

Middle School: Bridge Building Constraints

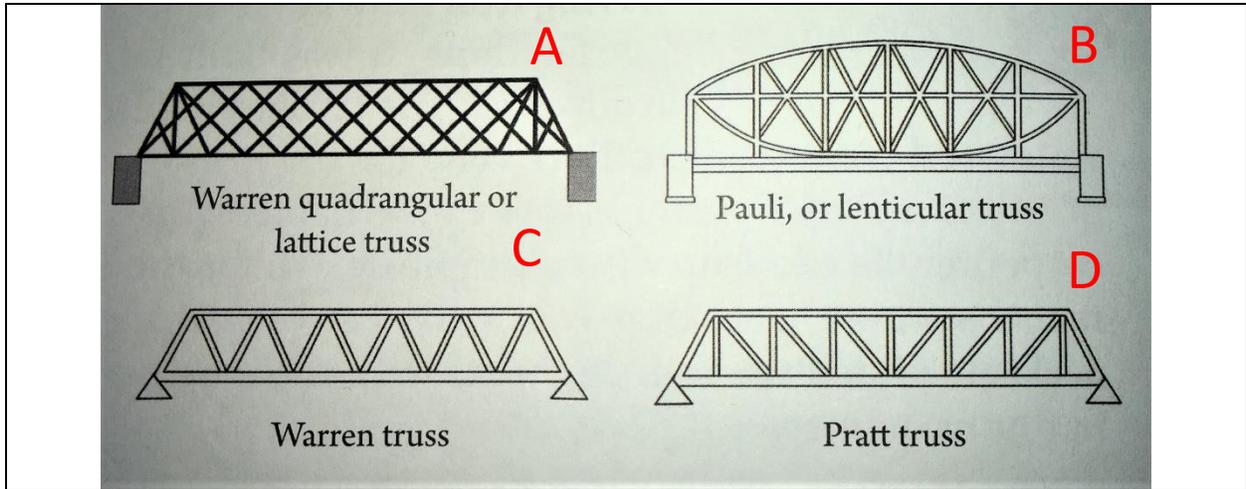


Figure 1: From page 64 of Noyce, Pendred E, *Engineering Bridges Connecting the World*, Boston: Tumblehome, Inc., 2019

1. Must be freestanding
2. Bridge must not weigh more than _____*
3. Bridge must have a road that spans 8 inches long, 3 inches wide, and has guardrails on both side of the bridge
4. May only use the provided resources
5. Budget must not exceed \$5000
6. Must be able to support the weight of one or more of the following for 10 seconds without buckling
 - a. Toy car (hot wheels)
 - b. Four block erasers

Must be as close to the chosen patented design as possible

Budget Sheet:

Materials Fees
<ul style="list-style-type: none"> • Construction Paper: \$10.25 per sheet • Scissors: \$15 per scissors • Tape: \$5 per 2 meters • Ruler: \$10

Construction Fees
<ul style="list-style-type: none"> • <i>Labor Cost:</i> \$45 per person in group + \$6.57 per minute worked

Disposal Fee:
<ul style="list-style-type: none"> • Construction Paper: \$5.27 per sheet returned • Construction Paper: \$2.50 per sheet portion of sheet returned practices fee • Tape: \$25 per roll returned