

Bike Race

You have decided to take part in this year's *Secant Lake* bicycle race. The race is run every year to raise money to preserve the wildlife in the area. You are able to raise \$10 for every kilometer travelled on your bike and you hope to travel the course 3 times.

Secant Lake is a circular lake that has a diameter of 4 km, as shown in the diagram below. Points A and D are the opposite sides of *Secant Lake* and lie on a straight line through the centre of the lake, with each point 5 km from the centre. The course of the race is $ABCD$, where $\overline{AB}$ and $\overline{CD}$ are tangents to the lake and $\widehat{BC}$ is an arc along the shore of the *Secant Lake*.

Using your knowledge of circle geometry and trigonometry determine the length of the route and the amount of money you can raise.

