
LEGO MASTER BUILDER
ACADEMY

DEAR LEGO® MASTER BUILDER ACADEMY MEMBER,

Welcome to the 11th installment of the LEGO® Master Builder Academy! Having gotten my university degree in design, one of my favorite topics has always been architecture. It is amazing to see how different cultures have created their own amazing structures all over the world. It is because of my fascination with architecture that I have been chosen to present your latest LEGO MBA kit.

The LEGO Master Builders are often influenced by real-world architecture when we design a new LEGO set. We really enjoy finding the perfect elements to create the details of realistic buildings, while making our models into fun interactive playsets, too.

In my time designing LEGO models, I've gotten to work with several styles of architecture. LEGO City tends to have buildings with very modern architecture and features that you can see in everyday life. Some of the buildings can be very big, while others are small and full of play functions. LEGO Ninjago, on the other hand, has a completely different approach to architectural design. Most of its structures have an Asian style that is based on the shapes and construction of ancient buildings from Japan.

I hope that our new building techniques and tips will inspire you to build great architectural models of your own!

GOOD LUCK, HAPPY BUILDING,
AND NEVER STOP PLAYING!

Samuel Johnson,
LEGO Designer

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Invent your world

DESIGNING AND BUILDING REALISTIC ARCHITECTURE!

In the last LEGO® Master Builder Academy kit, you journeyed to an alternate timeline and built technology that blended the materials of the past with the imagination of the future. Now it's time to steer your time machine back to the real world and take a tour of one of history's greatest inventions: ARCHITECTURE!

Without the invention of architecture, we wouldn't have cities full of skyscrapers, buildings with useful functions like factories and barns, or spectacular monuments and castles. We wouldn't know how to stack stones together to create strong and sturdy walls, how to build columns and archways to support roofs, or how to make buildings that are stable no matter their shape. And without all of those things...we wouldn't have building with LEGO bricks!

Here in KIT 11 – WORLD ARCHITECTURE, the LEGO Master Builders will show you how to use your LEGO pieces to design and construct buildings from multiple periods of time and places around the world. You'll discover the advanced techniques of HISTORICAL DESIGN and ARCHITECTURAL DETAILS and use them to create this handbook's star model, a double-sided temple that reflects the architectural stylings of two very different eras and cultures.

You'll learn how the LEGO Master Builders construct realistic buildings for LEGO themes, and how LEGO fans use those same techniques in their amazing custom creations. You'll build ten all-new springboard models that will expand your design horizons and help improve your models, and you'll take inspiration from architecture all throughout history as you design your own original buildings for the Kit 11 Architecture Design Challenge.

READY TO INVENT THE NEXT GREAT REVOLUTION IN WORLD ARCHITECTURE? THEN LET'S GET STARTED!

Continue the Adventure on LEGOmba.com!

Your Invention Designer journey continues on the LEGO® MBA website!

The LEGO Master Builder Academy is much more than just the kits and designer handbooks. Check out LEGOmba.com for the full online experience, including all-new videos, quizzes, skill tests, springboard model building instructions, and bonus tips from the real LEGO Master Builders. Earn badges, get feedback on your creations, and share your building knowledge with your fellow LEGO MBA members!

To join the online journey, visit LEGOmba.com and use the exclusive code below to register your LEGO Master Builder Academy Level 4 membership. Once you've created or updated your account, click on Member Access and select Kit 11 from the book-box at the top right of your LEGO MBA design desk for full access to all Kit 11 articles and activities!

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THIS CODE UNLOCKS LEGO® MBA KITS 10, 11 AND 12

The Invention of Architecture

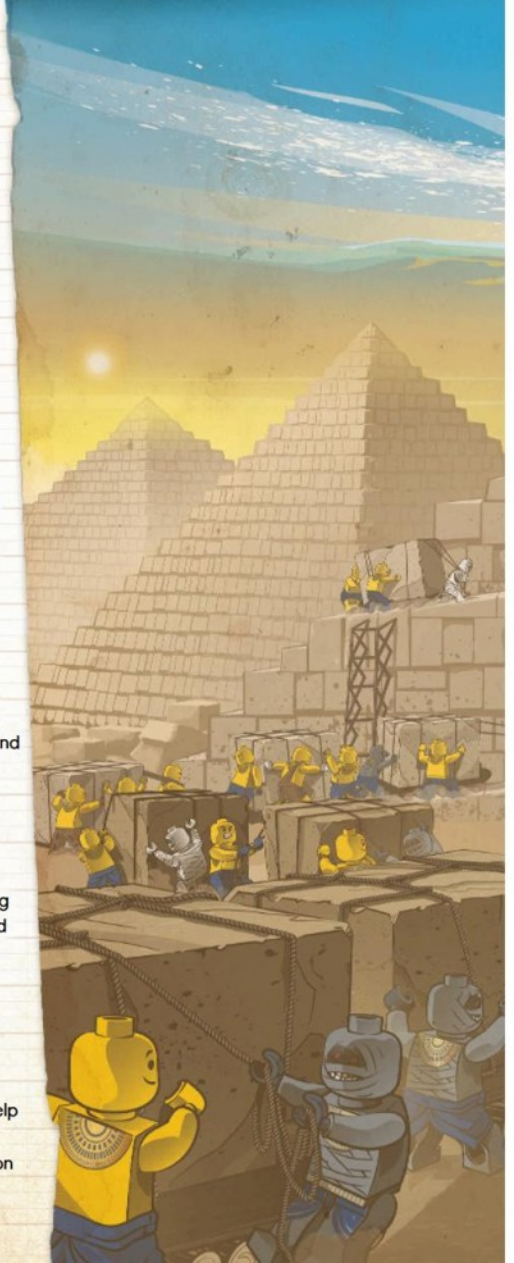
LIGHTS FLASHED AND ALARMS BLARED INSIDE THE PILOT CAPSULE. THE TIME MACHINE'S CONTROLS FELT SLUGGISH, THE INVENTION BARELY RESPONDING TO HIS COMMANDS AS HE TRIED TO GUIDE ITS FLIGHT THROUGH THE TURBULENT TIME-STREAM.

With a sinking feeling, he realized what was happening. Incredible as his visit had been, the steampunk world had belonged to a different timeline than his own, and the difficult trip back home was threatening to shake the entire machine apart. He wasn't quite sure what would happen if it spontaneously disassembled while he was in this in-between time and place, but he didn't think he wanted to find out.

A brick flew loose from somewhere behind him and went spinning off into the surrounding storm. He gulped, wondering where in time it would end up landing, and whether the rest of his invention would be following suit soon. He had to find a safe place to land and make repairs, and quickly. But the time machine was a whole different kind of building than what he was used to. He might not be able to fix it without a healthy dose of new building inspiration. Where could he find something to help him – and when?

The future was the obvious answer. Surely someone there would understand time technology and know how to get his invention working properly again. But each time he tried to set a course for a future date, the window in the storm would vanish before he could reach it. It looked like it would have to be the past or nothing...and that gave him an idea.

If the builders of the future couldn't help him, then perhaps the builders of the past could. He would get his inspiration from the inventors of architecture!

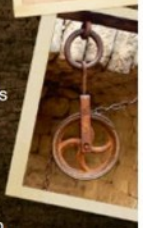


IN THE LATE 1ST CENTURY B.C., THE ROMAN ARCHITECT VITRUVIUS WROTE THAT A GOOD BUILDING SHOULD FOLLOW THREE PRINCIPLES:

FIRMITAS	UTILITAS	VENUSTAS
(DURABILITY)	(UTILITY)	(BEAUTY)

Today, many architects still follow those three key principles!

Long ago, buildings were made based on what was needed and what supplies were available. If a group of people needed shelter, then they had to build it out of whatever they could find around them, like mud and clay. The invention of useful devices like the pulley system (a simple mechanism that helps to lift and move heavy objects) led to improvements in construction. Soon, architects were designing much more complicated and impressive buildings, like the great pyramids of ancient Egypt.



From the earliest civilizations to the modern age, inventions have always guided architecture. Just as the wheel and the pulley let heavy building materials be transported and assembled, so the invention of mathematics has led to the creation of stronger and more stable constructions. And as architecture has progressed, buildings have changed from being simple and basic to detailed and decorative. Through time and practice, trial and error, architectural techniques continue to become more and more advanced.

Does all of that sound familiar? It should. It's the same process that you've gone through in your training as a member of the LEGO® Master Builder Academy...and in a very real way, those early architects were the very first Master Builders!

AROUND THE WORLD

EVERYWHERE HE LOOKED, POINTS OF HISTORY APPEARED AND VANISHED, EACH WITH ITS OWN UNIQUE STYLE OF ARCHITECTURE.

He saw the immense pyramids of Egypt, stone castles in Scotland, the Eiffel Tower of Paris, and a thousand others that came and went too quickly to recognize. There was a 19th century city, over there a Wild West town, and for a brief moment he saw a Tudor-style building that reminded him of the Lost Village Inn.

He needed to pick a destination that he could reach before its window in the time-stream closed, but it couldn't just be any random point in space and time. It had to be somewhere with great architecture and creative minds, where builders knew how to plan out and put together structures that would look good and hold together for generations.

THE TIME MACHINE SHOOK AGAIN. HE DIDN'T HAVE LONG TO DECIDE.

At that moment, two new windows opened up in the whirlwind of time. Through each he could see the face of a building. In the first were the tall columns and archway of an ancient Roman temple, all straight lines and perfect angles. In the second was the tiered roof of a traditional Japanese building, the red wooden gate at its entrance marking it as a shrine.

Though they were very different from each other, each building demonstrated the techniques of a master architect. Either one might be able to give him the inspiration he needed to fix his invention…but which one should he choose?

TIME WAS RUNNING OUT!

THE LEVEL 4 INVENTOR NEEDS TO CHOOSE, BUT YOU DON'T! BUILD THE KIT 11 STAR MODEL AND YOU'LL HAVE TWO SIDES OF ARCHITECTURAL ADVENTURE!

MANY CULTURES THROUGHOUT HISTORY ARE KNOWN FOR THEIR DISTINCT STYLES OF ARCHITECTURE.

The constructions of ancient Rome borrowed and combined elements of Etruscan, Phoenician and Greek architecture, with buildings made of marble or tile-covered concrete and strong pillars that supported the heavy weight of the stone, topped with majestic domes and arches. Classic Roman architecture still has a great influence on many building designs today.

The architecture of historical Japan took a very different direction. Unlike the Roman style, most buildings were made out of wood. Interior walls were thin and often featured sliding doors or movable panels.

The most prominent feature of a traditional Japanese building is its large and impressive roof, with curved eaves, or lower edges, that extend out well beyond the walls.

As you build the Kit 11 star model, think about how the designs of its two sides reflect two very different cultures, each from its own unique geographical location and point in time.

Understanding the unique styling and details of a place's buildings will really help you when you start to design your own WORLD ARCHITECTURE creations!

LEGO® MBA Technique:

HISTORICAL DESIGN

BUILD YOUR MODELS TO FIT A PLACE AND TIME!

Looking at a real building can tell you a lot about the people who built it. A building's design shows its inhabitants' hopes, desires and concerns. It tells you what kinds of tools and materials were available to them, and how they were influenced by other cultures and architectural styles. If you want to make models of buildings that look like they come from a particular time and place, then HISTORICAL DESIGN is the technique for you!

This advanced LEGO® Master Builder technique is about identifying the key structural details of real buildings from all throughout history, and including them in your LEGO brick creations. Here's how to do it!

FIND THE SIMILARITIES

Start out by finding pictures of several real buildings from your chosen time period and location. Compare them and see what design characteristics they have in common, like the style of their rooftops or the shapes of their windows and doors. Make a list of the features that link together buildings from that place and point in history. Those are the features that you want your model to include!

Renaissance Architecture

Europe, early 15th - early 17th centuries

Similarities

Central door
Square shape
Lots of Arches

DOMED ceilings
Columns (Roman-style)
Intricate carved decorations
Windows in side-by-side pairs

PICK OUT A SHAPE

Use your list of similarities to decide on your building's overall SHAPE. If you can find a picture of the real thing taken exactly from the side, that can be really helpful for figuring out the right outline for your model. Pictures taken from several different sides are even better. At this point, you can start sketching out some rough ideas for your model. Try using your brick paper from LEGO MBA Kits 1 and 2!

LOOK AT THE MATERIALS

Now that you have a shape and structure that will place your building in a historical setting, you need to pick out the pieces that you'll be using to build it. Look at the materials that were used to make the real thing – were buildings from that time and place made of stone, wood, or metal and glass? Were they left plain, or brightly painted? Use the MATERIALS technique from Kit 10 to find elements in your LEGO brick collection that have the right shapes, textures, and colors to recreate the appearance of the original building.

START BUILDING!

Now you have everything that you need to design and construct an architectural model from the distant past – and you can use the same techniques and skills to make modern or futuristic buildings, too!

LEGO® MBA Technique:

Architectural Details

DESIGN BUILDINGS WITH EYE-CATCHING DETAILS!

While the Historical Design technique is involved with an architecture model's overall shape and structure, the ARCHITECTURAL DETAILS technique will help you make your creations more realistic, believable, and good-looking down to their smallest details.

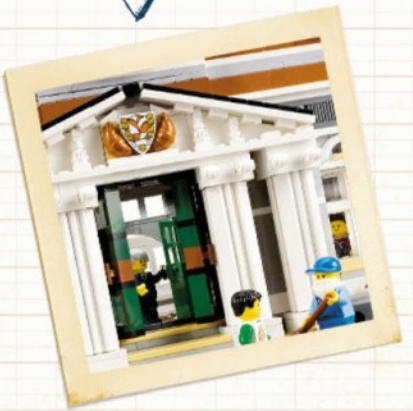
IN THE DETAILS

What are Architectural Details? They're decorative details that are built in, on, and around a piece of architecture. They're the special embellishments that make the difference between a building that's just plain walls and a roof, and one that looks like it was planned out by a master architect.

Architectural Details are often small, but they're designed to stand out and get noticed. They may have a practical use like an elegantly-carved archway, or they may be entirely decorative like a statue. They might reflect the builder's desire to create something that the world has never seen before, or help a building match the appearance of the other ones around it.

Architectural Details make a statement to the viewer about the skill of the designer and the style of the inhabitants. They can be used in competitions between architects as they try to outdo each other with increasingly bold and unusual ideas.

When enough architects adopt a new set of Architectural Details, and those details add up to make a new style of building, and that style becomes unique to a certain time and place... then you can even create a whole new kind of HISTORICAL DESIGN!



USE ARCHITECTURAL DETAILS TO ADD DECORATIONS INTO YOUR BUILDINGS!

IN REAL LIFE

A building's Historical Design can be seen and identified from a distance, but its Architectural Details are usually best viewed from up close. They may be patterns of stones, bricks and tiles, or ornamentation like columns, sculptures, decorative plants, and balconies.

When you walk into a new room, take a look around you and see what Architectural Details you can spot!

IN LEGO® MODELS

Building Architectural Details into a model uses the classic SIZE-SCALING technique, often combined with the SMALL ELEMENTS technique. The bigger the scale of a model, the easier it is to add pieces that represent special details. A minifigure-scale model can be filled with eye-catching decorations, while a microscale model might be too small to have any at all.

EXPERIMENT WITH YOUR LEGO® PIECES AND SEE WHAT FANCY ARCHITECTURAL DETAILS YOU CAN BUILD INTO YOUR ARCHITECTURE MODELS!

BUILD DIFFERENT AWNINGS AND RAILINGS!

INCLUDE DETAILS UNDER ROOF EDGES AND AROUND WINDOWS!

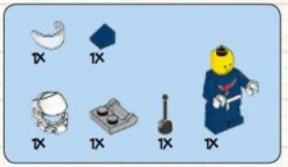
VISIT YOUR KIT 11 DESK AT LEGOmba.com TO FIND OUT MORE ABOUT USING THESE TECHNIQUES!

Time-Rover Build

GEAR FOR ADVENTURES IN TIME!

As the Level 4 LEGO® MBA Minifigure continues his travels through the time-stream, he's built a loyal robotic companion to assist him along the way. The Time-Rover is programmed to investigate time portals, obtain samples from the environments it encounters, and return with its discoveries. With its help, the Minifigure inventor will be able to explore even more points in history as he searches for inspiration for his latest inventions!

Gear up your Minifigure with a new Tempus-11 helmet for protection against time-storms, and an interactive controller so that he can communicate with the Time-Rover on its expeditions!



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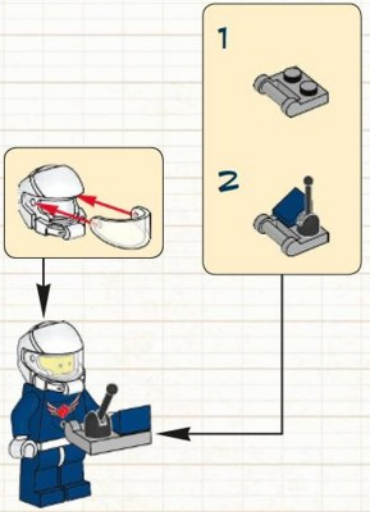

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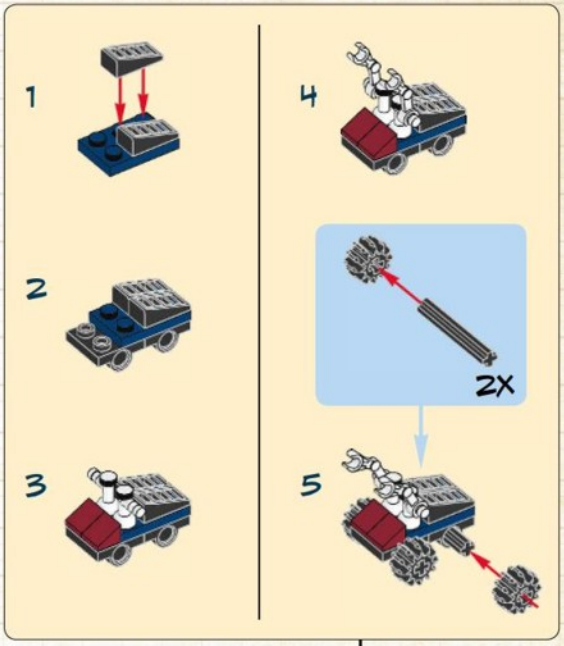
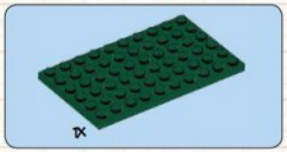


East/West Temple

On one side, the Kit 11 star model is a temple from ancient Roman times. Turn it around, and it's a shrine from Feudal Japan. In the middle is a spinning platform to transport your Level 4 Minifigure inventor through the centuries as you both discover the secrets of World Architecture.

You'll use the new Historical Design and Architectural Details techniques to give the East/West Temple architecture in the styles of two very different cultures and points in history. With practice, you'll be able to expand what you've learned to design realistic buildings from any place and time!

2-IN-1 MODEL!



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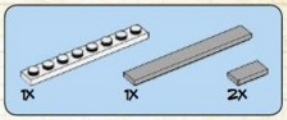

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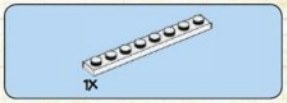

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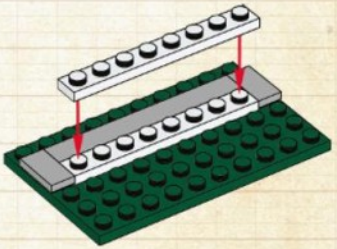
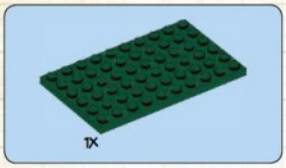


STEP 1 TIP: BUILD ON A BASE

For a stable architectural build, start out on a base plate. If you'll be displaying your model on its own, pick a color that blends in with the building. If you want to place it in a scene, use a base that's the color of the surface underneath, like grass.

HERE'S THE LEGO® MASTER BUILDER TECHNIQUE OF HISTORICAL DESIGN!

The Historical Design technique involves paying attention to your model's history – its where, when, and why. Ancient Roman builders were influenced by Greek architecture, in which temples were elevated above the ground on platforms of smooth stone steps like this one.



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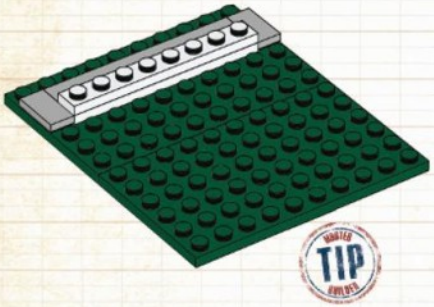

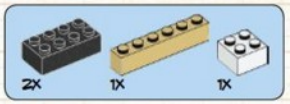

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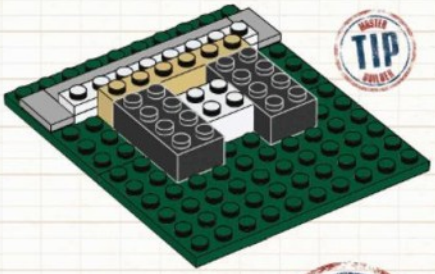


BONUS TIP:

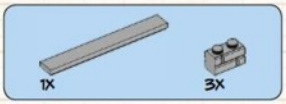
HOLLOW SPACES IN THE FOUNDATION KEEP A MODEL FROM BEING TOO HEAVY!

STEP 4 TIP: ROOM FOR EXPANSION

This model will represent two locations that are half a world and 1500 years apart. A second plate will make sure that you have enough room to build each side with its own separate and unique style.

STEP 5 TIP: SUPPORT YOUR STRUCTURE

The SUPPORT ELEMENTS technique that you learned about in Kit 6 is very important in architecture design. These bricks may end up hidden out of sight, but they'll serve as a strong foundation to support the weight of all of the pieces stacked above them.



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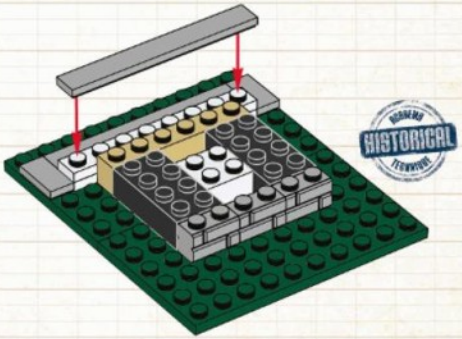

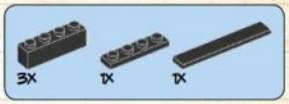

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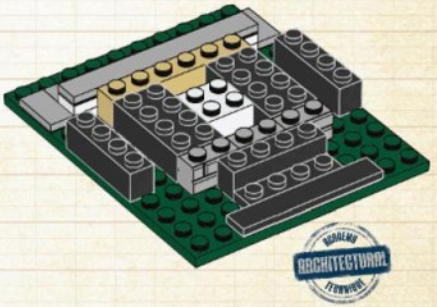
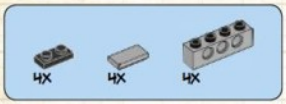


STEP 6 TECHNIQUE: HISTORICAL DESIGN!

In Feudal Japan, most buildings were made out of wood, but shrines could be raised on stone foundations. These 1x2 bricks have a textured pattern that can create the MATERIALS appearance of a brick wall or – as you're using them here – carved and stacked stone blocks.

HERE'S THE LEGO® MASTER BUILDER TECHNIQUE OF ARCHITECTURAL DETAILS!

Architectural Details are special visual elements built into an architecture model that are designed to look good at the scale of the building's inhabitants. The architects of ancient Japan were masters of woodwork, so use a shiny black tile to create an elegant painted and polished wooden step!



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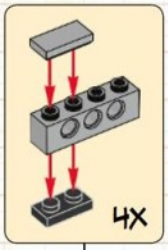

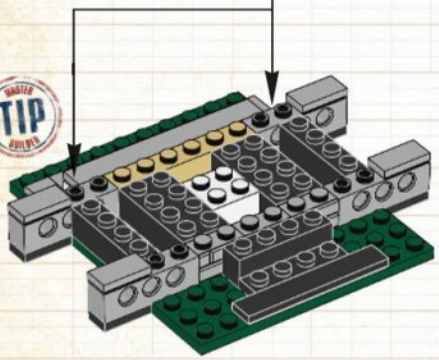

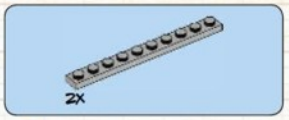

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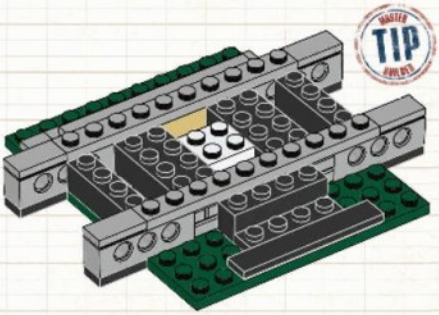
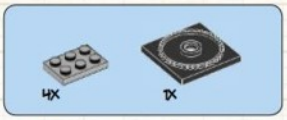


STEP 8 TIP: MAKE CONNECTIONS

Use LEGO® TECHNIC ELEMENTS to add the LEGO MBA MODULAR BUILDING system to your model's sides. Now you'll be able to connect your Time Machine and your other creations to make a bigger adventure!

STEP 9 TIP: FIRM FOUNDATION

LOCK down the bricks of the two-sided temple's foundation to make sure your finished model will hold together when you move it around.



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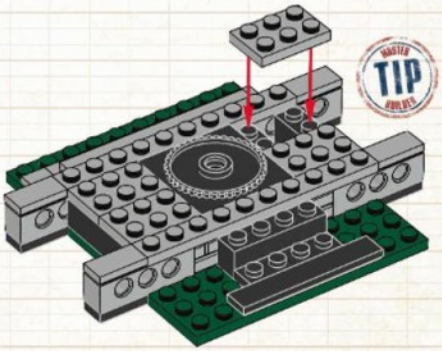

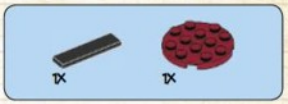

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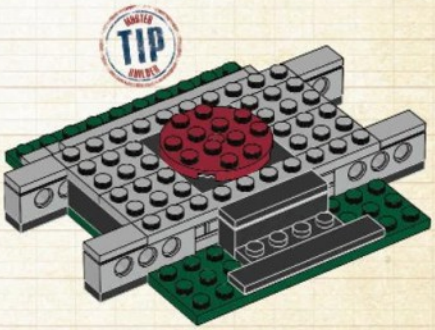
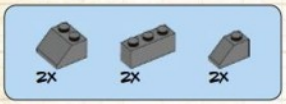


STEP 10 TIP: FLAT FLOOR

Use plates to build a well-supported floor on the temple's raised foundation. This level surface is important for building up your architectural creation's walls and columns.

STEP 11 TIP: ADD AN ADVENTURE FEATURE

Snap a special round plate onto a turntable base to make a spinning platform in the middle of the model. Now your Minifigure inventor will be able to time-travel easily between the historical eras of Ancient Rome and Feudal Japan!



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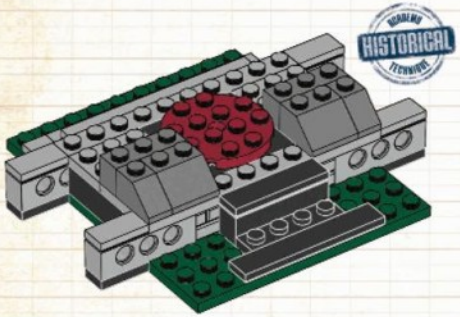

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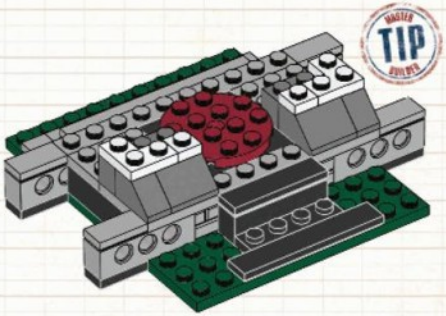
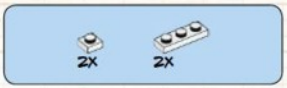


STEP 12 TECHNIQUE: HISTORICAL DESIGN

Earthquakes have been common throughout Japan's history. A wooden building may be easier to rebuild than a stone one, but no one wants a shrine to fall down. A stone base will help keep this building's walls standing strong.

STEP 13 TIP: MATERIAL TRANSITION

The best way to demonstrate different MATERIALS in your architectural build is to make each type of material look distinct from the rest. An abrupt color shift from dark gray to bright white marks the shrine's switch from stone blocks to painted wooden walls.



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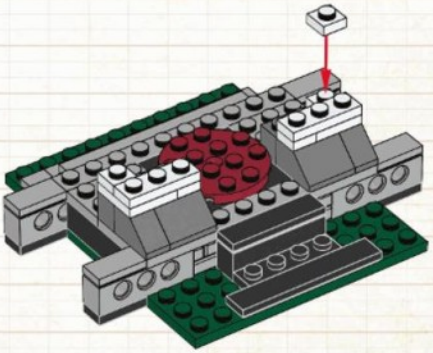

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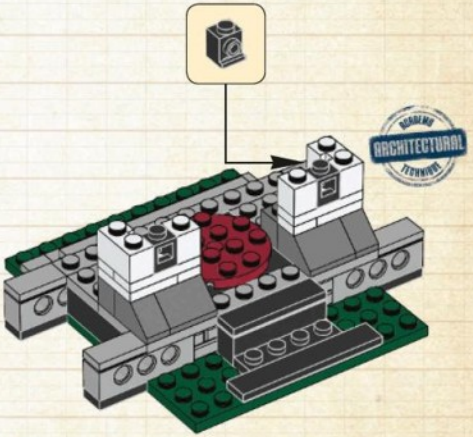
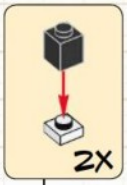
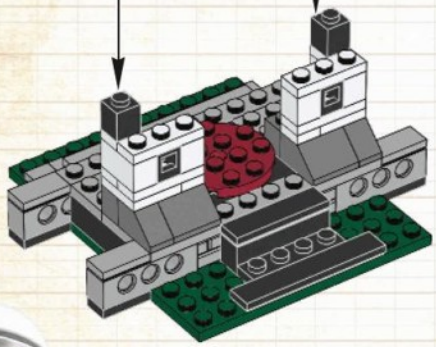


STEP 15 TECHNIQUE: ARCHITECTURAL DETAILS!

Since this model is being built at a smaller-than-minifigure scale (though your Inventor can still interact with it!), its architectural details should be scaled down as well. With the help of the **SIZE-SCALING** technique, you can turn Erling bricks around and use their backs as small, square windows for the shrine.

16





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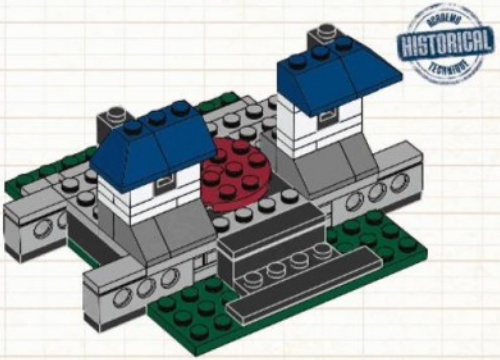
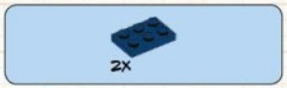


STEP 17 TECHNIQUE: HISTORICAL DESIGN!

The design of the shrine is influenced by the castles of Feudal Japan with their majestic towers, each story topped with a set of spreading, roof-like eaves. Sloped roof bricks are perfect for recreating this design feature that places the model at a specific place and time in history.



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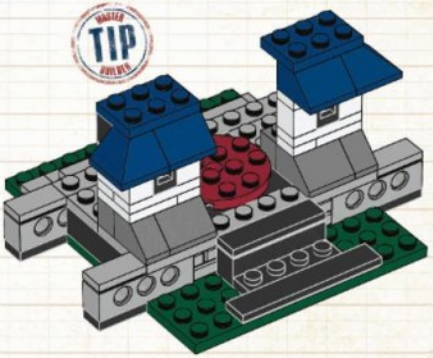

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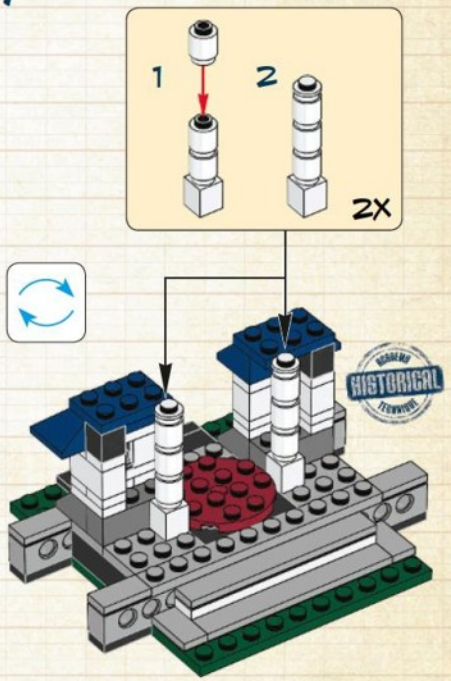


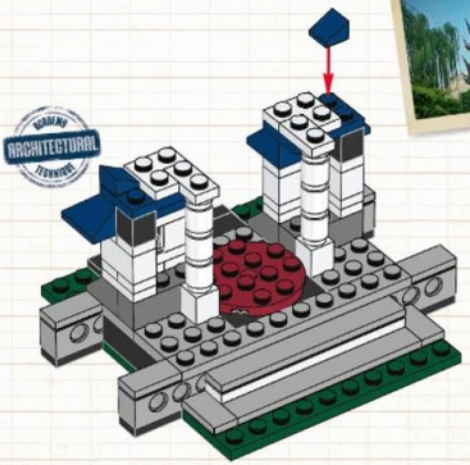
STEP 18 TIP: START A SECOND STORY

LOCK the first-floor eaves down with a pair of plates that will support the next level of the building.

STEP 19 TECHNIQUE: HISTORICAL DESIGN!

By stacking a few round bricks on top of a square one, you can create a column, a simple feature of ancient Greek and Roman architecture that's designed to support a large amount of weight. These two columns, which are smooth in the Tuscan style of Rome, will stand on either side of the temple entrance.

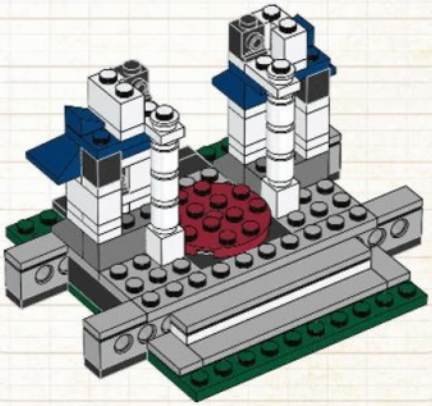
20

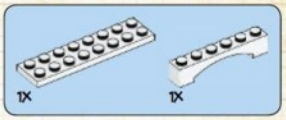


STEP 20 TECHNIQUE: ARCHITECTURAL DETAILS!

The roofs of classic Japanese buildings often have pointed decorative details at their corners. Representing this detail isn't easy at the scale of this model, but you can do it with one of the smallest SMALL ELEMENTS around: the tiny 1x1 'cheese' slope, positioned to form an outward-pointing miniature peak.

21





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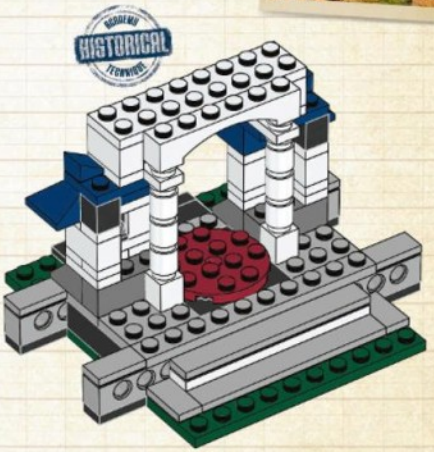
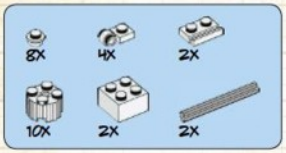


STEP 22 TECHNIQUE: HISTORICAL DESIGN!

In ancient Greek architecture, the tops of columns were connected by a flat, load-bearing slab of stone called a lintel that supported the rest of the structure above. The Romans replaced the lintel with the curved arch, which could support weight over a greater distance, letting them place their columns further apart.



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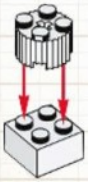

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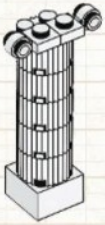


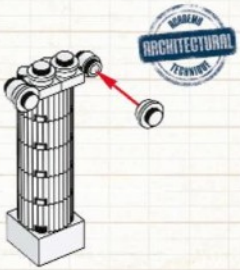
STEP 23.2 TIP: PILLAR OF STRENGTH

You've already built smooth Tuscan columns, but the face of a Roman temple calls for something a little fancier. Use a 2x2 brick to form a solid base and a Technic axle to give this bigger column its internal STABILITY!

STEP 23.3 TECHNIQUE: HISTORICAL DESIGN!

These 2x2 round bricks are textured so that when they're stacked on top of each other, they form a fluted, or vertically grooved, column like the ones found in ancient Greek and Roman buildings.

23.5



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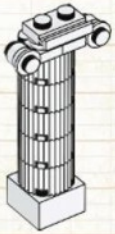
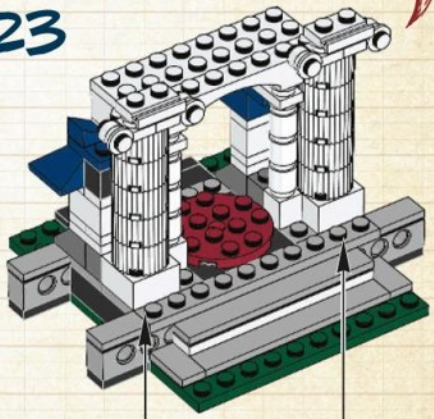


2X

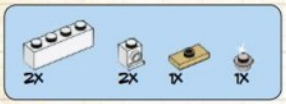
THE THREE CLASSICAL ORDERS OF ANCIENT GREEK ARCHITECTURE:
1) DORIC 2) IONIC 3) CORINTHIAN

23



STEP 23.5 TECHNIQUE: ARCHITECTURAL DETAILS!

The Romans adopted several different types of Greek columns, which can be distinguished by the designs at their tops. By using SIDEWAYS BUILDING, you can create the recognizable volutes, or scroll-like ornaments, at the top of a classic Ionic column.



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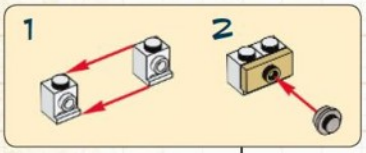

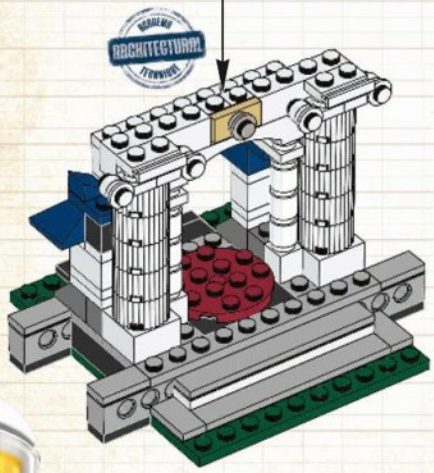

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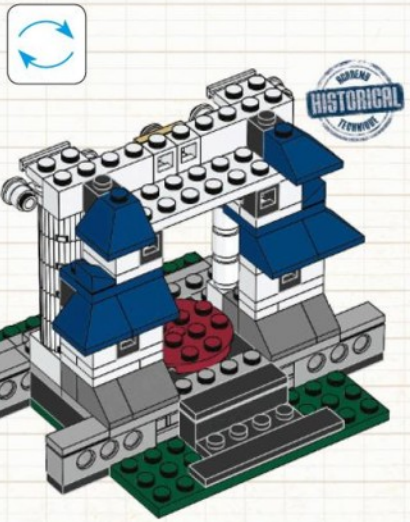
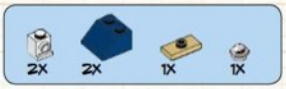


STEP 24 TECHNIQUE: ARCHITECTURAL DETAILS!

Ancient Roman temples often had decorations to tell stories or honor the gods. SIDEWAYS BUILDING and the MATERIALS technique will give your model a metal ornament for a spot of color over its entrance archway.

STEP 25 TECHNIQUE: HISTORICAL DESIGN!

By stacking square levels and sloped eaves, you give the shrine side of your model a pagoda-style tiered roof. In addition to being beautiful, pagodas are also extremely resistant to earthquakes!



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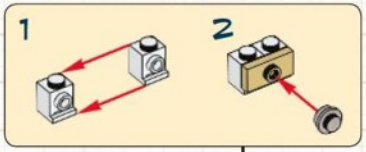

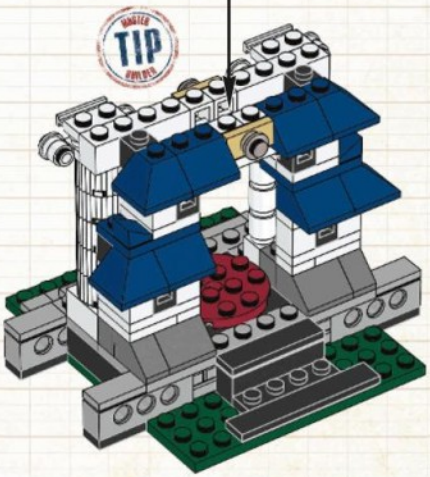

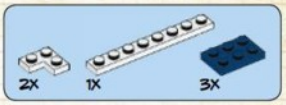

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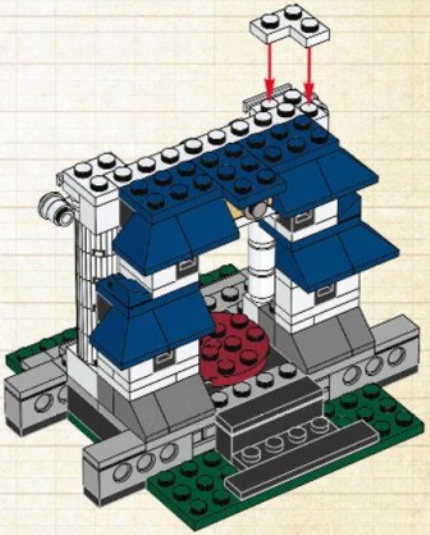
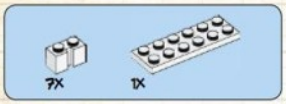


STEP 26 TIP: BUILD A STORY

Japanese architecture can include ornaments, too. Is the fact that the decoration is the same on both buildings only coincidence...or a STORY BUILDING detail that connects the temple and shrine through the centuries? That sounds like a mystery for your Minifigure inventor to investigate!



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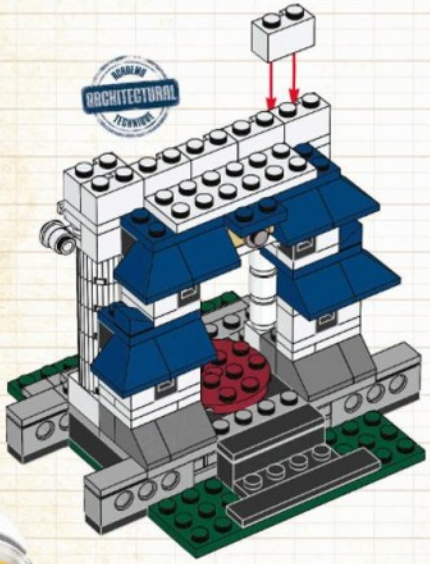

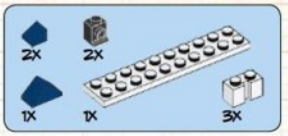

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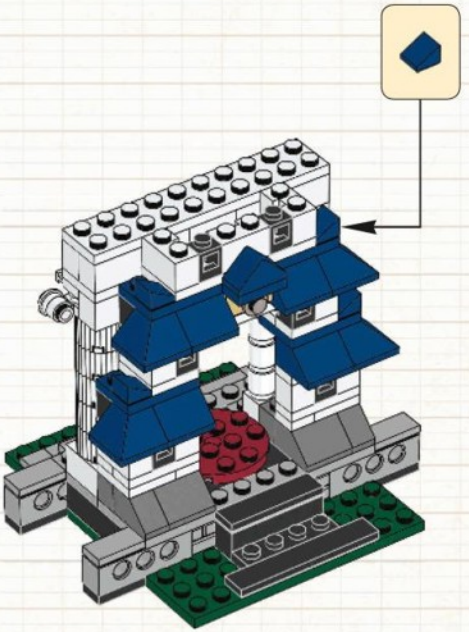
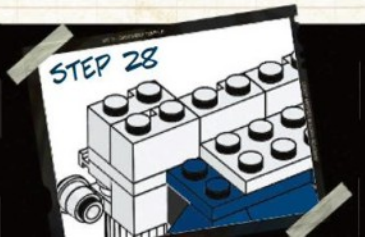


STEP 28 TECHNIQUE: ARCHITECTURAL DETAILS!

You've already used some of these grooved bricks on the other side of your model, but you turned them around to keep the wooden walls of the Japanese shrine smooth. This time, the grooves face outward on the Roman temple side to create a decorative frieze. On a full-sized temple, the frieze might be full of sculpted pictures or battle scenes.



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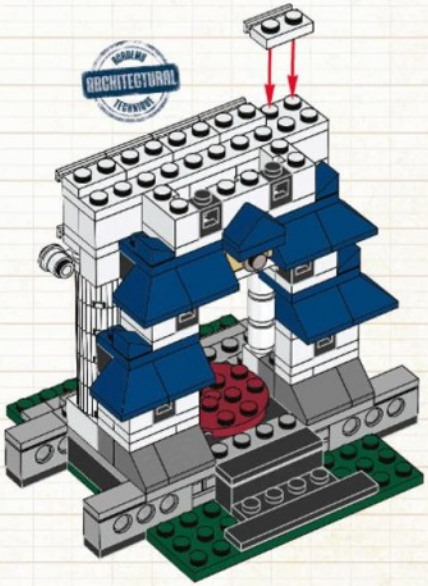

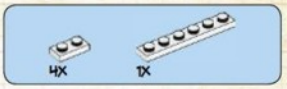

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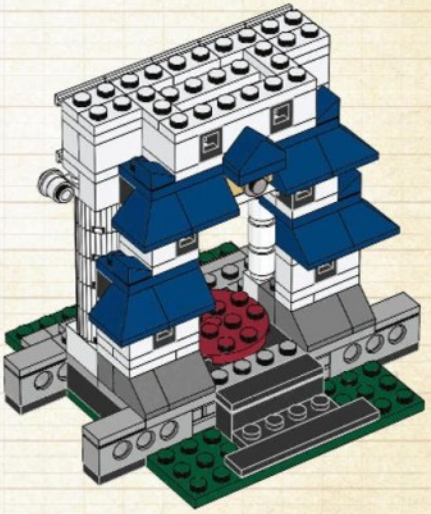
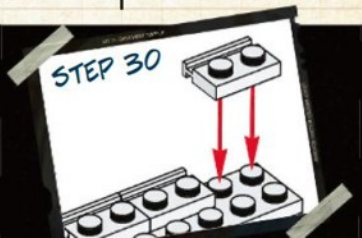
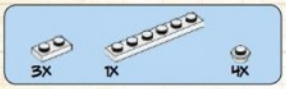


STEP 30 TECHNIQUE: ARCHITECTURAL DETAILS!

The horizontal rails on these plates look good above the vertical grooves of the frieze. Architects often break up large, plain walls with grooves and other repeating patterns. They add texture and character to the face of a building.





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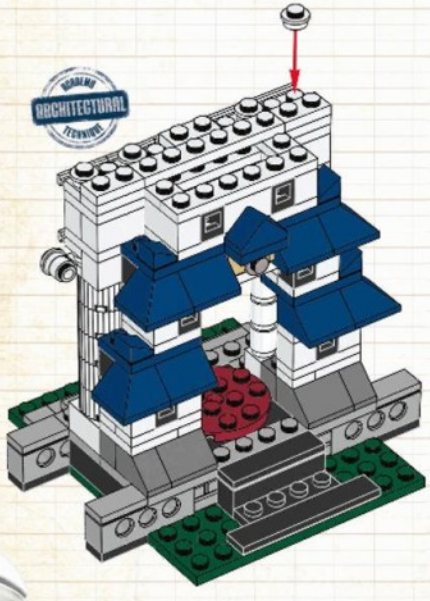

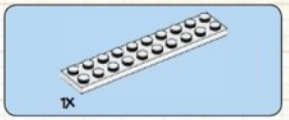

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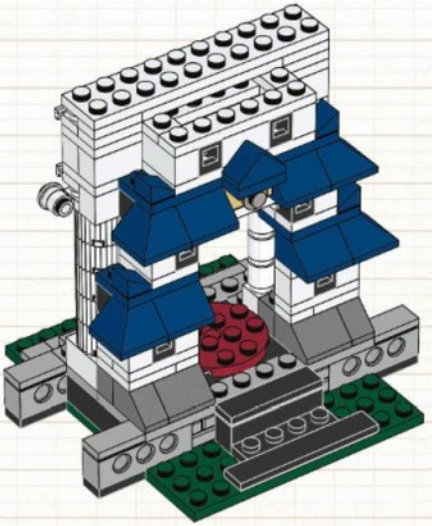
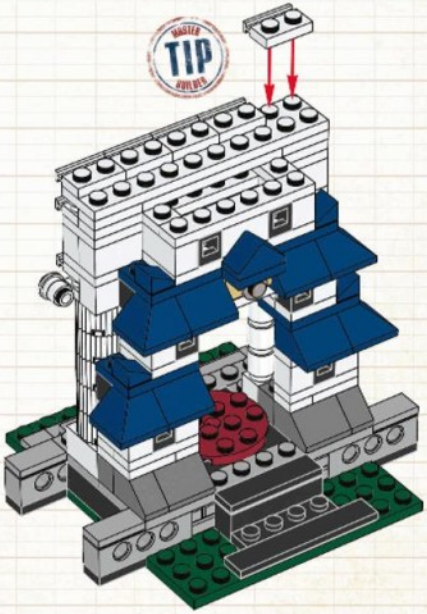


STEP 32 TECHNIQUE: ARCHITECTURAL DETAILS!

By filling some of this space with **SMALL ELEMENTS** and leaving other parts empty, you create another row of decorations for your Roman temple. Like the frieze, this section of the real thing could be filled with all kinds of imaginative sculpted details.

34



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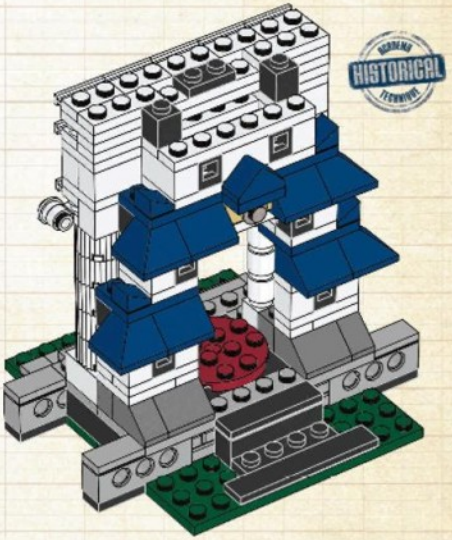
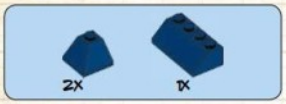


STEP 34 TIP: REAL-WORLD ARCHITECTURE

Not only does this row of plates with slide rails complete the look of the row of decorations, but the projecting rail also replicates the upturned edge of a roof to channel rainwater and prevent it from damaging the sculptures underneath.

STEP 35 TECHNIQUE: HISTORICAL DESIGN!

Each new level of the shrine is smaller than the one below it. This tapering design gives your model a distinctive SHAPE that's true to historical Japanese architecture.



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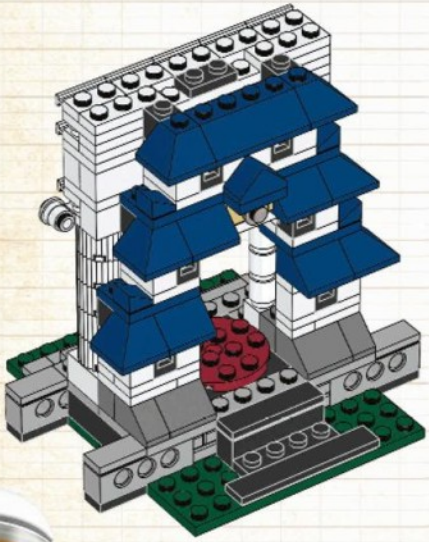

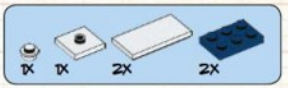

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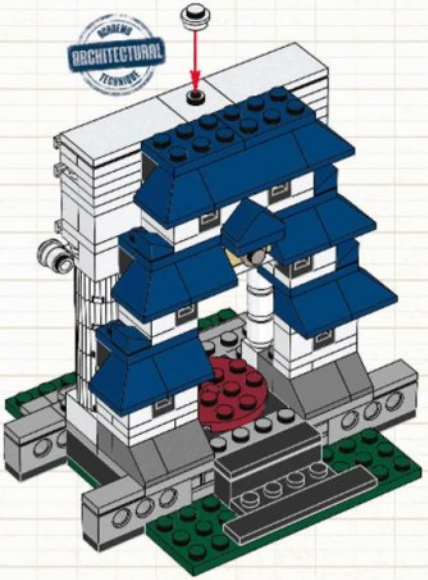
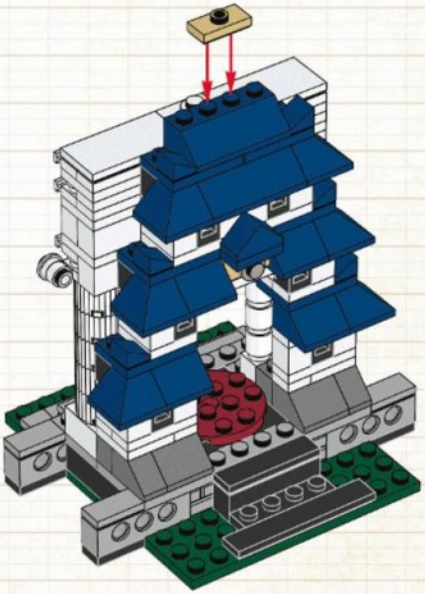


STEP 37 TECHNIQUE: ARCHITECTURAL DETAILS!

A roof of smooth tiles completes the MATERIALS appearance of polished stone. The little round plate in the middle may not look impressive to you, but from the perspective of a minifigure standing down on the ground, it's the highest point on the temple – perhaps a statue of the Emperor of Rome himself!

38



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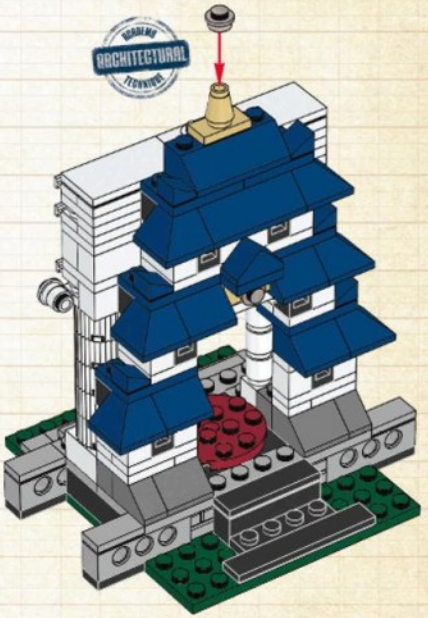
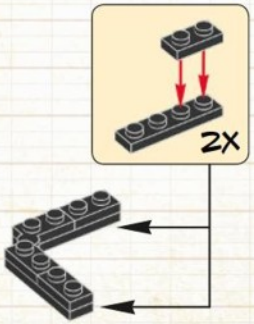


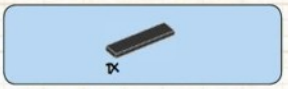
STEP 39 TECHNIQUE: ARCHITECTURAL DETAILS!

The shrine has a decoration on top of its roof as well: a bare wooden spire capped with rare and precious metal. Placed way up here, it draws the viewer's attention and admiration to the building's striking triangular design.

40.1

40.2





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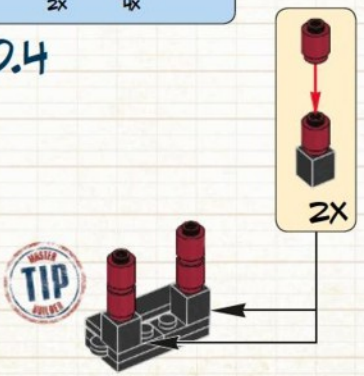
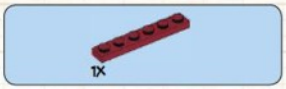


STEP 40.1 TECHNIQUE: HISTORICAL DESIGN!

Your shrine is missing an important part: the torii gate that will stand before its entrance. Just like the arch is a signature part of Roman architecture, the torii is a key element of a Japanese shrine, marking the transition from the mundane world to the spiritual one.

STEP 40.4 TIP: AUTHENTIC COLORS

Traditional torii like this one are made of wood and either left bare or painted, with the base of each leg (nemaki) colored black, and most of the rest of the gate colored red.



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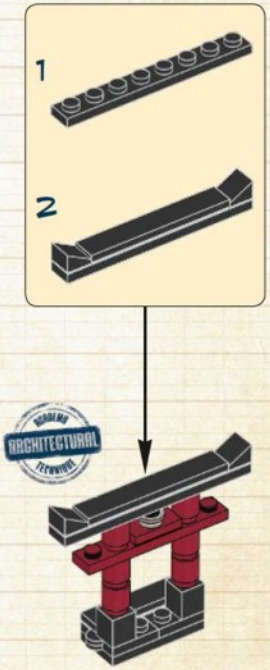


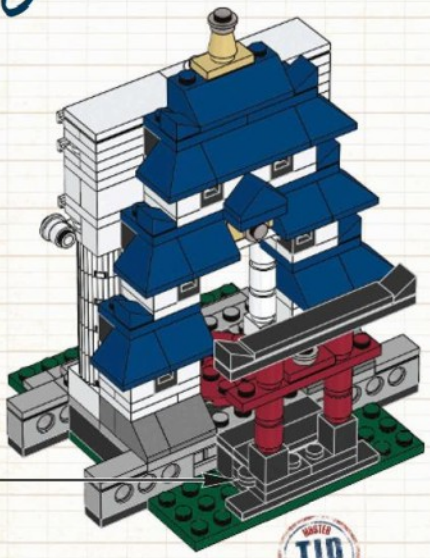
STEP 40.6 TIP: LOOK AT REFERENCES

Torii have a very specific shape, and it's important to capture it properly with your bricks. Remember to look at pictures of the real thing when you're trying to recreate an iconic piece of architecture!

STEP 40.7 TECHNIQUE: ARCHITECTURAL DETAILS!

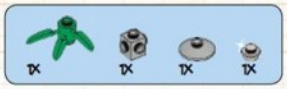
The top section of a torii is called the kasagi. Colored black like the nemaki at the bottom, it often has an upwards curve at its ends that you can duplicate with a pair of 'cheese' slopes.

40



STEP 40 TIP: PRACTICAL FEATURES

Visitors to a real Japanese shrine would walk through the torii at its entrance before going inside. Because you've built this model at a small scale, though, your Minifigure can't fit through. Fortunately, you've solved this problem by building in a useful HIDDEN FEATURE – a hinge to let the gate swing out of the way!



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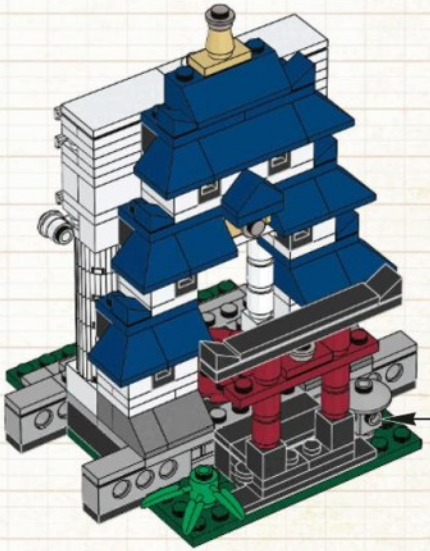
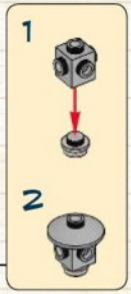
YOU'VE BUILT THE EAST/WEST TEMPLE! WHICH SIDE WILL YOUR MINIFIGURE INVENTOR VISIT FIRST... AND WHAT WILL HE DISCOVER THERE?





STEP 41 TECHNIQUE: ARCHITECTURAL DETAILS!

Complete your model with a plant and a traditional stone lantern, or ishi-doro, to help visitors find their way to the shrine. Just like the Romans borrowed from Greek architecture, historical Japanese builders were influenced by China, where lanterns like this one first appeared. When you're designing models based on real architecture, see if you can find out what inspired the original architects!

Kit 11

SPRINGBOARD MODELS

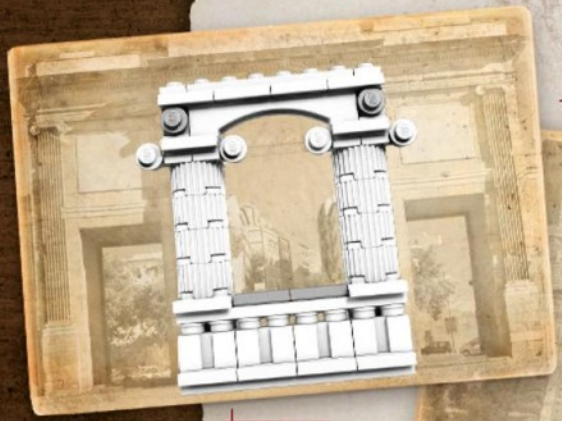
ARE YOU LOOKING FOR A WAY TO JUMPSTART YOUR OWN ARCHITECTURE MODELS? LOOK NO FURTHER, BECAUSE THESE WORLD ARCHITECTURE SPRINGBOARDS ARE HERE TO HELP!

Each of the Kit 11 springboard models is a component of a larger structure or scene that's designed to get you familiar with styles of architecture from different points in history all around the world. Whether you want to make a building model in microscale or minifigure scale, from the ancient past or modern times, they'll give you ideas that can help you get started on your next big architectural creation.

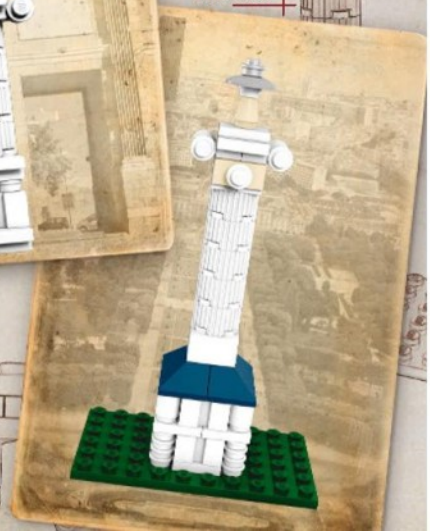
Build these springboard models from the pieces in your World Architecture kit and find out how the LEGO® Master Builders used the HISTORICAL DESIGN and ARCHITECTURAL DETAILS techniques to make them good-looking and strong, just like the real buildings that inspired them!

You'll find building steps for three all-new springboard models on the following pages of your handbook, and instructions for assembling seven more in your Kit 11 To-Do List on the LEGO Master Builder Academy website.

Dog House



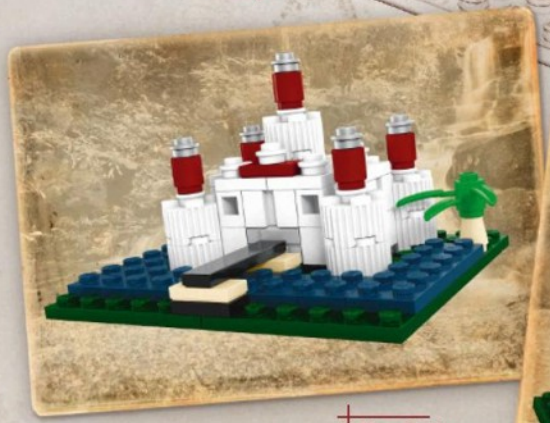
Monument



Temple Window

Gateway

Fireplace



Micro Castle

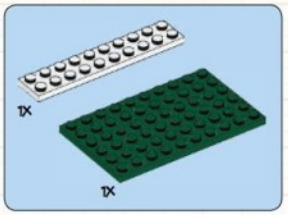
Market Stand

YOU'LL FIND **BUILDING INSTRUCTIONS** FOR ALL OF THESE SPRINGBOARD MODELS AT YOUR **KIT 11 DESK** ON **LEGO**mba.com!

Roman Window

A master architect takes pride in every part of a building. That's why this window isn't just a simple hole in a wall to let the sunlight through, but a decorative and functional architectural feature fit for a temple or a fine home in ancient Rome.

You can build the Roman Window directly into your models, or assemble it on its own to see what new building designs it inspires you to create!



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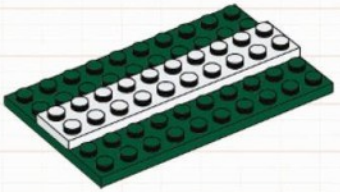

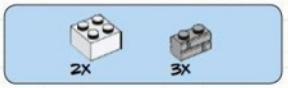

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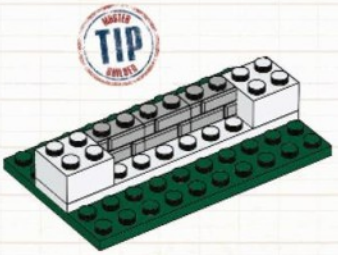
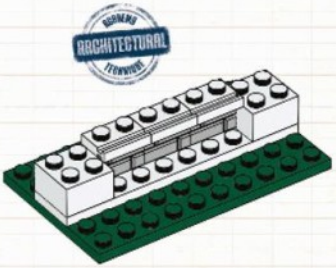
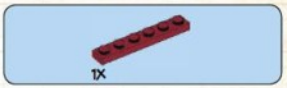


STEP 2 TIP: MAKE IT LOOK BUILT

A believable architectural creation looks like it was built out of real MATERIALS. Bricks with different colors and textures create a strong foundation of marble and stacked gray stones that will support the window from underneath.

3





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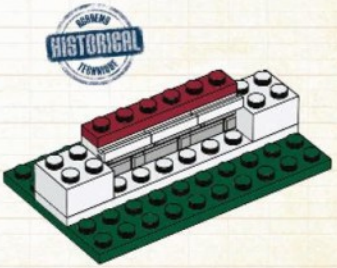
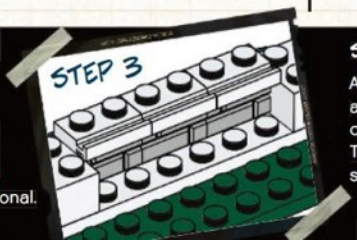


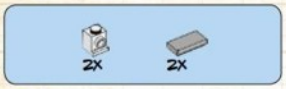
STEP 3 TECHNIQUE:
ARCHITECTURAL DETAILS!

A row of plates with slide rails adds a decorative three-dimensional detail that gives the window a sense of artistry, making it more than just functional.



STEP 4 TECHNIQUE: HISTORICAL DESIGN!

Although you may be used to seeing ancient Greek and Roman buildings as plain white, they were often colorfully painted, especially in white, blue and red. This plate is the start of a historically-inspired COLOR scheme for your springboard model!



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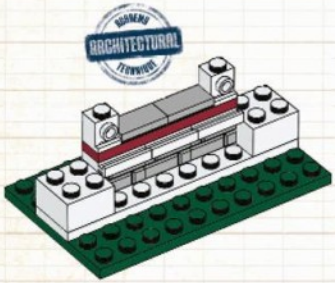

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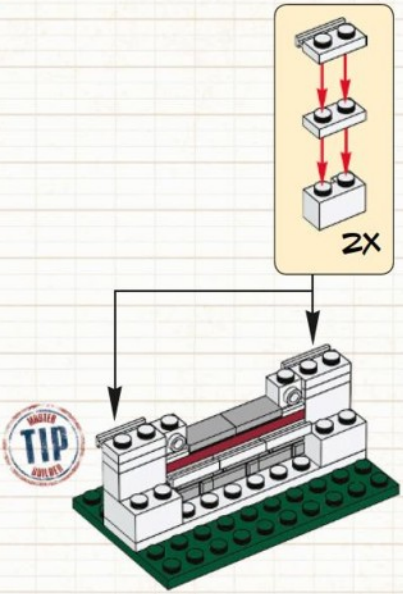
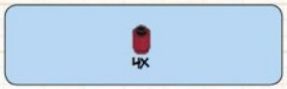


STEP 5 TECHNIQUE: ARCHITECTURAL DETAILS!

Details like these two gray tiles may not be necessary, but a building's inhabitants really appreciate them. Their contrasting color makes the window frame more interesting to look at, and the smooth surface is nice to lean on.

STEP 6 TIP: DETAILS ON BOTH SIDES

Every window has two sides. Give the people inside this building some artistic decorations of their own with a pair of plates with slide rails that point inwards.



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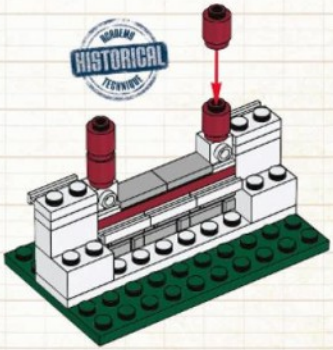

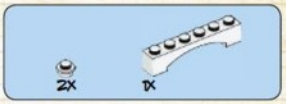

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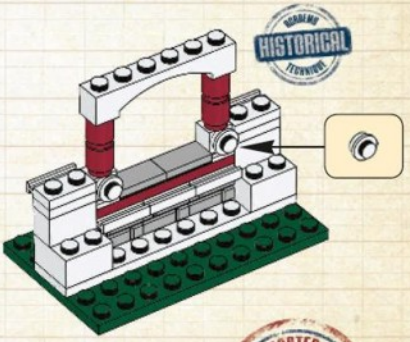


BONUS TIP:
A PAIR OF SMALL ELEMENTS ADDS EXTRA DEPTH AND ARCHITECTURAL DETAILS TO THE COLUMNS' BASES!

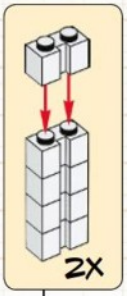
STEP 7 TECHNIQUE: HISTORICAL DESIGN!

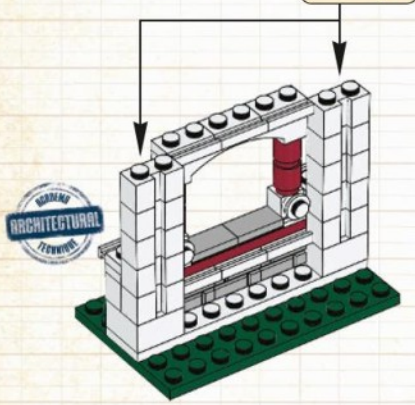
Continue the color scheme you've begun with some red round bricks, stacked on top of each other to create a pair of small SUPPORT columns. Pillars like these are characteristic of both ancient Greek architecture and the Roman style that came after it. So how can you tell the difference between them?

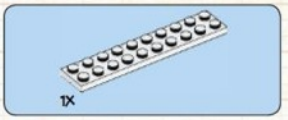
STEP 8 TECHNIQUE: HISTORICAL DESIGN!

The answer: look for the arch! Of the two styles of architecture, only the Romans were well-known for placing weight-bearing arches between their columns.

9







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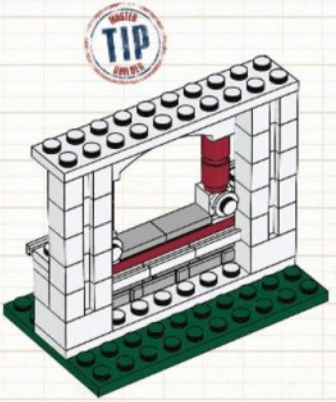
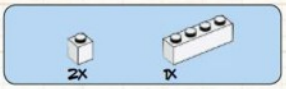


STEP 9 TECHNIQUE: ARCHITECTURAL DETAILS!

A stack of grooved bricks makes the difference between a simple wall of plain marble blocks and one that a craftsperson (or crafts-minifigure!) has taken the time to carve and decorate.

STEP 10 TIP: LOCK THE COMPONENTS

LOCK the three sections of your window frame together with a single long plate. Now you've got a good building surface for adding an awning, a roof, or a second floor above this one.



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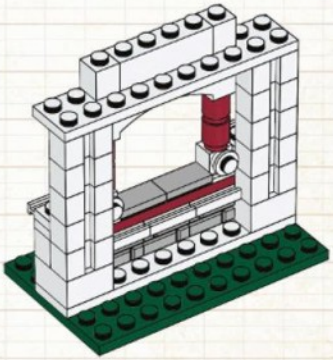

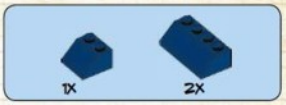

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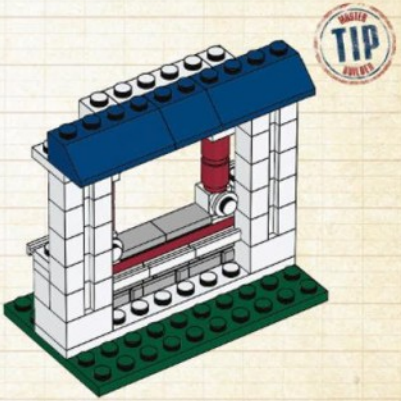
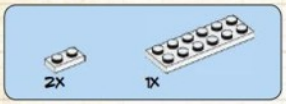


STEP 12 TIP: KEEP OUT THE RAIN

Only the wealthiest citizens of ancient Rome could afford glass for their windows. Everyone else had to keep out the wind and rain the old-fashioned way, like with a painted stone overhang. These sloped roof bricks complete the window's COLOR scheme!



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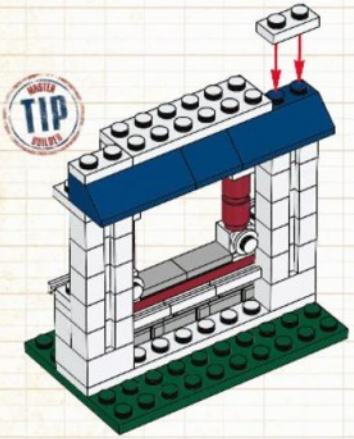

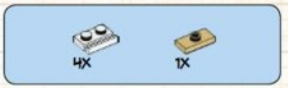

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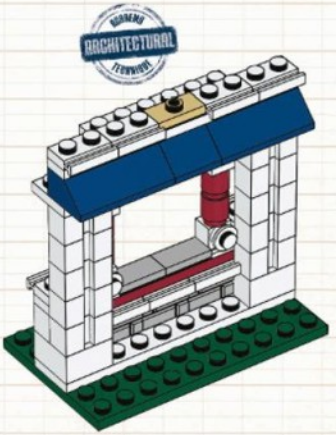


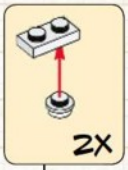
STEP 13 TIP: BUILD TO LAST

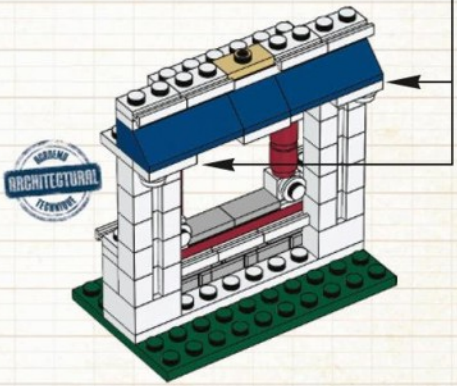
Want this ancient window to still be standing after 2,000 years? Think like a great architect and use LOCKING over and over again for a model with plenty of STABILITY.

STEP 14 TECHNIQUE: ARCHITECTURAL DETAILS!

The single stud in the center of this jumper plate will make it easy for you to add a special detail like a statue or other ornament to the top of your model. Try a minifigure head to represent the sculpted bust of a famous emperor or general!

15

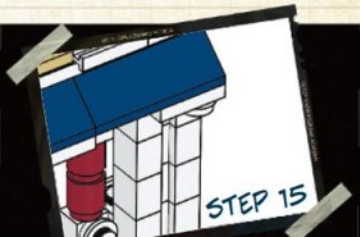




YOU'VE BUILT A WINDOW RIGHT OUT OF ANCIENT ROME! NOW YOU JUST NEED TO DECIDE WHAT KIND OF BUILDING TO DESIGN AROUND IT. TRY LINING UP MULTIPLE WINDOWS TO CREATE A WHOLE WALL!

STEP 15 TECHNIQUE: ARCHITECTURAL DETAILS!

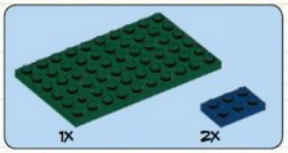
Look for new and unexpected places where you can add extra detail onto an architectural creation. These additions may be tough to spot from above, but from a passing minifigure's point of view, they're great eye-catching decorations.



Spanish Fountain

Not every architectural feature has to be built into a building's walls. Some, like the ornate Spanish Fountain, are designed to stand separately and complement the structures around them.

Place this springboard model wherever it looks best near or even inside your creations. Whether your setting is in the past or present, it's sure to enhance your latest World Architecture masterpiece!



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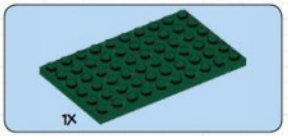

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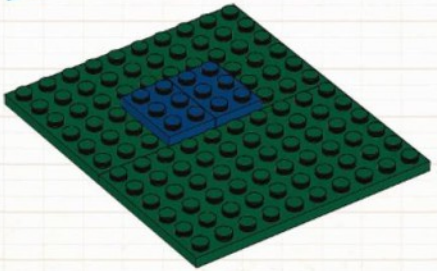
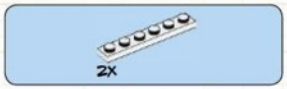


STEP 1 TIP: START WITH THE BASICS

Even before you get into historical settings and architectural features, make sure that your creation can be clearly recognized. What does every fountain have in common? Water, of course – so use blue plates and the NATURE DETAILS technique to make some!



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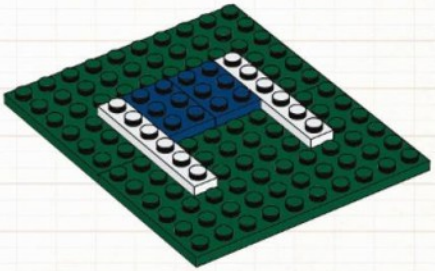
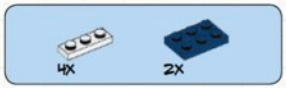




4

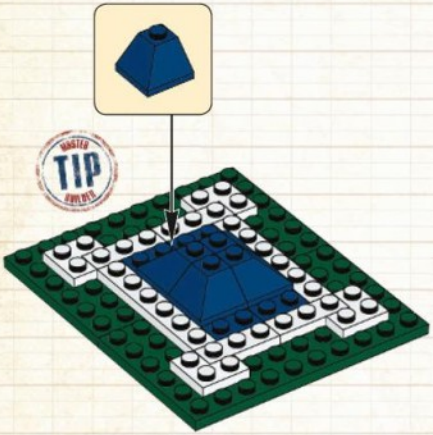
ARTISTIC ARCHITECTURE

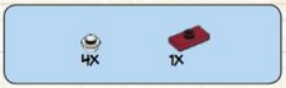
Like many types of ornamental structures, there's no one right way to build a Spanish fountain. Try taking a look at different examples, picking out your favorite features and colors, and then using your imagination to come up with something new, just like the LEGO® Master Builders did when they designed this springboard model!

STEP 4 TECHNIQUE: HISTORICAL DESIGN!

This style of fountain doesn't belong to any single point in history, but you can still look at some common features of Spanish fountains over the centuries and capture them in your creation. Start by building the first layer of a walled basin to contain the water inside.

5





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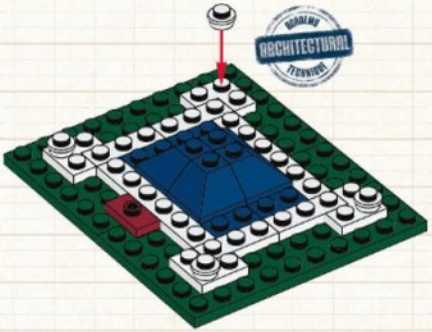
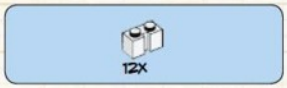


STEP 5 TIP: DOWNHILL FLOW

When building the base of the fountain's central spire, remember that there's water flowing down over it and use blue elements instead of white. The sloped shape of these roof corners will give the spire a wide foundation for extra STABILITY, too!

STEP 6 TECHNIQUE: ARCHITECTURAL DETAILS!

These round plates aren't a necessary part of the fountain's function. Instead, they're decorations that give viewers something interesting to look at. It's an example of how SMALL ELEMENTS are great for adding architectural details to your models.



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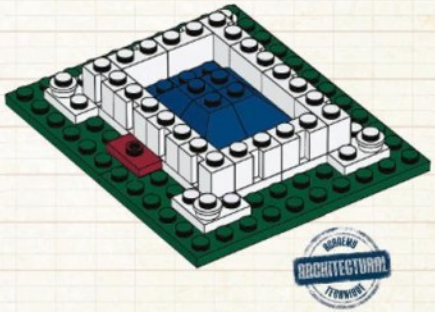

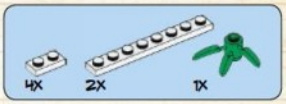

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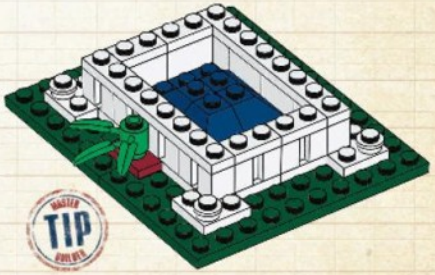


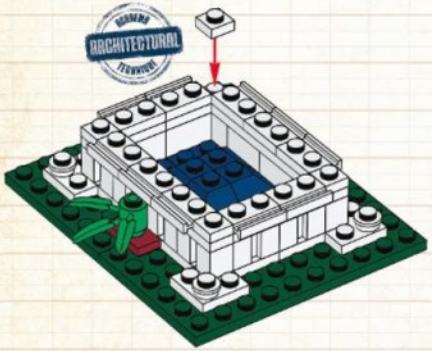
STEP 7 TECHNIQUE: ARCHITECTURAL DETAILS!

Bricks with special textures are some of the best pieces you can use for making fancy architecture, since they combine construction and details in a single element. Thanks to these grooved 1x2 bricks, you've created a repeating pattern all around the fountain wall.

STEP 8 TIP: LIFE AND COLOR

The water in a fountain often splashes onto the ground outside, making it an ideal place for plants to grow. Attach a leaf element to a one-stud jumper plate to create a NATURE DETAIL that will make your fountain look even more vibrant and lifelike.

9



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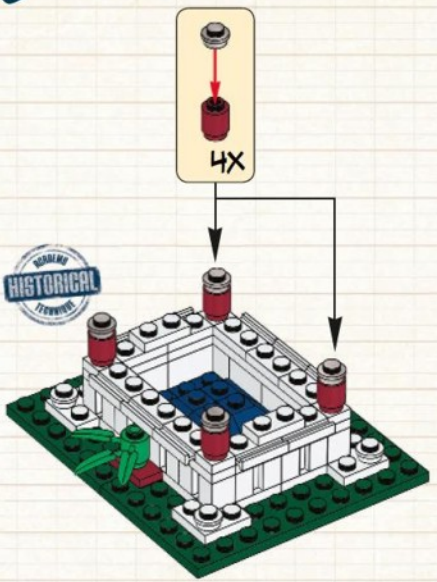
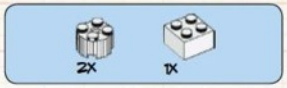


STEP 9 TECHNIQUE: ARCHITECTURAL DETAILS!

Plates with slide rails add extra depth and ornamentation to the fountain's surrounding wall, and also provide a ledge for minifigures to sit and take in the view.

STEP 10 TECHNIQUE: HISTORICAL DESIGN!

Classical Spanish fountains were sometimes decorated with carved statues. Place a round brick capped with a round plate on each corner of the wall to make a set of sculptures for visitors to admire!



11.1

11.2

11.3

11.4

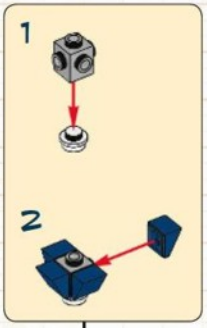
STEP 11.1 TECHNIQUE: ARCHITECTURAL DETAILS!

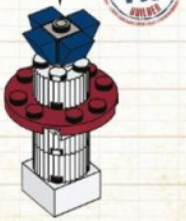
The round bricks that you use to make grooved columns can also be stacked to add patterning to any pillar-like structure, including a fountain's central spire.

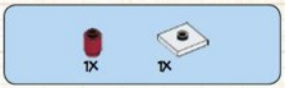
STEP 11.3 TECHNIQUE: HISTORICAL DESIGN!

This style of fountain often has a smaller basin or platform partway up the central spire for the water to run and splash down. Interrupting the straight vertical line of the spire will also keep it from looking too much like a simple column.

11.5







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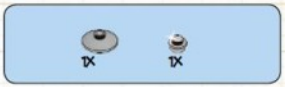

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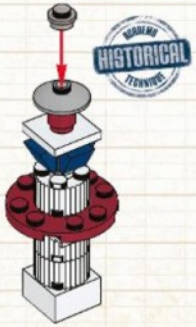


STEP 11.5 TIP: MAKE A SPLASH

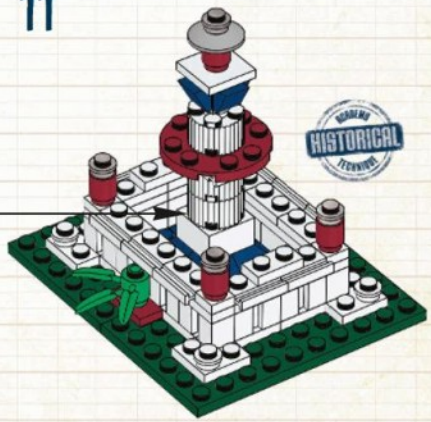
To make it appear that water is bursting out of the spire, use SIDEWAYS BUILDING to attach blue 'cheese' slopes to a 1x1 brick with side-studs.

STEP 11.7 TECHNIQUE: HISTORICAL DESIGN!

This sculpture matches the STYLING of the ones on the basin wall below. A small extra dish element draws the viewer's eye to the very top of the fountain.

YOU'VE BUILT AN ELEGANT SPANISH-STYLE FOUNTAIN! WILL IT DECORATE A TOWN SQUARE, A CITY PARK, OR THE COURTYARD OF A WEALTHY PALACE?

11



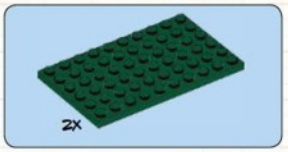
STEP 11 TECHNIQUE: HISTORICAL DESIGN!

Historically, fountains were used for drinking and washing, but most today are purely decorative. The function of this springboard model will depend on where – and when – you place it!

Asian Gazebo

With its open sides and covered roof, a gazebo provides a welcome spot of shade and shelter for people to stop and look out at the scenery.

The right choice of details can turn even the most everyday structure into something that fits a particular style of architecture. Once you've built the Asian Gazebo, try using the same techniques to design a whole world around it!



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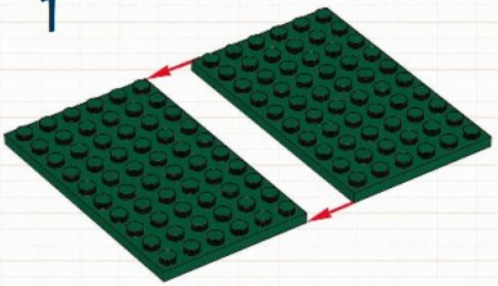

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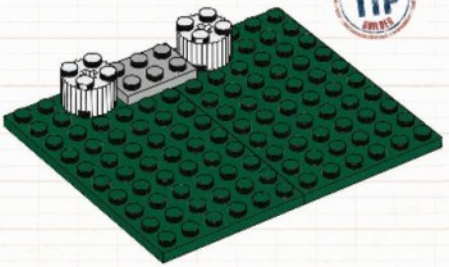
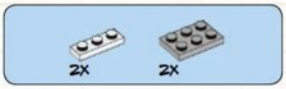


STEP 2 TIP: SIDEWAYS SHUFFLE

Instead of placing your model in the center of its base, try shifting it a little to one side. In addition to creating more room for story-telling and action, this can make your entire construction appear more dynamic. It's an architectural trick discovered by the ancient Greeks!



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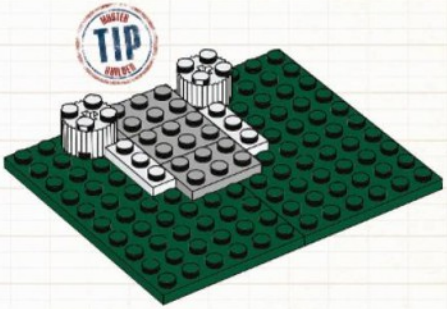

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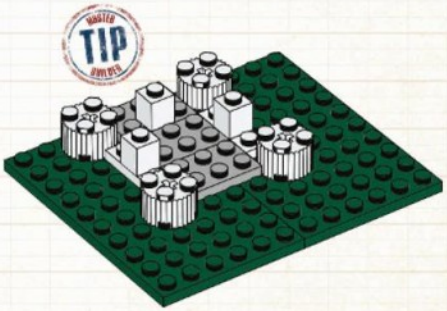


GAZEBOS

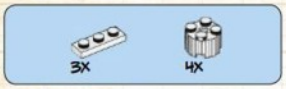
Gazebos are often built in parks, gardens, and other open areas. They can be large or small, simple or highly decorative. A gazebo makes a great architectural addition to an outdoor scene!

STEP 3 TIP: MIX YOUR MATERIALS

Gray plates make a good stone foundation, while white plates become the base of a painted wooden handrail. Using the MATERIALS technique to create the look of different types of building materials is very important for architecture model design.

STEP 4 TIP: THOUGHTFUL SCALING

The SIZE-SCALING technique is important, too. You may not have room to create a detailed line of handrail support posts, but one 1x1 brick in the center of each railing's base will give your model a scaled-down approximation of the real look.



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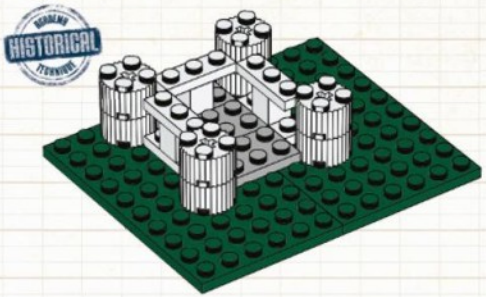

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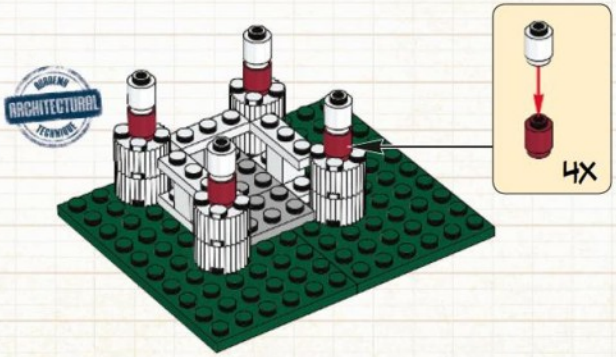


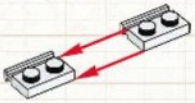
STEP 5 TECHNIQUE: HISTORICAL DESIGN!

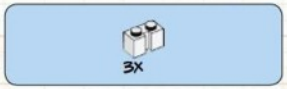
Gazebos come in many shapes and styles, but one common element is that they always have open sides. To support a sturdy roof without walls, use 2x2 round bricks as the SUPPORT bases for a set of corner columns.

STEP 6 TECHNIQUE: ARCHITECTURAL DETAILS!

Multi-colored columns aren't a necessary part of a gazebo's design, but minifigure visitors will appreciate them. You could have stacked more 2x2 round bricks to make thick, solid pillars, but these smaller 1x1 pieces will open up the sides and create a lighter and friendlier-looking structure.

7.1





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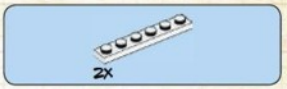

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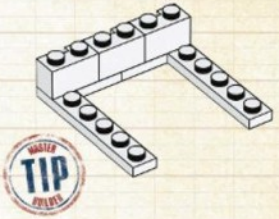

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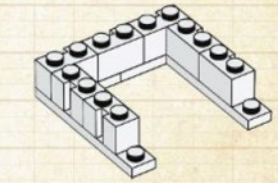
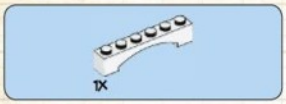


STEP 7.2 TECHNIQUE: ARCHITECTURAL DETAILS!

Patterned bricks make adding architectural details to a model quick and easy. Just change the number of grooves that face out, and you'll have new walls with brand-new patterns!

STEP 7.3 TIP: PLAN FOR STRUCTURE

Use the overhanging edges from the last step to build a SUPPORT frame for the roof. By making the roof's frame a little larger than the railing below, you can give the gazebo a big, decorative top and a more spacious interior.



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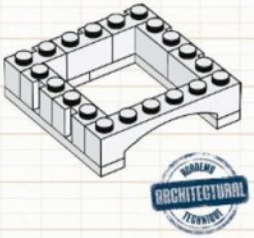

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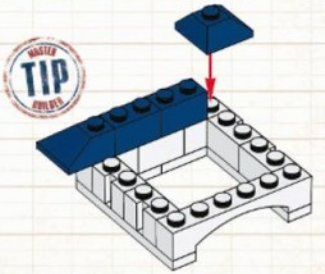


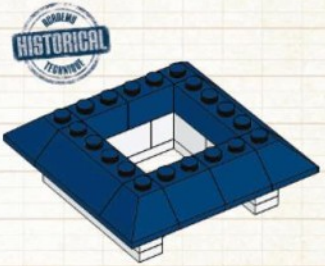
STEP 7.5 TECHNIQUE:
ARCHITECTURAL DETAILS!

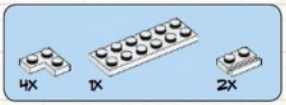
The mighty arch will LOCK the gazebo's entire frame together. It also provides an elegant raised entrance for minifigures to walk through without bumping their heads.

STEP 7.6 TIP: MADE FOR THE JOB

There are lots of different elements that you can use to build a sloped roof, but sometimes it's good to go back to the basics. LEGO® roof bricks are textured like brick or stone and come in several different shapes, including simple slopes for the middle of a roof and corner slopes for the edges.

7.7





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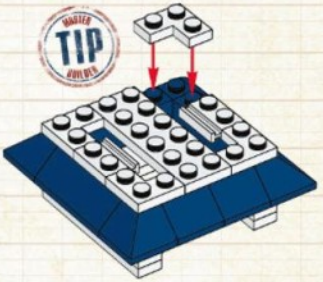


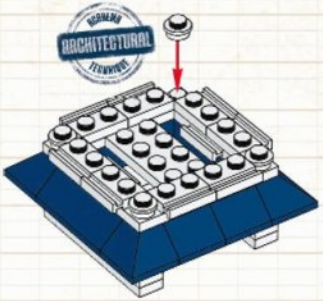
STEP 7.7 TECHNIQUE: HISTORICAL DESIGN!

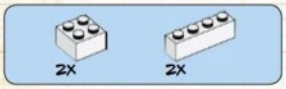
For a classic gazebo roof, create a symmetrical **SHAPE** that angles down evenly on all sides. The edges should stick out beyond the base to create a nice shady area below.

STEP 7.8 TIP: HIDDEN STRUCTURE

With the roof bricks forming an open ring, how can you support the central part of the rooftop? Just lay a long plate across the gap and point a pair of plates with slide rails inward to act as hidden **SUPPORT** elements!

7.9





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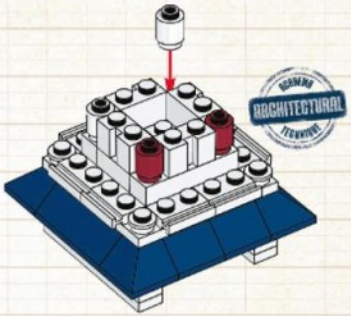
STEP 7.9 TECHNIQUE:
ARCHITECTURAL DETAILS!

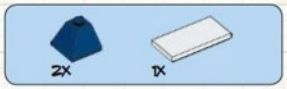
You could have used basic plates to build this second layer, but plates with slide rails and round 1x1 plates at the corners will create a more decorative design that fits into the overall STYLING of the roof, but stands out too.

STEP 7.10 TIP: MULTIPLE LEVELS

The roof of a simple gazebo would have a smooth slope up to the top, but you're going to make this one look a little more interesting. Build up the center with bricks to create a raised second tier!

7.11





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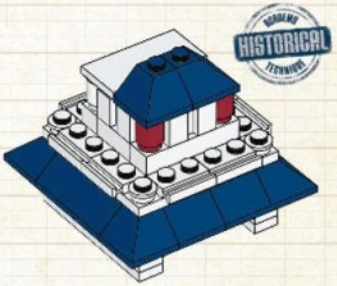


PAGODAS

A pagoda is a tower with multiple tiered levels, each of which has its own eaves, or spreading roof edges. Pagodas can be found in architecture all throughout Asia, from China to India, and are often associated with spiritual or religious places. Adding a pagoda-style roof to a model will give it a distinctly Asian flair!

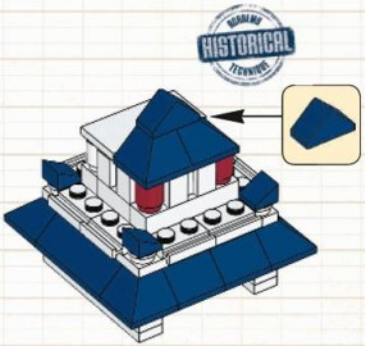
STEP 7.11 TECHNIQUE: ARCHITECTURAL DETAILS!

Some architects like symmetry, and others don't. By using red 1x1 round bricks as decorative details on the front of your roof, and white ones on the back, you add variety to your model and give it a different appearance when viewed from different angles.

STEP 7.12 TECHNIQUE: HISTORICAL DESIGN!

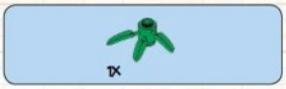
Even if you aren't basing your architectural creation on a specific building, you can still give it design details that place it in a particular world setting. By building your gazebo with a pagoda-like roof, you make it fit into the STYLING of Asian architecture.

7.13



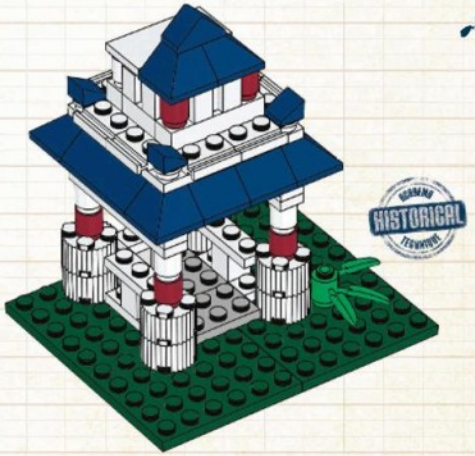
STEP 7.13 TECHNIQUE: HISTORICAL DESIGN!

Complete the peaked top with another type of roof brick and use **SMALL ELEMENTS** to add outward-facing points at the top corners of the first tier, making the pagoda-style roof look even more ornate.



7

YOU'VE BUILT AN ORNAMENTAL GAZEBO IN THE STYLE OF ASIAN ARCHITECTURE! CAN YOU CREATE ITS SURROUNDINGS IN A WAY THAT MATCHES ITS DESIGN?



STEP 7 TECHNIQUE: HISTORICAL DESIGN!

This type of Asian gazebo would look right at home in the middle of a well-tended garden, so establish your architectural model's setting by adding a growing plant to the grass-colored base plates. Now your creation is ready for someone to step inside and rest, relax, and enjoy the view!

LEGO® Fan Creations!

Architecture Springboards

Architecture is full of repeating designs, from rows of windows and columns to walls and roof domes built by placing matching segments side-by-side. Check out how these architecturally-inspired LEGO® fan builders have created springboard models that can be repeated and combined to make even bigger and better buildings!

Archway and Column

The archway uses several LEGO arches put behind each other so that they can all be seen from the front. I used cross-axle extenders to create the thin pillar between the arches. In a large castle, these could be used for windows or doorways.

In addition to regular round Greek columns, some can be found in the shape of statues. I used angle plates to attach parts on the sides for skirt and torso detailing. With several of these lined up next to each other, a roof can be placed across them. It can also be used for a park or inside a building.

Roman Wall

This wall section is built using several small modules consisting of a brick with stud on one side on top of a 1x1 plate with a clip, and then a 1x2 tile attached on the side and a 1x1 tile on top. The modules have alternating colors on the plate with clip and the tile on top, and then all of the clips are attached to a bar on the back to keep them together. The pattern could be repeated to make an entire room as long as you want.

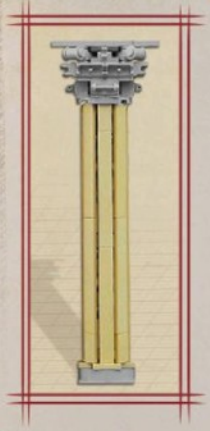
Cecilie Fritzvold
Norway

Japanese Temple

This springboard has many of the classic details of an old Japanese temple or teahouse. I used plates to build the distinctly-curved roof, and added details with 1x2 plates and 1x1 round plates in the corner. The wall pattern simulates Japanese rice paper walls: white for the rice paper, and brown for the wooden pillars. The window/door is placed to look like a sliding door.

The interior has some typical characteristics of a traditional Japanese bedroom: a white futon on the ground to sleep on, a wash basin and mirror, and tatami mats on the floor. I used two colors and positioned the tiles so it looks like the mats are placed every other way. This can easily be done over a larger area to create a beautiful Japanese-looking floor.

CHRISTOFFER BEHRENS
DENMARK



COLUMN

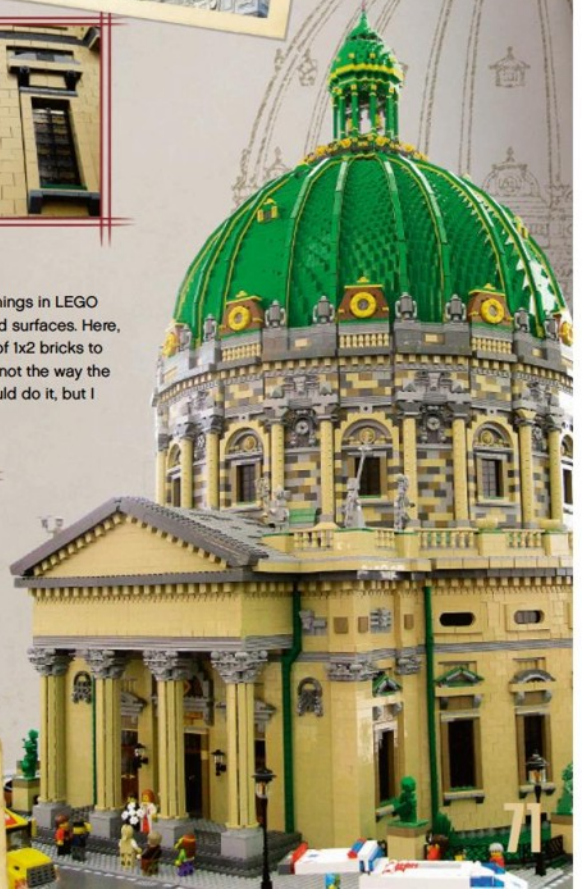
The elements that I originally wanted to use for this column weren't available in tan, but I was inspired by a technique in a video on the LEGO Creator website. The very detailed head of the column is my own design, using lots of small parts for the details.

CURVED WALL

One of the most difficult things in LEGO building is designing round surfaces. Here, I angled the connections of 1x2 bricks to make a curved shape. It's not the way the LEGO Master Builders would do it, but I think it worked out well.

WINDOW

For this window, I mostly used smaller basic bricks and lots and lots of jumper plates to offset the bricks by a half-stud and give it a more natural look. Above it, I used arches and smaller parts for detailing. There are a lot of decorations between the windows. I built columns with 2x2 round bricks, and used various different tiny bricks as details.



VISIT YOUR **KIT 11 DESIGN JOURNAL** ON **LEGO**mba.com
TO SEE CHRISTOFFER'S COMPLETE ACHITECTURAL CREATION!

Kit 11

ARCHITECTURE Challenge

DESIGN AND BUILD A WORLD ARCHITECTURE MODEL!

In this handbook, you've practiced constructing buildings from different historical eras and locations around the world while using the techniques of the LEGO® Master Builders to make your models realistic and strong. Now it's time to put what you've learned to the test and create a World Architecture model of your very own!

THE CHALLENGE

Use your collection of LEGO elements to design and construct your own model building. Your World Architecture model can be in microscale, minifigure scale, or even bigger. It could be a log cabin, a mighty stone castle, or a towering skyscraper, as long as it's stable and looks believable.

Your building can come from any place in the past or present. Use the HISTORICAL DESIGN technique to make sure it fits in with the other buildings of its time, and leave room for decorative ARCHITECTURAL DETAILS to make it look interesting!

START CONSTRUCTION

To take part in the Kit 11 Design Challenge, you need to have registered your Level 4 membership at www.LEGOmba.com using the code printed on page 5 of this handbook.

Once you're signed in on the website, visit your KIT 11 desk, click on the TO-DO LIST, and select the ARCHITECTURE DESIGN CHALLENGE. Then just follow the instructions for taking and uploading pictures of your new architecture creation!

BUILDING IDEAS

TIPS FOR DESIGNING ARCHITECTURE MODELS!

01. PICK A SETTING

First, decide where and when your building will come from. Do you have a favorite period of time from history? Is there a country that you've always wanted to visit? Are the buildings from that time and place easily recognized by their style of architecture? Then you've found a great setting for your model!

02. MAKE A BLUEPRINT

Use the Historical Design technique to spot common features of different buildings from your setting. Do they tend to share a certain type of column, roof or wall? Do they use any special materials? Are they usually painted in particular colors? Once you've identified what makes your setting's architecture unique, come up with a design and sketch it from different angles to create a blueprint for your model.

03. THINK LIKE AN ARCHITECT

Your building shouldn't be just an empty shell with walls and a roof, but it shouldn't be a solid block of bricks, either. Try to think the way a real architect does, and give your model a sturdy foundation, well-locked walls, interior spaces with ceiling supports, and sensible placement of windows and doors. Don't forget to include some Architectural Details to make your custom creation stand out and look good!

04. USE YOUR IMAGINATION

So far we've talked about ways to make your model look as realistic as possible, but it's important for you to make it your own design, too. Don't just copy a real building. Put your imagination and skills as a LEGO® MBA member to work and build a model that respects the designs of real architecture, but also adds something new. Be creative, be original, and have fun building!

YOU'LL FIND EVEN MORE **TIPS AND IDEAS** ON THE FOLLOWING PAGES AND AT YOUR **KIT 11 DESK** ON **LEGO**mba.com!

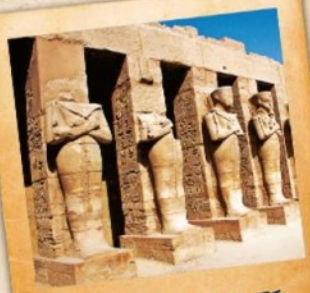
WORLD TOUR

ARCHITECTURE STYLES THROUGHOUT HISTORY!

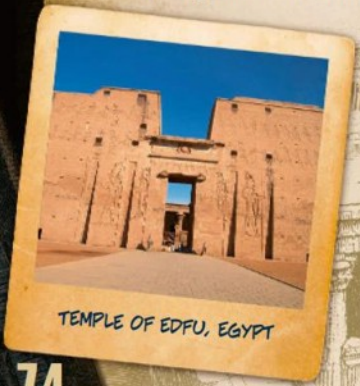
The building style of a particular place and time can be as unique as a fingerprint. Take a tour through these famous points in architectural history and see if you can recreate their designs and details in your own LEGO® brick creations!

EGYPTIAN

The ancient Egyptians built almost everything out of stone and mud bricks. During construction, bricks were carried one-by-one and stacked on top of each other, creating walls that were strong enough to support themselves for a long time. Some temples and other buildings had a square shape, while other monuments, like the pyramids, were built at an angle. Completed Egyptian buildings were often decorated with painted or carved hieroglyphics and symbols.



KARNAK TEMPLE, EGYPT



TEMPLE OF EDFU, EGYPT

NOTES

ROMAN COLOSSEUM, ITALY

ROMAN

The key to designing a successful Roman structure relied on the building's ability to hold a lot of people, and yet also be something that citizens would want to look at every day. Innovations in using arches and domes allowed Roman architects to construct buildings that were both visually impressive and highly useful. Strong arches supported aqueducts, which carried water all around the city, and large domed ceilings created open interior spaces where the public could meet and gather together.

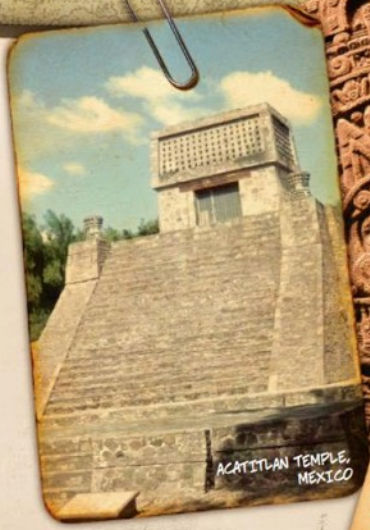
AZTEC

Rival Aztec cities competed with each other to build the greatest temples. These were blocky, stepped pyramids with long staircases leading to the top that were designed to resemble mountains, believed to protect against bad weather. Aztec builders didn't have much technology, so they had to use what was in the environment around them. They would cut down trees and use the wood as supports for walls made of various types of stone held together by mud. Instead of tearing down old temples and starting over, they would often build directly on top of the existing structures, leading to some truly massive creations.

BODIAN CASTLE, ENGLAND

MEDIEVAL

The castles of medieval Europe were mostly built out of stone on a square foundation, with mortar to hold the high defensive walls together. Archways for entrances and windows were also made of stone. The only parts of the castle that typically were not built from stone were the roofs, which were made out of straw and similar materials, tied together tightly to prevent rain from getting through. The entrance was usually guarded by a portcullis gate that could be raised and lowered from inside to keep enemies out. Often the land surrounding a castle was altered to enhance the main building, including moats that were dug to protect the castle walls.



ACATITLAN TEMPLE, MEXICO

VICTORIA AND ALBERT MUSEUM, ENGLAND

VICTORIAN

The Victorian architecture of 19th century England incorporated elements from past styles while adding its own new concepts such as protruding bay windows. Sloped roofs often had towers and windows, and those windows sometimes had their own smaller roofs. Victorian buildings tended to be built out of wood, but some larger structures used more durable bricks. Houses were designed to make the inhabitants look like royalty, so that any passersby would be impressed at the very sight of the building.

HOUSES OF PARLIAMENT, ENGLAND

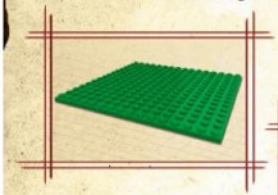
Designing Buildings

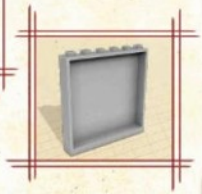
LEGO® MASTER BUILDER IDEAS!

When he was a kid, Samuel Johnson used to spend hours building environments and structures for his minifigures. Now that he's an official LEGO® designer, he gets to do the same thing full-time! Here are some of his best tips for designing and building your own realistic architectural creations.

BUILD STRONG

A building cannot stand without its foundation, so a good starting point is a big base plate. A great way to build up strong walls quickly is by using LARGE ELEMENTS like some of our wall pieces. They make a model really sturdy. We also like to use them because they have a good surface for adding cool sticker details.





BUILD LARGE

The largest modern-style building that I've designed is the City Garage for the LEGO City theme. It needed to be big enough for you to put your hand inside to play with the vehicles there. Here are some special LEGO elements that I have found to be very useful for building huge but stable structures. They can easily be locked and decorated to give some great detail.

BUILD TALL

When designing a building with multiple floors in minifigure scale, make sure you provide enough headroom for the little guys! I like to make my rooms at least 6 bricks high. A LEGO door frame is also 6 bricks tall, so you should be able to fit one in for an entrance pretty easily.

DOORS AND WINDOWS

Where to put your building's doors? More regal buildings tend to have their doors placed centrally, but something like a supermarket might have them offset to the side. Your choice of windows can also vary depending on what you want. Just remember that you need about 2 bricks' height under the window frame so your minifigures can see out.

"BY THE TIME I WAS 16, I HAD ASSEMBLED AN ENTIRE TOWN OUT OF OFFICIAL LEGO® MODELS AND MY OWN CREATIONS. ONE OF MY FAVORITES WAS THE POLICE COMMAND BASE FROM 1986. THE BEST THING ABOUT IT WAS THAT IT HAD MULTIPLE AREAS FOR PLAYING: A SPACE FOR POLICE MOTORCYCLES, A GARAGE, RECORDING AND SURVEILLANCE EQUIPMENT, AND A HELIPAD! WHEN I START DESIGNING A MODEL OF A BUILDING, I LIKE TO PLAN OUT WHAT WILL GO ON INSIDE IT FIRST, AND THEN MAKE A STRUCTURE TO SUIT IT."

- LEGO DESIGNER SAMUEL JOHNSON

BUILD TO THE TOP

When it's time to design a roof, it can be hard to decide on the style. A flat roof is easy and can be made by using a big LEGO plate element. Sloped roofs are a little trickier to build, but they look great. I like to use a similar style to the flat roof, using a large plate that I can hinge from the top to slope the roof. The studs are then really easy to decorate with other bricks. By hinging the roof, you can also create easy access to the interior or the attic of the house.

BUILD DETAILED

Details complete a building and give it character. Ancient buildings often have huge statues around them, so why not try making some stone guardians for your temple? For smaller sculptures, there are some cool LEGO elements that can work as details. A baby dragon makes a great decoration for a building, and so can a gray LEGO frog.

EXPERIMENT WITH YOUR TECHNIQUES AND DON'T BE AFRAID TO TRY SOMETHING NEW, BECAUSE SOMETIMES THOSE MODELS CAN BE THE MOST INSPIRING OF ALL.

NOW HAVE A GO AT BUILDING YOUR OWN AWESOME BUILDINGS, AND IN NO TIME YOU'LL BE CONSTRUCTING ENTIRE CITIES WITH GREAT FUNCTIONS AND DETAILS LIKE A TRUE LEGO MASTER BUILDER!

FIND MORE **LEGO® MASTER BUILDER TIPS** AT **LEGO**mba.com!

STABILITY IS THE KEY WITH MODELS OF BUILDINGS. JUST LIKE REAL ARCHITECTS, WE NEED TO MAKE SURE OUR MODELS DON'T COLLAPSE OR COME APART!

IN THE LEGO NINJAGO PRODUCT LINE, MOST STRUCTURES HAVE A STYLE THAT MIMICS ANCIENT BUILDINGS FROM JAPAN. FOR ME, THE MOST IMPRESSIVE BUILDING IN THE THEME HAS TO BE THE FIRE TEMPLE, WHICH LOOKS VERY GRAND.

LEGO® Fan Creations!

Historical Architecture

LEGO® Ambassador Svend Erik Saksun, a retired colonel in the Danish Air Force, got his first LEGO bricks in 1954 and has been building ever since. Architecture – from ancient castles to contemporary houses – is his favorite subject when it comes to making his own creations.

"WHEN WALKING THROUGH THE STREETS OF COPENHAGEN, I NEVER LOOK DOWN. I PAY ATTENTION TO THE FUNNY DETAILS OF EACH BUILDING – THE PLUMBING, BROKEN PLASTER, WINDOW FRAMES, CARVINGS, AND DILAPIDATED CHIMNEYS – AND SAVE MY IMPRESSIONS FOR LATER USE. LEGO BRICK HOUSES CANNOT BE EXACT COPIES OF THE ORIGINALS, AND THEY SHOULDN'T BE EITHER. RESEMBLANCE, RECOGNITION AND CREDIBILITY ARE IMPORTANT FACTORS."

– SVEND ERIK SAKSUN

MEDIEVAL EUROPEAN HOUSES

To me it is important to add life to my buildings. This time I wanted to create a scene from a Hans Christian Andersen fairy tale. I studied buildings from the 13th to 17th centuries and decided that they should definitely be half-timbered, with stone foundations and walls between wooden beams, and at least two stories high. Apart from that, I had to rely on my imagination, my experience, and my collection of bricks.

The ground floor in old houses is lower than in modern houses, so I decided to go for a height of 6 bricks instead of my usual 7 or 8. I built details like cracks in the foundations to make it more realistic.

The second floor has an overhang of one stud. In real architecture, this "jettying" was used to increase the amount of space inside the building without blocking the street outside.

Don't be afraid to use parts that weren't originally designed for house building. Here I've used scoops of ice cream as banisters and skeleton arms for the balustrade on the balcony.

19TH CENTURY EUROPEAN BUILDINGS

When building historical architecture, it's a good idea to look at pictures of buildings from the period in question and read about the materials and techniques that were used at the time. I like 19th century city houses because their mixture of styles gives me a lot of options for adding my own touch to the final result while staying true to the fundamental features.

Assembling each floor as a separate section makes it easier to change parts of the building later if I feel like it. A disadvantage is that this technique uses up more bricks than building the house in one piece.

When building on a 16x32 base plate, I like to place the foundation in the middle with an 8-stud space on each side, covering the sidewalk with gray or black tiles. I made the railing here with gold minifigure telescopes, and combined red and dark red bricks for the front wall.

Windows are mirrors of the building – the very soul, you might say. I love to think up clever new details for them. This house has a mini-awning over the shop window. I used two different techniques on the second floor. On the right, LEGO® Technic pins are used for the balustrade, and on the left, turntable bases with transparent plates create leaded windows, which were very popular in the 19th century.

ROOFS

The shape of the roof differs from region to region. Chimneys, gutters, and supports or decorations underneath add the final touch.

DOMED ROOF MADE OF DINOSAUR TAILS AND AUTO MUDGUARDS

GABLED ROOF MADE WITH HORIZONTAL SLOPES AND A TECHNIC FRIEZE

GAMBREL ROOF MADE WITH 3 TYPES OF SLOPES (33, 45 AND 75 DEGREES)

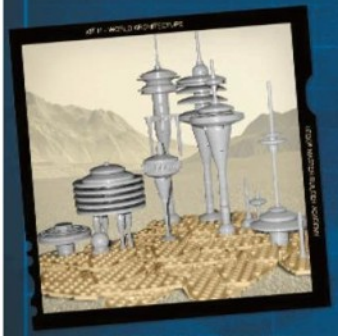
The Architectural Artist

ADAM REED TUCKER ON BUILDING BRICK ARCHITECTURE!

From designing concepts for official LEGO® Architecture sets to creating his own huge scaled models of buildings and monuments, Adam Reed Tucker is one of the best-known builders around at transforming bricks into detailed and realistic architecture models. Here's how he does it!

MULTIPLE SCALES

The LEGO brick lends itself well to building both big and small models. For one of my projects, I built Chicago's Museum of Science and Industry in two different scales. The larger version used over 30,000 pieces, while the smaller one took only 300. No matter how many bricks you have, you can always find an architectural scale to fit the size of your collection!



HISTORICAL DESIGN

When building a historical creation, design details are the key to making a recognizable model. I made the Egyptian pyramid using tan-colored slope bricks and surrounding it with a base of exposed studs and 1x1 round plates to represent the texture of sand. The Greek Parthenon has a bit more detailing, showing the stepped platform and the rows of columns that support the pitched roof. I also included a bit of decoration in the upper areas using random tiny LEGO elements.

The Roman Colosseum has the most detailing, mainly due to recreating the structure in its current ruined form rather than its original glory. In historical architecture, oftentimes a structure will have begun to deteriorate and crumble. LEGO bricks give you the ability to show architecture in all of the various stages of its lifespan, and by incorporating different levels of detailing, you can decide how you want to portray a particular architectural landmark.

COMBINING SHAPES

Architecture is made by joining different 3-D shapes together. By combining shapes, you can create specific architectural styles – even ones that don't exist yet. When I wondered what outer-space architecture might look like, I took inspiration from various U.F.O. and alien starship designs and used LEGO radar dishes, domes, cones and antennas to build a futuristic metropolis. Try picking out a couple of strange or unique elements that you have multiples of in the same color, and see where your imagination takes you in creating some out-of-this-world architecture.

"I DON'T VIEW MY MODELS AS LITERAL REPLICAS, BUT RATHER AS MY OWN ARTISTIC INTERPRETATIONS USING LEGO® BRICKS AS A DESIGN MEDIUM. AS I CONTINUE TO EXPLORE CAPTURING ARCHITECTURE WITH ONLY BASIC BRICKS, PLATES AND TILES, I FIND THE CHALLENGES AND POSSIBILITIES THEY OFFER ALMOST MAGICAL."

- ADAM REED TUCKER

REALISTIC CONSTRUCTION

It's pretty amazing how well you can create almost life-like architectural and construction detailing using LEGO® elements. This is a typical wall-section that could be found in just about any residential house. I was always fascinated watching buildings under construction, especially houses with all of their wood framing. One day I had the idea of teaching this construction process with a group of architecture students, and I thought it would be neat to capture the details of wood-framed construction as a visual learning aid.

I used many different building techniques to create the different components found in a wall section. With just ordinary LEGO plates, bricks and tiles, I was able to create the foundation walls, floor decks, interior framing, roof trusses, window openings, and brick and lap siding on the outside of the walls. I was even able to represent steel reinforcement rods and connection plates.

This is a great example of how you can use your LEGO brick collection to study the way architecture and construction systems are designed and built in the real world. By "peeling" back the skin of a building to reveal the inner workings, you can learn what it takes to be an architect by adding realism into your models.

COLOR AND TEXTURE

This model of a house shows how blending colors and combining elements of different shapes can create textures and patterns that represent real-life building materials. In designing the model, I had to replicate stonework that wrapped around the base of the walls. I was able to use an assortment of 1x1 square plates and 1x1 round plates to achieve the stone texture, and additional shapes and colors to create the rest of the materials that make up the building.

MORE IDEAS

Architecture can be discovered in all sorts of different types of structures: houses, skyscrapers, bridges, castles, space stations, monuments, and even sports stadiums!

SEE MORE FROM ADAM IN YOUR **KIT 11** DESIGN JOURNAL AT **LEGO**mba.com!

Architecture Q & A!

INTERVIEW WITH LEGO® MASTER BUILDER STEEN SIG ANDERSEN!


VILLA SAVOYE


THE WHITE HOUSE

Steen Sig Andersen isn't just a designer for the LEGO® Master Builder Academy. He also works on the LEGO Architecture line of microscale models of famous buildings like the White House and the Villa Savoye, finalizing their designs and helping to turn them into official LEGO sets.

HOW DO YOU TRANSLATE A REAL BUILDING INTO A LEGO® MODEL?

We try to get as much material about the building as we can. We use that reference material to make the proportions, colors and details as correct as possible for the model's scale and style. The goal is to make the model recognizable. Sometimes it is better to leave out some details instead of trying to build them with elements that don't quite match the right shapes.

WHAT DID YOU LEARN ABOUT THE ORIGINAL HISTORICAL BUILDINGS IN YOUR RESEARCH?

I didn't know that the White House had been renovated and reconstructed several times over the years, or that the west and east wings were added later. One thing that I hadn't known about the Villa Savoye was that the semi-circular driveway was designed to exactly match the turning circle of a 1927 Citroën automobile.

ARE THERE ANY BUILDING TRICKS THAT YOU'RE ESPECIALLY PROUD OF USING?

For the White House, I am quite happy about the way we solved the connection of the columns by using white robot arms so they could follow the half-circle balcony. We also used jumper plates and 1x1 LEGO® Technic bricks with hollow studs to create the right look for the window sections.

On the Villa Savoye model, I'm proud of how sideways building techniques made the curved parts on top of the building turn out. Another challenge was how to attach the thin pillars to the ground. After several tries, the solution came in making the base thicker, so there was space for clip-plates that could hold the pillars solidly.

DO YOU HAVE ANY EXTRA ADVICE FOR NEW LEGO MBA ARCHITECTS?

Don't start with the most difficult buildings. Build some easy ones for practice first. Later on, you can always find some with more challenging construction.

Try to discover your own style. Some architecture designers like to just build straight up, while others use a lot of sideways building. Some like to see the studs on their buildings, and others cover their models with tiles. It's up to you!

SEE YOU IN LEGO® MBA **KIT 12: INVENTOR'S LAB!**

Kit 11 Invention Designer Elements!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300501


3x
300301


2x
301001


14x
4264360


10x
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1x
4620761


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302401


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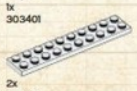
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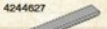
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