CLASS LESSON

Lee Chapel Architecture and History

What You'll Need:

- **Writing Utensil**
- **Research Resources (school website, yearbooks, teachers, principle, news articles)**
- **Tape Measure (if available)**
- **Extra Grid Paper (optional)**

Students will start the lesson by reading a brief introduction on the history of Lee Chapel and Museum. Robert E. Lee's original purpose for the building was to give students a place to gather. Since it's completion in 1868, Lee Chapel has expanded and completed several renovations to accommodate its role at the university and the growing visitor population. The lesson continues with an activity that will have students investigating their own school's history. By using resources available to them, students should answer the questions listed on the sheet. Learning about the story of their school can help secure memories they make there and increase their pride in their school.

Moving on to *Starting from Scratch* and *Finding Your Square Footage* students will create a floor plan of their classroom. Depending on your time, students can complete the activity alone or work with a group. Students will find the square footage of their classroom by measuring it's length and width. Students can use a tape measure to count out the feet. If a tape measure is not available, students could use their own feet or count floor tiles for an approximate number. Once the length and width is determined, students will multiply the numbers together to get the total. A formula for finding the square footage is given.

Next, students will need to use the gridded paper to draw their classroom layout. Using the classroom's square footage, students should start by drawing the perimeter. They should then fill the classroom with the furniture found in their class setting. Students should measure the space between the furniture and plot them on the gridded paper. If you're short on time, split the students into groups and have each group take measurements of a certain area in the classroom. Whether they're planning the layout of a room or an entire building, drawing out a plan helps reduce problems in the building process. Both Lee Chapel and their school started from a blue print.

After laying out their classroom, students will assemble their crew and materials. Examples of members on a construction crew are listed and students can search for building materials in the word find. When finished, students should read the two short passages on how Lee Chapel looks today. Lee Chapel has gone through several renovations since it's completion in 1868. Following the look at Lee Chapel's exterior and interior is a set of basic steps to construction a building from the ground up. Read through the steps to learn new vocabulary words.

Next, it's time to get out of your seats. For the next activity, your class needs to pick an area in your school building that is unique to it. It could be the library, the cafeteria, or maybe the building has an unusual main entrance. Once the area has been selected, travel there and complete the architectural elements scavenger hunt. The last activity in this lesson talks about preservation. The students will explore reasons why we preserve certain buildings. Students should read through the text and answer the questions to finish the lesson.

What is Lee Chapel's history?

In the fall of 1865, Robert E. Lee traveled to Lexington, Virginia, to become the 11th president of Washington College, now Washington and Lee University. Known for his leading role during the Civil War, Lee saw this as an opportunity to help rebuild and reunite the country. He resided over the college for five years. In 1866, Lee asked the board of trustees to consider building a chapel. He argued that the students needed a larger gathering space, because they were outgrowing the classroom they were currently using.

In January 1867, construction on the Romanesque-style chapel broke ground. Lee, his oldest son, George Washington Custis Lee, and Colonel Williamson of Virginia Military Institute's engineering department are given credit for Lee Chapel's design. The building's main level was to seat 500 students for chapel services, college events and lectures. The lower level was to hold administrative offices, including Lee's, and a student center. The chapel was completed in 1868 just in time for commencement activities.

Since it's original construction, Lee Chapel has undergone many needed renovations. In fact, in the 1920's the building was in such bad shape, that the college, now Washington and Lee University, planned to build an entirely new university chapel. While the decision to construct a new chapel was vetoed, the lower level of Lee Chapel was converted into a museum and Lee's office, left untouched, continued to stand as a reminder of his hard work and dedication.

In 1961, Lee Chapel finally received a complete restoration. The Ford Motor Company granted Washington and Lee University $370,000 for the restoration of the chapel. The building was closed for fourteen months while it was made structurally sound. Each floor board and roof slate was taken up, numbered and then replaced. Steel beams and concrete were laid to strengthen the building. The Erben pipe organ was restored, the pews were redone and light fixtures more historically accurate to the building were installed.

Lee Chapel went through smaller modifications in the 1990's and in 2007. In 2007, the building's current museum exhibit, *Not Unmindful of the Future: Educating to Build and Rebuild a Nation*, was installed. In 2015, fire suppression and a new lighting system was installed to provide better care for the building and it's objects. Lee Chapel will continue to go through changes as we continue to preserve the building's legacy for many more visitors to see.

What is your school's history?

Investigate

Lee Chapel's history isn't just something we knew, we had to investigate it's past. Using resources available to you, learn about the history of your school and answer the questions below.

When was your school built? _____

Who or what is your school named after? Why is it named what it is?

_____

_____

_____

Does your school have a symbol or mascot? If so, why did your school select that particular symbol or mascot?

_____

_____

Has your school ever been through renovations? If so, when and what was renovated?

_____

_____

_____

Is there something particular your school is known for? (Example: Does it have the best football team?)

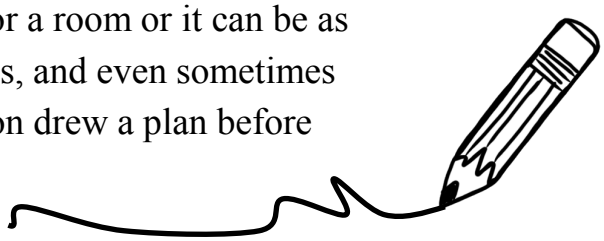
_____

_____

_____

Starting from scratch.

Before a building can be built there must be a plan for it. Every building serves a purpose and it's function should be illustrated through it's **blue print.** A blue print is a plan designed to show the layout of a building. A blue print can be drawn by hand or by computer. It can be as simple as measurements for a room or it can be as detailed to show windows, doors, lighting fixtures, and even sometimes furniture! Lee, Custis Lee and Colonel Williamson drew a plan before starting construction on Lee Chapel.



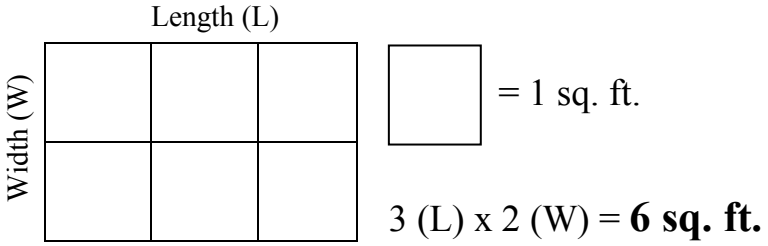
From your reading on page 1, what was the purpose of building Lee Chapel?

_____

_____

_____

In the next activity, you'll be asked to draw a plan of your classroom, but first you'll need to determine it's area. **Area or the square footage (sq. ft.)** of a room is determined by measuring the length and width of your area and then multiplying those two numbers together.



3 (L) x 2 (W) = **6 sq. ft.**

What's your square footage?

To get the most accurate length and width of your classroom use a measuring tape. If you don't have one, there are other ways to get a rough estimate. If your floor is tile, then you can count tiles! Just make sure to take in consideration the size of your tiles. You can also walk the two distances by putting one foot in front of the other and counting your steps.

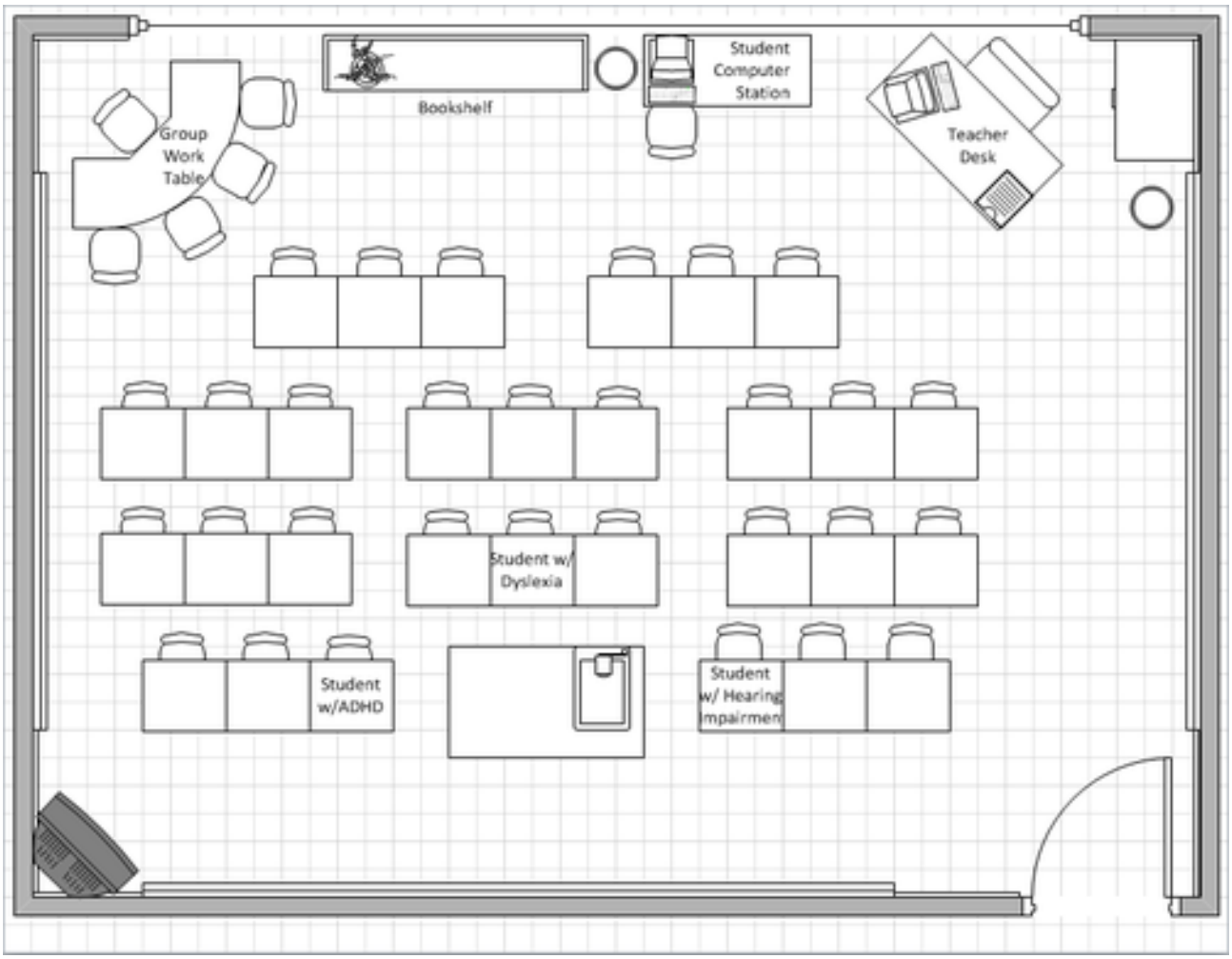
How many square feet is your classroom? _____(L) x _____(W) = _____

Drawing your classroom to scale.

Using the next page, draw your classroom to scale. **What do we mean by to scale?** We've heard the word scale when measuring the weight of an object or the temperature of air, but in this situation, we mean drawing a smaller representation of something so that is it easier to work with. Lee Chapel's orrery is a great example of something made to scale. An orrery is a mechanical model of the solar system used to represent the planet's positions and motions. An orrery makes studying the solar system easier because of it's small size.

On the next page is a 20 x 30 block grid. If you pretend that each block is 1 square foot, you have 600 square feet to work with. Using the grid, map out your classroom. If your classroom is larger then 600 square feet, double the size of a block so that now each block represents 4 square feet. There is an example of a classroom plan below.

Make sure to use the square footage of your classroom to help you start. You should start by drawing the perimeter of your classroom. Next start adding any windows, doors, desks, and chairs in your classroom. Before measuring the distance between the furniture, make sure you're using the best unit of measure to measure with.



Assembling your crew.

Architects design buildings and in many cases supervise their construction, but they're not the only people involved. Engineers, like Robert E. Lee, help as well. Engineers design, build and maintain machines and public works. Together the two make a perfect team. Lee was a brilliant engineer. He graduated second in his class from West Point Military Academy in New York. His sharp attention to detail and strong mathematical skills made him a valuable asset. Engineers and architects also need to work with a construction crew in order to complete a job. They can work with brick layers, carpenters, plasterers, plumbers, and electricians; just to name a few.

Who else might work with Lee on constructing a building?

Gathering your materials.

Complete the word search below. Cross off materials from the word bank as you find them. Words can be found horizontally, vertically, diagonally, and backwards.

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

STEEL
WOOD
CONCRETE
TILE
GLASS
BRICK
SHEET ROCK
PIPES
WIRES
INSULATION
NAILS
SCREWS
PAINT
GRAVEL
HAMMER
SAW
VINYL

Lee Chapel Assembled

Lee Chapel has been through several renovations since it's construction in 1868. With all the upgrades, what does the Chapel look like now?

Lee Chapel's Exterior

What do we mean by exterior? A building's exterior is it's outer shell. The exterior is what you see from standing outside the building. Lee Chapel's exterior walls are made up of brick. The brick, red in color, was made in Lexington, Virginia. It's foundation is made of local limestone. What is a foundation? A **foundation** is the building's base. It connects the building to the ground and bears the weight of the building. The gable roof is made of slate and a spire sits atop the bell tower. Clock faces were installed on three of the four exterior walls on the bell tower. Lee Chapel's auditorium windows are trimmed in white paint and their mullions portray a diamond design. Window mullions are the bars that separate the glass panels in a window. Visitors enter through double white doors surrounded by ivy growing on the front exterior wall. A second, more modern, set of glass doors is located on the side of the building.

Lee Chapel's Interior: The Auditorium

What do we mean by interior? A building's interior is what you see from standing inside the building. Lee Chapel's auditorium is split into a main floor that hold rows of white pews and a balcony level that holds additional seating. Together they seat 500 people. The floor of the main level is hardwood laid over concrete with carpet running down the two aisles. The walls, which were once painted and scored to look like brown sandstone, are now smooth and white. The ceiling is curved and several arches spanning the ceiling indicate where major steel beams have been installed. On stage, before entering the statue chamber addition, visitors pass under a large archway. In the addition, the walls are brick and limestone. Both materials used on the exterior. The floor is a combination of white tiles and smaller red tiles. At the center of the room sits the Recumbent Lee statue made of marble. For the statue's protection, the statue chamber can be closed off by gates and a fire door.

Assembling your building.

Now that you've got a plan, your materials and your human resources you're ready to start building. Assembling a building is not a easy task. However, we've simplified it into 8 steps for you! Read through the steps below.

1. BUILDING A FOUNDATION

Foundations, the building's base, need to be laid first. Foundations should be level, clear of any moisture and resist the earth's movement. Preparing for a foundation might mean eliminating foliage and evening out the ground.

2. COMPLETE A ROUGH FRAMING

Once the foundation has been approved by an inspector, the building's floor, wall and roof systems are installed. This frames the exterior and interior layout of the building. It's here that exterior windows and doors are installed. Think of the rough framing as **the building's skeleton.**

3. PLUMBING, ELECTRICAL AND HVAC

Once the building's skeleton is up, it's time to install plumbing, electrical and HVAC systems. **What does HVAC stand for? Heating, ventilation and air conditioning.** At the same time, siding is installed and any work on the roof is completed.

4. KEEPING YOU WARM AND DRY

The next step is to insulate your house. **Insulation** helps keep your house comfortable by separating your buildings interior climate from the weather outside.

5. FINISH THE INTERIOR

At this time, the building's drywall is completed. **Drywall** seals the interior walls creating independent rooms. When installation is completed, painting can begin.

6. FINISH THE EXTERIOR

While the building's interior is being completed, final touches on the exterior are finished. A building's exterior finish can include brick, stucco, stone, or siding.

7. ADDING WHAT YOU USE

At this point it's time to add what you use daily. Primarily items in the kitchen and bathroom are installed, items like; sinks, countertops, large kitchen appliances, showers, toilets, etc.

8. GET DECORATIVE

Lastly, it's time to add small fixtures to the building that make it unique. These could include: mirrors, decorative lighting and shelving.

Searching for Architectural Elements

With your classmates and teacher, pick an area in your building that is unique to your school. You could use your cafeteria, your library or maybe even your school has a unique main entrance. These are just a few options you could use. While in that space, answer the questions below about the architectural elements you see.

What does the floor look like?

_____

What do the walls look like?

_____

Does the space have any windows? If so, how many? _____

Chose a door or doorway in the room, find the perimeter of it. _____

What unit of measure did you use to find the perimeter? _____

Are there any arches or archways in the space? _____

Arch/Archway: a curved symmetrical structure spanning an opening.

Are there any columns in the space? _____

Column: an upright pillar, made of stone or concrete, that supports a structure.

What kind of lighting does it have? Include all examples you find.

_____

_____

What is the space's purpose?

_____

_____

What in the space supports the room's purpose?

_____

_____

_____

Why do we preserve?

Preservation means to maintain something in its original or existing state.

Why do you think we preserve buildings?

Lee Chapel and Museum is considered a preserved building. Lee Chapel was named a national historic landmark in 1961. Buildings become important to us because they have value to us in one way or another. Someone might chose to preserve a building because of it's historical significance in time or to its community. A building can be preserved because it can be re-used. If it's structure is sound the building can be adapted for another purpose. A building can also be preserved because it's pleasing to the eye.

What are the advantages of preserving a building?

As part of Washington and Lee University's campus, Lee Chapel offers it's use to the school for events. Lee Chapel's auditorium can hold 500 people and it is the largest gathering space on campus. Staff at Lee Chapel have also extended the use of the chapel's original purpose by allowing private weddings in the building, making it even more important to continue to preserve the exterior and interior. The lower level of the building isn't excluded from preservation either. In fact, Lee's office is preserved just how he left it when he passed away in 1870. Preserving his office is a tribute to his contribution as president of Washington College.

Other advantages to preserving a building might include avoiding unnecessary demolition and new construction. This reduces wastes in landfill and therefore helps preserve the environment.

Can you name another building that you know has been preserved? Why was is preserved?