction of the boat to find an approximate solution. Then find the solution and check your answer with the simulation.