

ARCHES AND CORBELLED ARCHES

Objective: Students will be able to identify and build a corbelled arch structure.

***Vocabulary:** ARCH
HORSESHOE ARCH
SQUINCH ARCH
CORBELLED ARCH
TRIUMPHAL ARCH
ARCH OF TITUS
ARCH BRIDGE

Materials: BrickLab elements, Dictionary, Paper, Pencil

Preparation: Be familiar with BrickLab materials. Prepare a corbelled arch model.

Discussion: The instructor will lead a group discussion on the use of **arches** in architecture. Arches are curved structures that support the weight of material over a space. Arches span an opening in such a way as to transfer the load to lateral thrust on either side of the opening. This increases the ability of a structure to support a load. There are many different types of arches, such as **horseshoe arches**, **squinch arches**, and **corbelled arches**. A corbelled arch is two cantilevers that meet at a central point. The Romans of ancient history incorporated the arch shape in **triumphal arches** such as the **Arch of Titus**. Arches are often incorporated in modern structures, such as **arch bridges**.

Activity 1: Students will build a simple corbelled arch structure that can support the weight of a dictionary. The corbelled arch structure should stand at least 10 cm tall.

Activity 2: Students will build a personal triumphal arch. The arch should stand at least 15 cm tall. This triumphal arch should commemorate some important event.

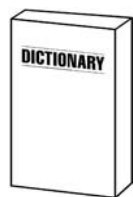
Activity 3: Students will identify and record four examples of arches in their community. Students should sketch their discoveries and identify the arch shapes.

Activity 4: Students will write a short essay describing an example of arch architecture and its importance in a structure.

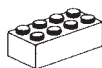


ARCHES AND CORBELLED ARCHES

Required Materials:

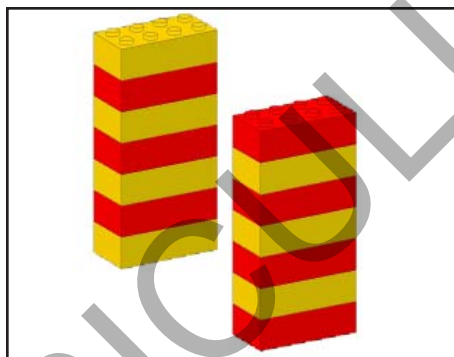


dictionary



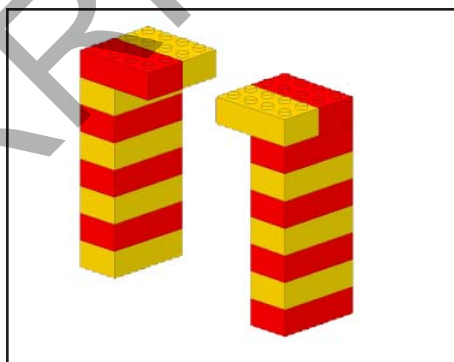
25 - 2x4
bricks

1. Stack seven 2x4 bricks on top of one another. Create a second stack of seven 2x4 bricks.



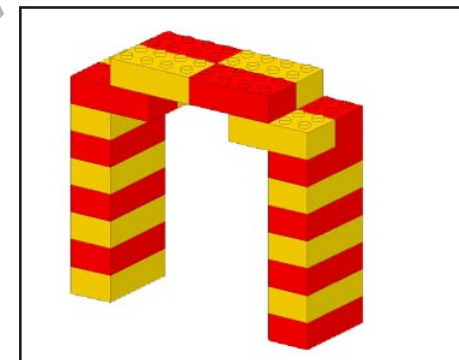
Check off when complete

2. Place two, 2x4 bricks cantilevering out from each of the stacks.



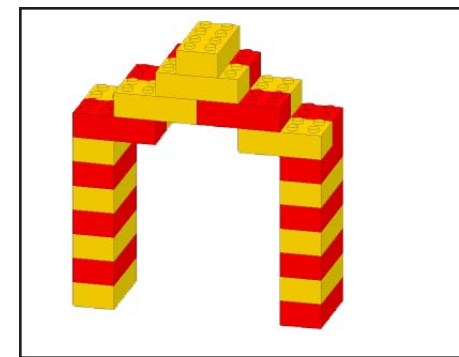
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3. Carefully place two 2x4 bricks cantilevering out from the previous 2x4 bricks.



Check off when complete

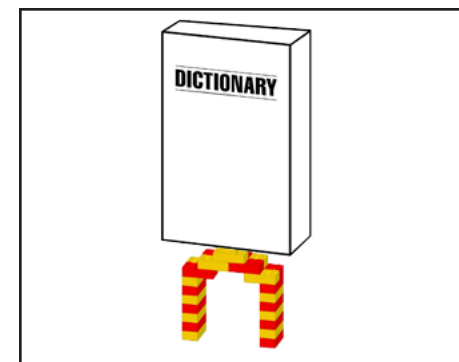
4. Attach the two sets of cantilevers with two 2x4 bricks. Cap the arch off with a single 2x4 across the top.



Check off when complete

5. Attempt to place a dictionary on the top of the arch.

Does the arch support it?



Check off when complete



Assessment

Construction
Engineering

#3

ARCHES AND CORBELLED ARCHES

Vocabulary Review:

ARCH HORSESHOE ARCH SQUINCH ARCH

ARCH BRIDGE CORBELLED ARCH ARCH OF TITUS

TRIUMPHAL ARCH

Multiple Choice:

1. A curved construction that spans an opening is generally referred to as...

- A Post
- A Lintel
- An Arch
- A Teacup

2. A corbelled arch...

- Uses two cantilevers that meet at a central point
- Uses two posts that do not meet
- Has never been used
- Uses many smaller arches to make one large arch

3. One example of a structure that uses an arch is ...

- The Statue of Liberty
- The Pyramid of Khufu
- The Parthenon
- The Arch of Titus

Questions to Ponder:

(Use these questions as a starting point for your journal entry)

1. What are arches?
2. Can you identify a type of arch? Describe it in detail.
3. Can you describe a structure that uses an arch? Describe.

Journal Entry:

Grade _____

Name: _____

Date: _____