**[MACC.912.G-SRT.3.8:](http://www.cpalms.org/Standards/PublicPreviewBenchmark5618.aspx) Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.**

Activity based on information found in the following document: Sayers, A. T. (2007). Critical Analysis of Sunshine Skyway Bridge. *Proceedings of Bridge Engineering 2 Conference.* Bath, UK: University of Bath.

**Sunshine Skyway Bridge dimensions of longest stay for calculation of tension, t.**

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*L*

The cable-stays that connect the deck to the pylons are arranged in a single plane with 21 cables spanning out from each pylon. Each stay is formed using bundles of high-tension steel cables that have been spun together. The largest stay consists of 82 strands and weighs approximately 37tons. These are then sheathed using steel tubing to provide protection from corrosion in the harsh marine environment. The stays are bolted to the desk segments through anchorages that are embedded below the road level. They then pass up through the corresponding section on the opposite site. This creates a symmetrical system that balances the loads and reduces the bending moments induced in the pylon. (Sayers, 2007)

**Calculate the length, L, of the longest cable (to nearest tenth of a meter) and the measure of angle (Ɵ) that the cable makes with the bridge.**