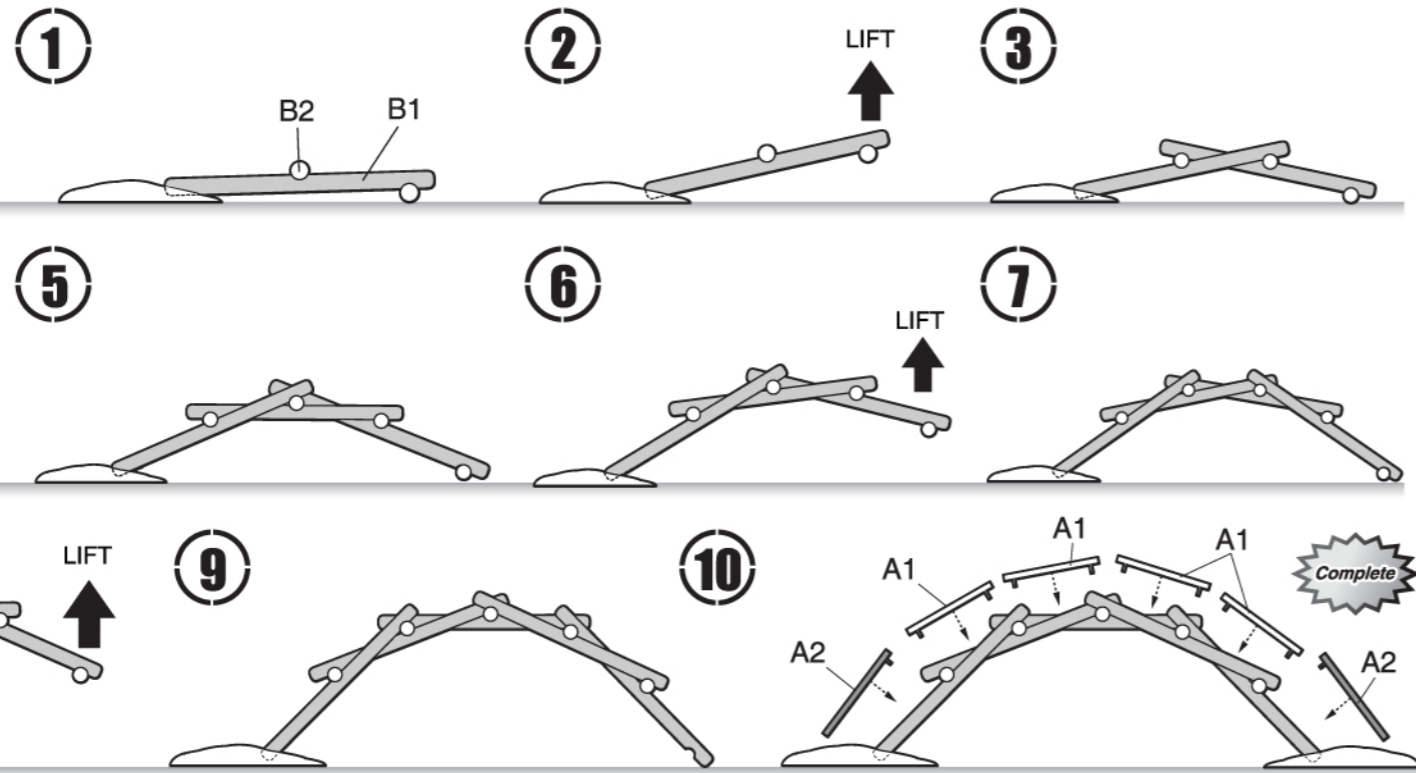
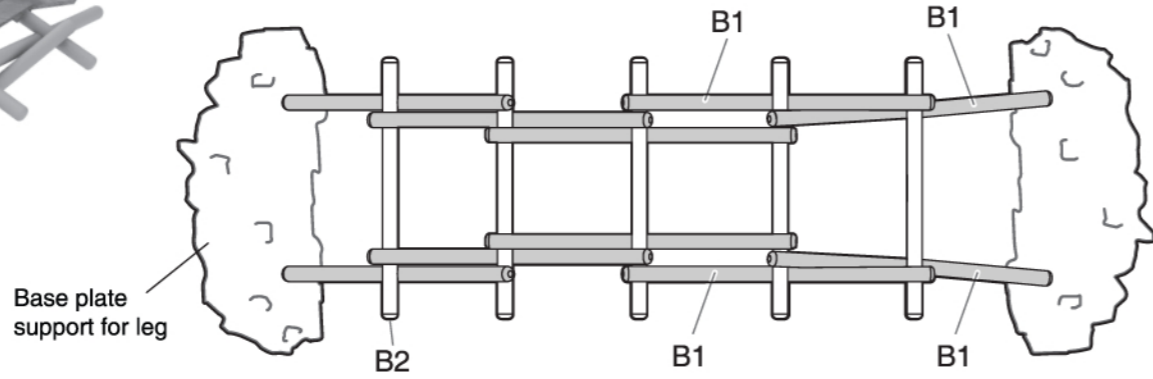



**Advanced Level**


Arch Bridge Assembly


※ Follow the diagram as shown in B1 and B2 when assembling the upper level of the bridge.




**Types of Bridges**

- 

**Simple Bridge**  
A simple bridge design uses beams to support the upper roadway.
- 

**Arch Bridge**  
An arch bridge uses its semi-circular "arch" shape to distribute the force of compression by spreading the weight outward.
- 

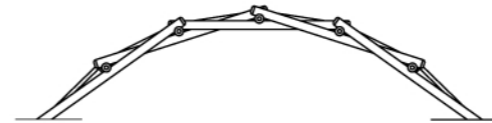
**Truss Bridge**  
A truss bridge uses the strength of the triangle to transfer load from a single point to a wider area. Truss design is often used in rail bridges.
- 

**Suspension Bridge**  
A suspension bridge suspends the deck by cables hung from towers. Compression tension is transferred from the cables to the towers to the ground.

**The Principles of da Vinci's Arch Bridge Design**

Arch Design Concept: The arch design uses a bow shape to transfer the weight of the bridge throughout the entire curvature of the arch.

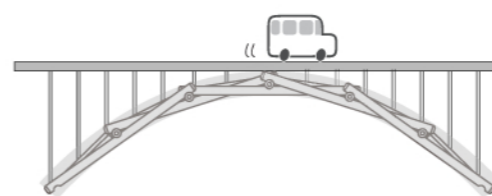
- Da Vinci's Arch Bridge (Self Supporting Bridge)



- Example of a Modern Arch Bridge Design (applying da Vinci's arch bridge design)



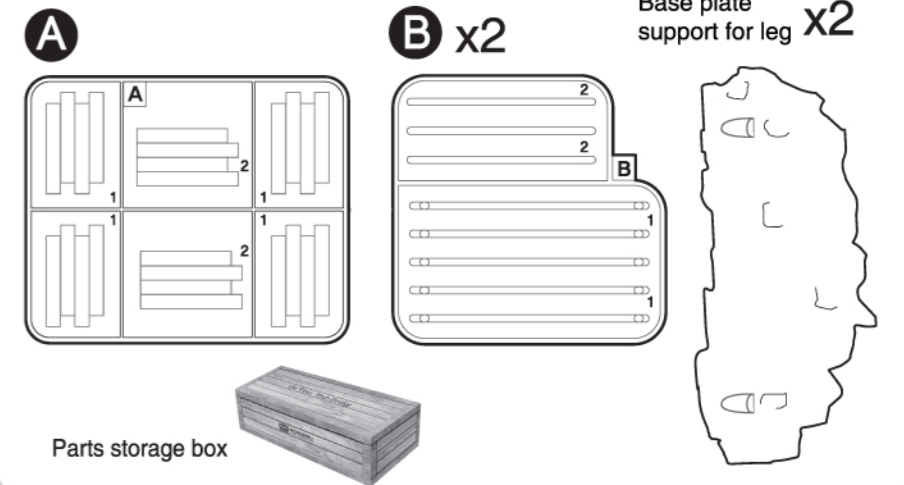
- Another Type of Modern Arch Bridge Design (applying da Vinci's arch bridge design)



**Arch Bridge by Leonardo da Vinci**

The more weight the bridge carries, the stronger it becomes. On the other hand, if one key component is removed, the bridge will fall. It was originally intended as a quick-build, wood bridge for use by the military. Removing a single piece of wood while the enemy was crossing could cause the bridge to collapse drowning enemy forces.

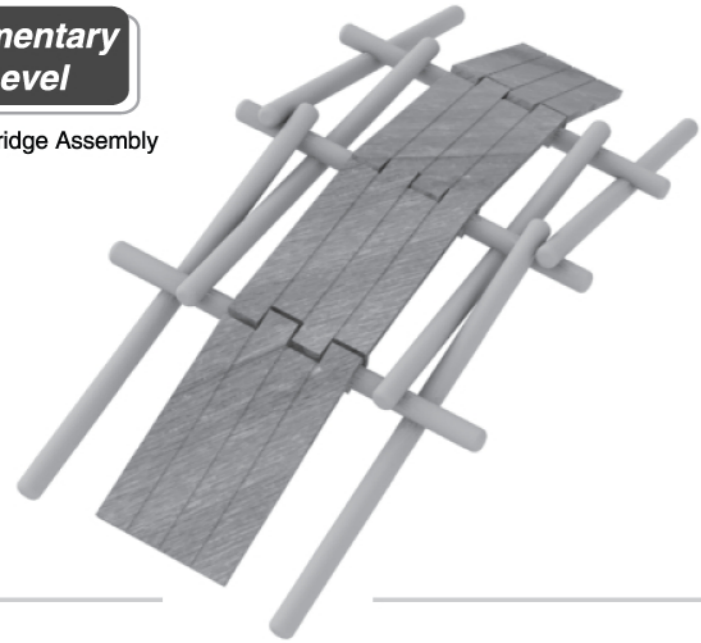
parts location diagram



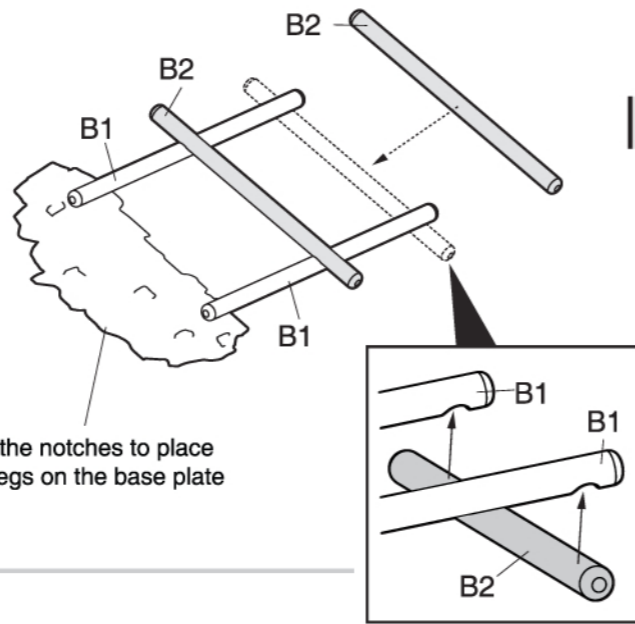
Parts storage box

**Elementary Level**

Arch Bridge Assembly



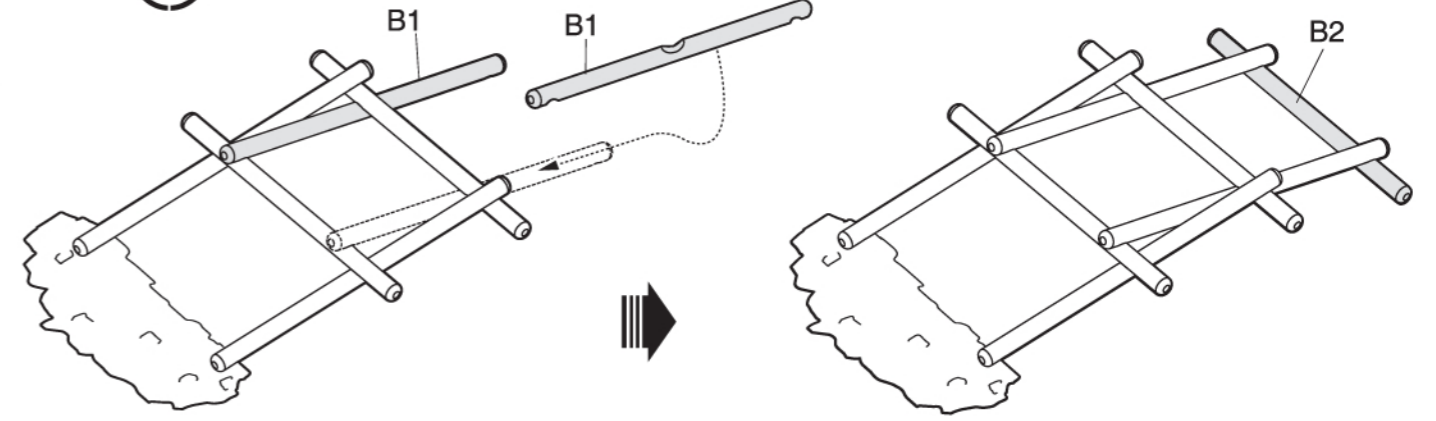
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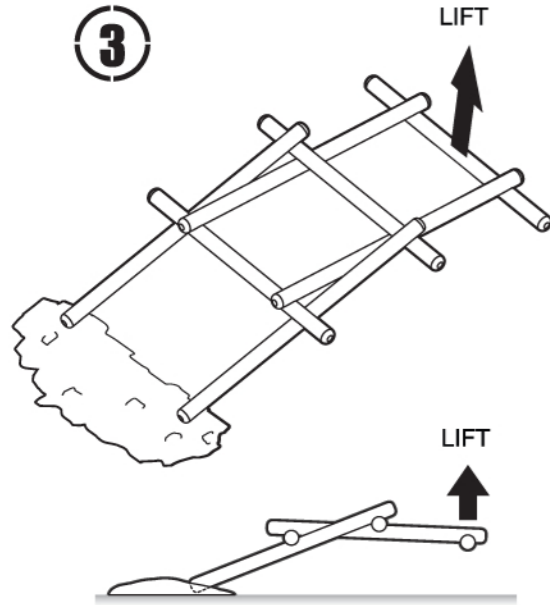
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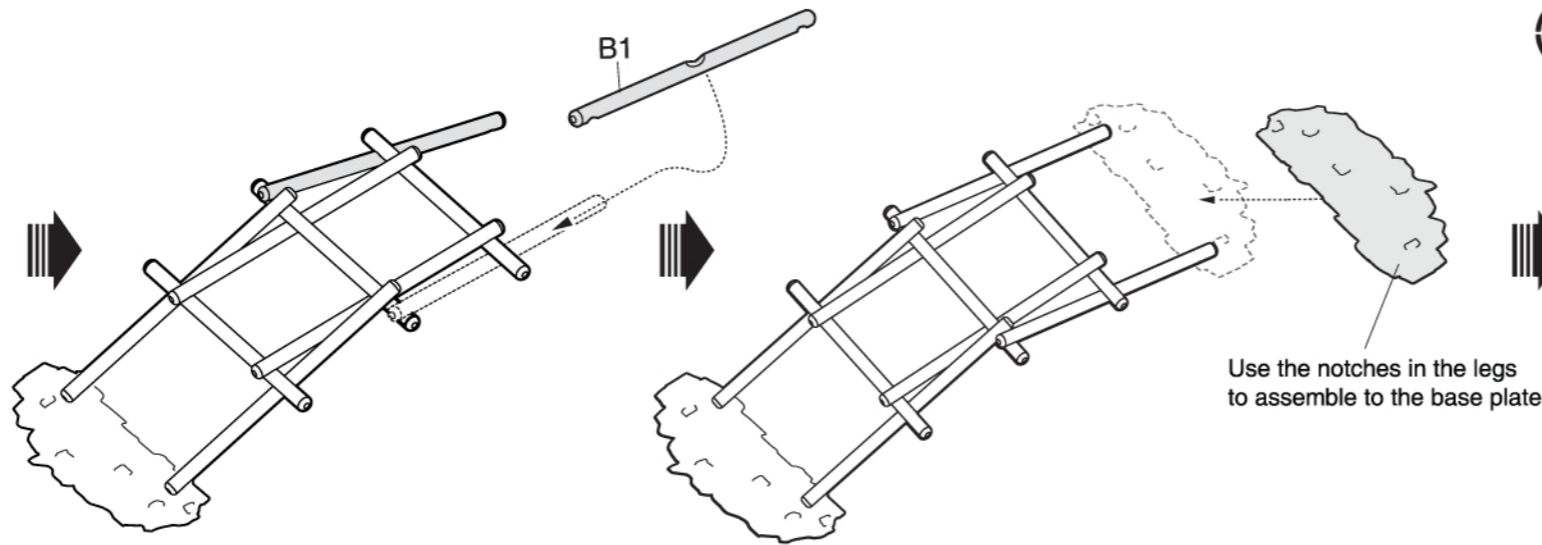
**2**



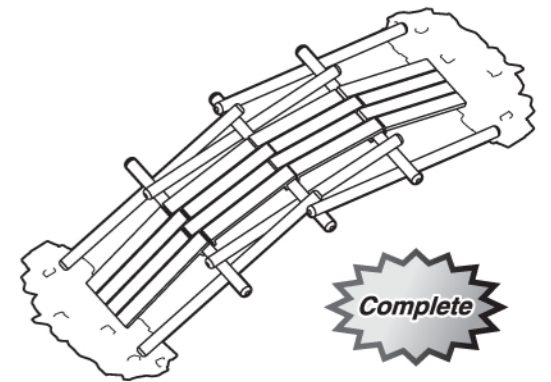
**3**



**4**



**5**



When done, place the bridge parts in the box.

