



How Do Buildings Stand Up?

Program Goal: Students will explore architectural design and use St. John the Divine to understand how stone structures support themselves.

Vocabulary

- Architecture
- Force
- Structure
- Romanesque
- Gothic
- Stability
- Function
- Aesthetics

Essential Questions

- What factors impact the architectural design process?
- How do architects use physics to ensure stability in stone buildings like St. John the Divine?

Pre-Program Activities

- Explore the Cathedral’s floorplan and façade on Pg. 2-3. Where do you think the building’s entrance is? What do you see that makes you say that? What shapes do you see in the floorplan and façade images?
- Explore your home or classroom. Look at the walls, ceilings, doors, windows, etc. What shapes do you see? How do all the rooms connect? What materials are used? Why? Can you draw a floorplan for your classroom or home? Share how your floorplan is similar or different to St. John the Divine’s.
- Look at images of stone cathedrals from all over the world. What details stand out? What is similar between the cathedrals? What’s different? What jobs do you think went into building these cathedrals?

Post-Program Activities

- Work individually or in groups to build a structure out of recycled materials. Consider questions of function, stability, and aesthetics before and during the building process. Share what went well and what was challenging. (For further explanation, watch “Reduce, Reuse, and Build” with Ashley, a Cathedral Educator.)
- Design a building’s façade using graph paper, pencils, rulers, protractors, compasses, etc. Students can use whatever tools are available, including everyday objects for shape tracing. Consider how the façade of your structure is an important component of your building.
- Check out the “Cathedral Architecture” word search on Pg. 4.

Extra Resources

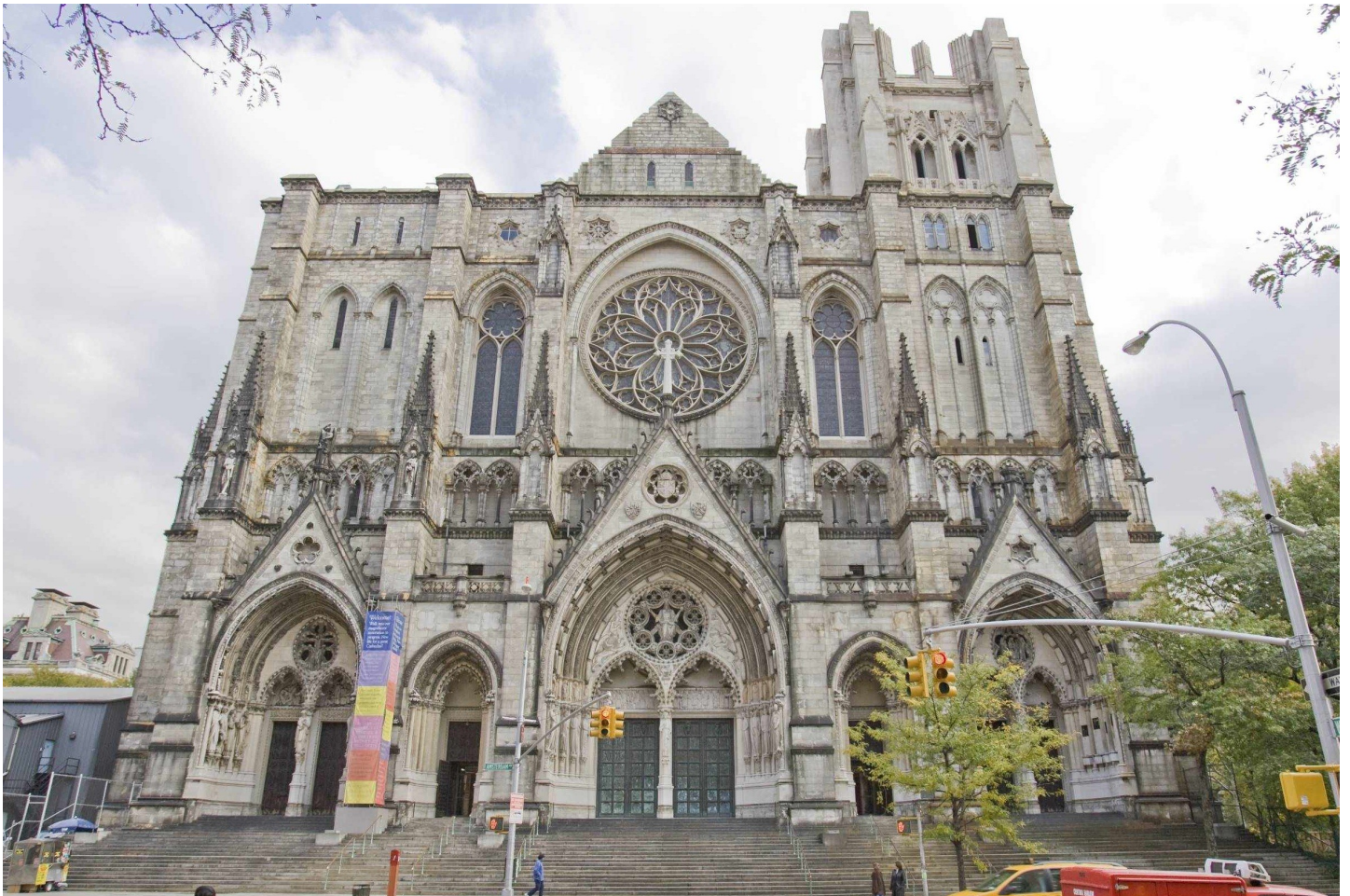
CN Trueman. "Building A Medieval Cathedral." Historylearningsite.co.uk. The History Learning Site, March 5, 2015.

Video – “Building the Great Cathedrals:” <https://www.pbs.org/wgbh/nova/video/building-the-great-cathedrals/>
“ Physics of Stone Arches” Interactive: <https://ny.pbslearningmedia.org/resource/nv37.sci.engin.design.arches/physics-of-arches/>



The Cathedral
Church of **Saint John**
the Divine

St. John the Divine: Façade





The Cathedral
Church of **Saint John**
the Divine

Word Search: Cathedral Architecture

C R E U D R Z Y N R N A R T H E X N A F
H O K C P O T G O C V V F Z B D T O E W
S E N F R I M M I I H I J N W L M S S X
B C O S V O A E T U O A P H U Z Q A T D
V A P A T N F W C V S I P A Y A C M H U
J G R L E R F Z N Y E A V E V J D F E C
B G F S W W U W U R V F O Y L E K H T O
J O Q N G Q I C F Q X Y F D S D E T I L
T U C I H T O G T X L M D I F M S V C U
E M W H J D C A T I K L G B N Y J H S M
M V J N L K N N F C O N Q V A S M C X N
E F A L B H K U V Y V N Q J V F O C I S
A R Z W S V S T F B V B O E E E Y A R L
N U U G H F D J R E Z R P I L B L Y X R
V K E T K C F Y N Q F N N B H R E V T Z
E E X F C O A S B Q K W Y F B A N X E H
U U P E C U I Z J W L N B X B T P W N N
A R C H D Y R Q M Y T I L I B A T S P T
U N C P I R J T A R C H I T E C T U R E
Z G F K E X W U S G J O P H T C H V U H

Aesthetics
Arch
Architecture
Chapel
Column

Construction
Design
Dome
Force
Function

Gothic
Gravity
Mason
Narthex
Nave

Pier
Romanesque
Stability
Structure
Vault