

Parabola Calculation Challenge:

The Golden Gate bridge is a suspension bridge in San Francisco, California. The towers are 1280 meters apart and rise 160 meters above the road. The cable just touches the sides of the road midway between the towers. What is the height of the cable 200 meters from a tower?



1. Sketch the bridge, two towers, and the cable between them on grid paper.
2. Draw a coordinate axis onto your grid so that the origin is at the point where the cable touches the road.
3. Label the points at the top of each tower with the correct coordinates based on the information given in the problem.
4. Use these points to write the equation of the parabola in vertex form. Things to think about:
 - a. Should it be an $x =$ or $y =$ equation?
 - b. Should a be positive or negative?
5. On your graph, mark a point, P , on the roadway 200 meters from the tower. Find the coordinates of that point, based on the information given in the problem.
6. On your graph, mark the point on the cable directly above point P . Things to think about:
 - a. How does point P relate to the question you are trying to answer?
 - b. Which part of the coordinate of P do you already know?
 - c. Discuss the answers to these questions with your partner or group.
7. Use all of the information you have gathered, including the equation you wrote for the parabola made by the cable, to find the height of the cable 200 meters from a tower.

