

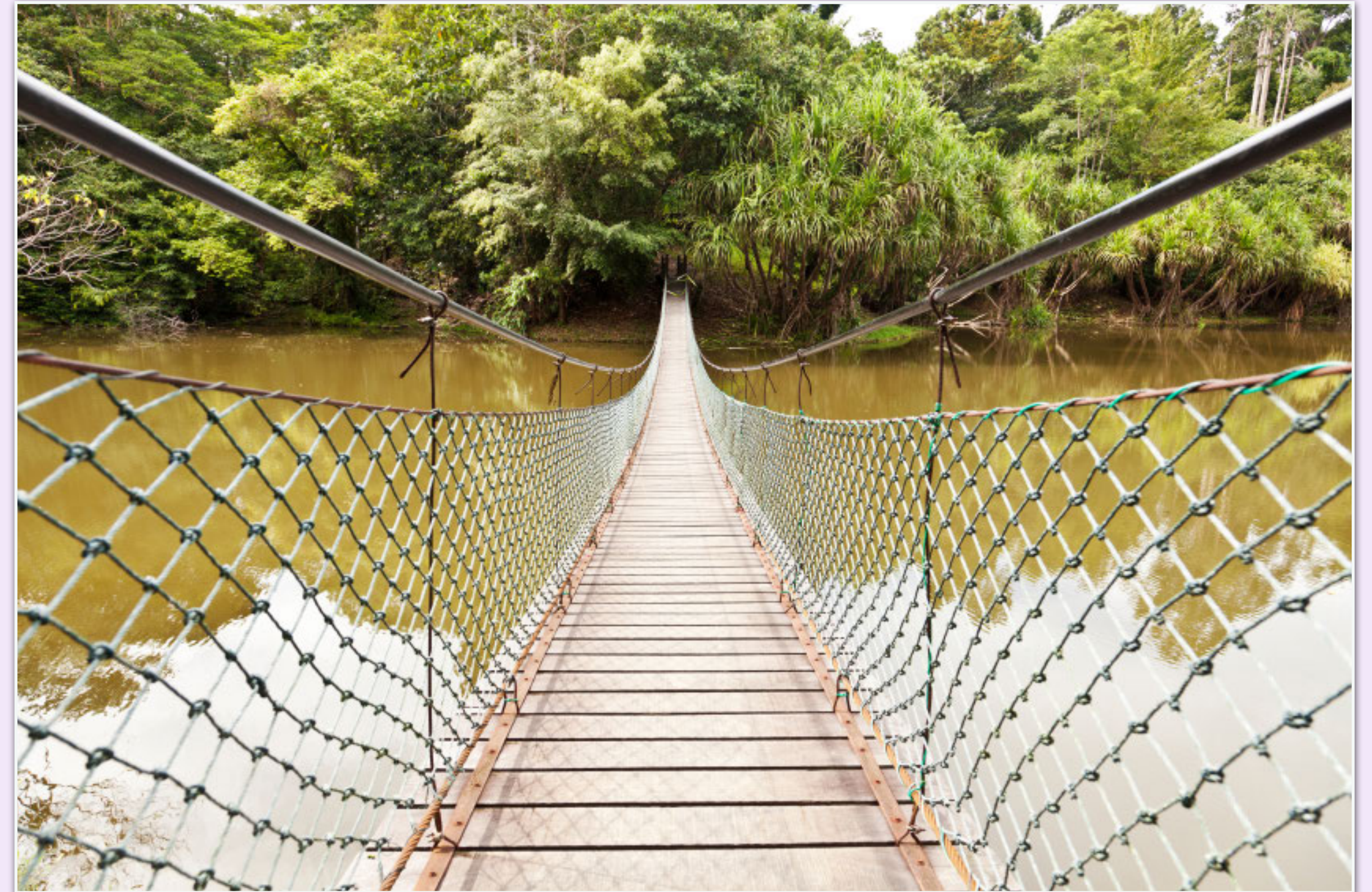
Building Bridges

Learning Objective:

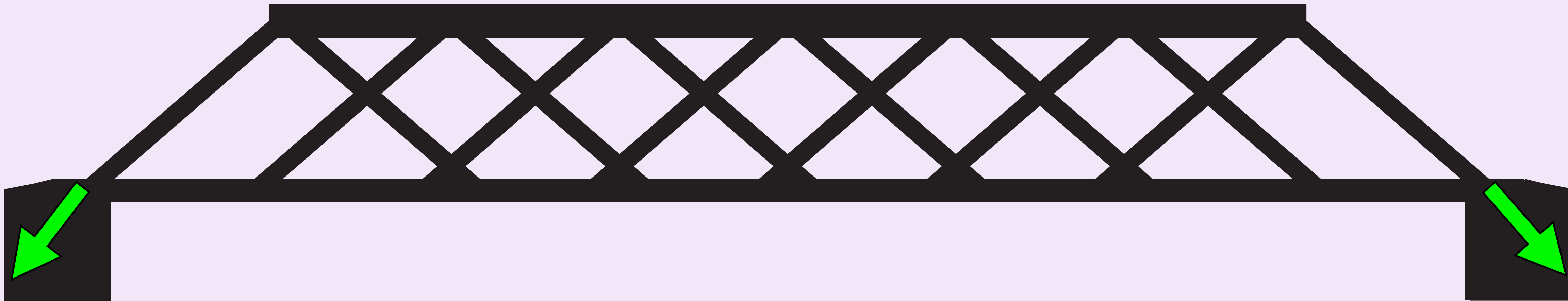
To understand how suspension bridges are able to span long distances.



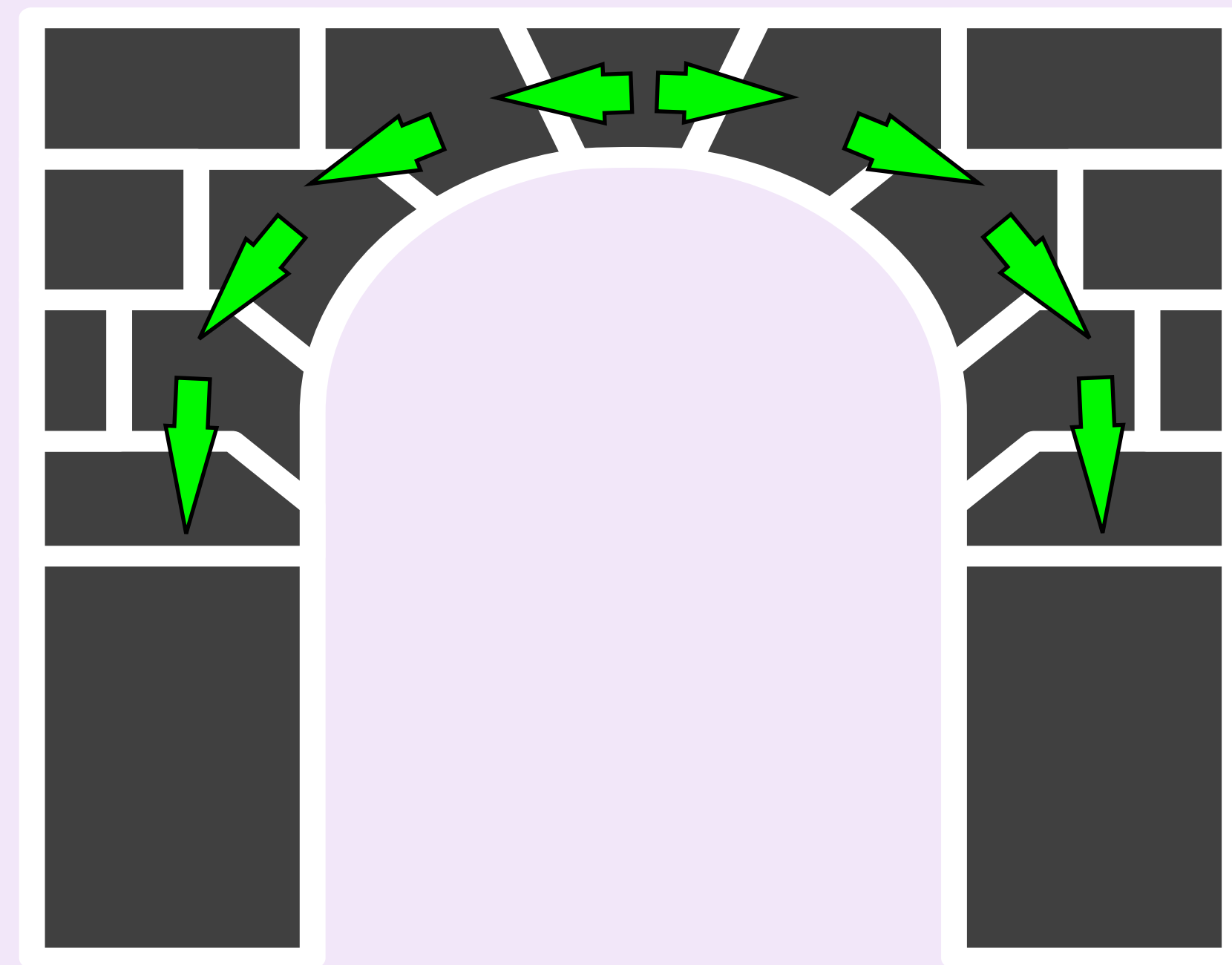
What are suspension bridges?



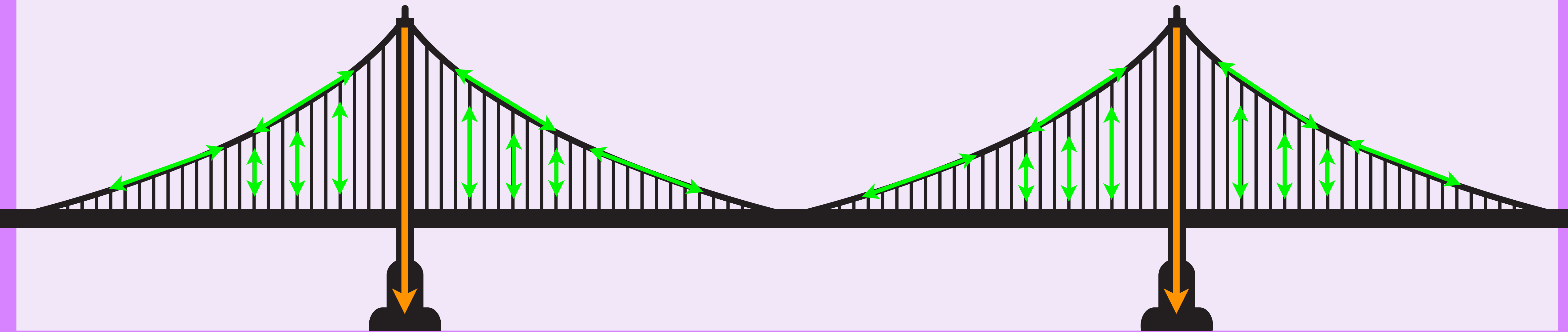
Suspension bridges are different to other bridge designs. The deck hangs from cables attached to pillars and anchorage points on either side of the bridge.



These bridge designs transfer the compression forces caused by gravity to the abutments or pillars on either side. All of the weight of the bridge pushes down on the abutments and pillars.



Suspension bridges are different. They use **tension** forces. The heavy deck pulls down on the suspension cables, putting them under tension. The heavy, twisted steel cables transfer some of the weight to the pillars, where the tension forces create **compression** forces; the weight of the cables and bridge deck pushes down on the pillars.





The suspension cables are anchored firmly, deep down inside concrete or rock abutments.

Instead of pushing down on the abutments, the cables pull; tension forces are spread out by the long cables, helping support the heavy deck.





Today we will
be designing and
making suspension
bridge models.