

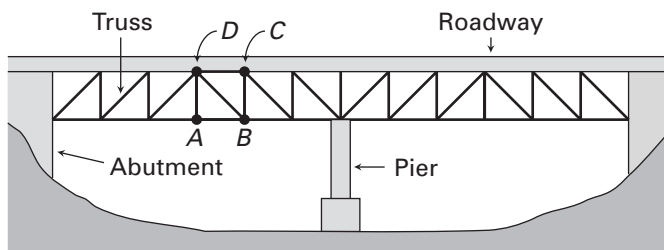
Real-Life Application: When Will I Ever Use This?

For use with pages 212–219

Truss Bridges

One of the most important developments in the history of transportation is the bridge. In our modern society, it is impossible to imagine being blocked by a river or a lake. Although bridges may have humble beginnings, constructed from such materials as logs or vines, they have evolved throughout the 20th century into tremendous feats of engineering. As materials like concrete and steel increase the strength of bridges, they are now spanning distances far longer than ever thought possible.

Because the triangle is a rigid shape that easily distributes weight, many bridge designs, including the truss bridge, the steel arch bridge, and the cantilever bridge, incorporate it. A truss bridge, shown in the diagram below, is often the bridge of choice because the small amount of construction material makes it very cost effective.



In Exercises 1 and 2, use the diagram above showing a truss bridge.

1. Name the included angle between the pair of sides given.
 - a. \overline{AD} and \overline{BD}
 - b. \overline{CB} and \overline{BA}
 - c. \overline{DC} and \overline{DB}
 - d. \overline{AB} and \overline{BD}
2. Complete the following proof in two different ways.

Given: $ABCD$ is a square.

Prove: $\triangle ABD \cong \triangle CDB$