

MAYA

HIDDEN WORLDS REVEALED

EXHIBITION EDUCATOR'S GUIDE

AT THE SAN DIEGO NATURAL HISTORY MUSEUM • JUNE 12, 2015–JANUARY 3, 2016



INSIDE: Exhibition Overview • Exhibition Floor Plan • Classroom Connections
Planning Your Visit • Additional Resources • California Academic Standards



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SAN DIEGO NATURAL HISTORY MUSEUM



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Encounter the richness of Maya culture by examining centuries-old authentic artifacts, traditions, and world view. Experience immersive life-size recreations of Classic Maya architecture, and explore the hidden worlds of the Maya past and present.

Your students will have the opportunity to:

- **Engage in hands-on explorations** of building arches, deciphering hieroglyphs, drilling techniques, translating a Maya calendar, and more.
- **Understand** that contemporary Maya people maintain many cultural practices and beliefs that link them to their ancestors.
- **Take part in the process of discovery** to learn how archeologists use science, technology, and contemporary Maya voices to interpret the past.
- **Find evidence** that shows the relationship between writing, mathematics, astronomy, architecture, urban planning, and the sophisticated world view of the Maya.

Objects from the collections of the National Institute of Culture and History, Belize; Harvard University's Peabody Museum of Archaeology and Ethnology; the University of Pennsylvania Museum of Archaeology and Anthropology; the Science Museum of Minnesota; the Denver Museum of Nature and Science; and the San Diego Museum of Man.

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Field Trip Information

Tickets purchased for *Maya: Hidden Worlds Revealed* include access to our 3D theater and to all exhibitions in the Museum.

For further information and field trip guidelines, please visit sdnat.org/maya

Plan your trip today with one of our group sales agents for best availability by calling 619.255.0349 or emailing groupsales@sdnhm.org



A Maya warrior, with black body paint and dressed in jaguar robes and headdress, adorns a ceramic plate that is over 1200 years old.

Collection of DMNS.



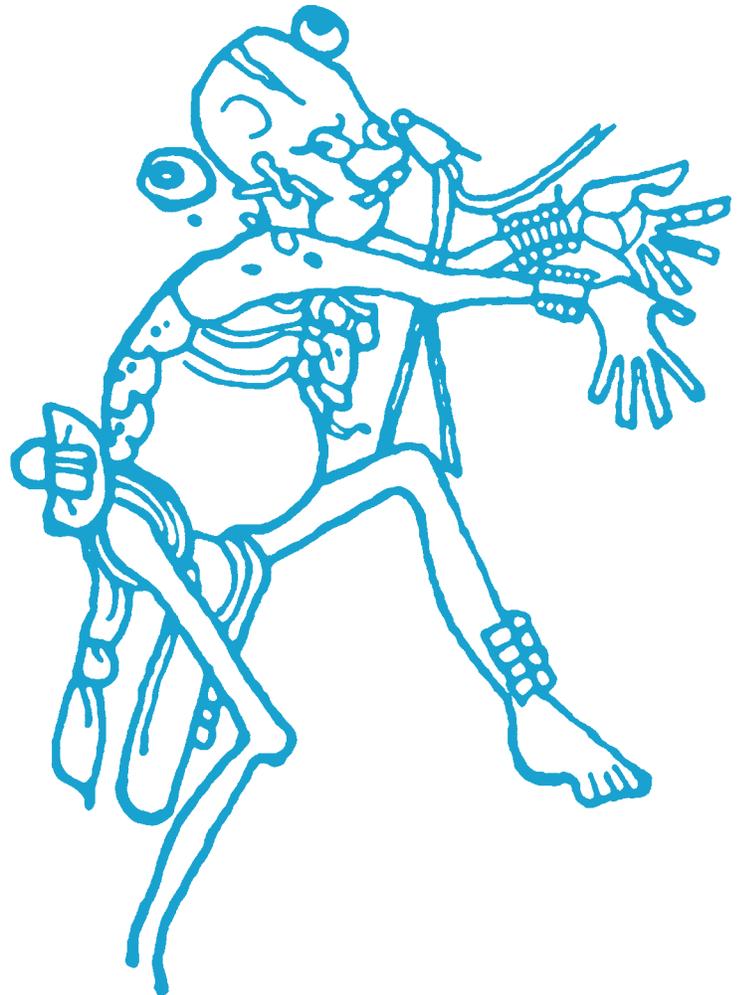
BEFORE YOU VISIT

- Do some preparation activities before your visit. Use suggestions in this guide and the resource list (page 34) for more ideas.
- Review this guide for connections to your curriculum. Choose the activities that meet your needs best. Blend groups to provide fewer questions for each student, but still cover the topics you need.
- Add your own page(s). Bring journals or composition notebooks if you use these in classroom work. Bring sturdy cardboard to write on if you plan to use single pages during your field trip.
- Share expectations, plans, and schedules for the visit with students and chaperones. Give chaperones copies of the Chaperone Guide Sheet (page 27) and any copies of the activities the students will do.
- Encourage students to spend time in each section to go beyond simply answering questions.



DURING YOUR VISIT

- Ask students to add their own questions and observations that arise during their exhibit explorations.
- Flash photography is NOT allowed in the exhibition. Photographs without a flash are permitted and encouraged.
- Students must be with their chaperones to enter the exhibition, and should stay with the chaperones throughout.
- Divide your class into small groups to work together in the exhibition.
- No food or drink is allowed in the exhibition.





EXHIBITION OVERVIEW

To the Maya, both the past and present, the ceiba is a sacred tree. Its trunk is of this world—that of the living—while its roots plunge into the depths of the underworld and its lofty branches reach into the heavens above. In many Maya cities and villages, the giant ceiba stood as a symbol of a universal connection between the earth, the heavens, and *Xibalba*—the underworld. In *Maya: Hidden Worlds Revealed*, the construct of the three worlds, symbolized by the ceiba tree, helps show interconnections, growth, death, and rebirth.

A floor plan is shown on page 8.

INTRO THEATER

Maya narratives have repeated themes of death and rebirth. The brief introductory video provides an analogy between the story of the death and resurrection of the Maya Maize God and the abandonment and gradual rediscovery of Maya cities, monuments, writing, and life ways of kings and nobility of the time period over 11 centuries ago.

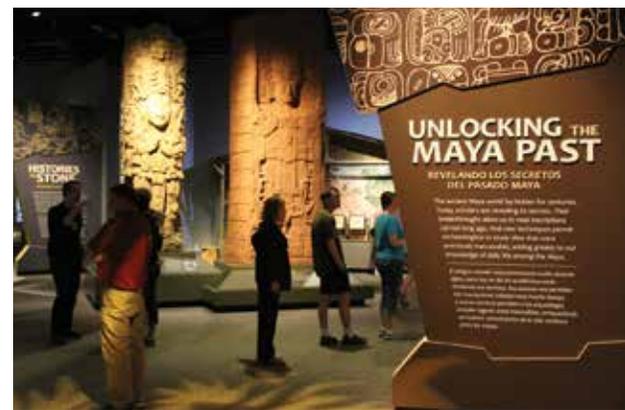
It also briefly introduces the methods Mayanists have used to explore the Maya world of the past: archaeological investigations, ethnographic analogies, and the complicated decipherment of Maya script.



Learn how scholars have begun to unlock secrets of life long ago in Maya lands and read inscriptions carved hundreds of years ago. New techniques allow archaeologists to study sites that were previously inaccessible, adding greatly to our knowledge of daily life among the Maya. Scientists begin to understand Maya

culture by excavating cities and house mounds, interpreting objects recovered, deciphering glyphs, and learning from Maya people living today.

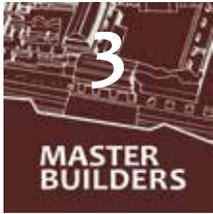
- An activity will let you see the gorgeous cities of the ancient Maya, introduced to the rest of the world by early explorers to this region.
- Use an interactive time line of glyph decipherment and learn why scholars and Maya people alike are excited about our ability to read the glyphs.
- Try your hand at some Maya mathematics.
- Examine two massive replica stelae—once unreadable, but now a wellspring of information about Maya rulers and their relationships.





Maya hieroglyphs carved into stone stelae, only recently deciphered, tell of great and powerful dynasties. Get a sense of how to read a stela and how Maya rulers placed themselves at the center of the cosmos as living “world trees.”

- A name glyph generator allows you to title yourself, Maya style.



The Maya were excellent urban planners, organizing their cities according to practical needs, environmental constraints, and religious beliefs. Architects, artists, and laborers—who had no wheels or metal tools—incorporated the Maya world view and social hierarchy into

city plans and buildings. And the Maya modified every inch of their landscape. Explore city size, layout, population, and specific features—such as roadways, agricultural terraces, and reservoirs—that served the tens of thousands who lived in the shadows of these cities. A life-size frieze that once surrounded the top of El Castillo pyramid at Xunantunich, in Belize, is bathed in what archaeologists believe may have been the original colors.

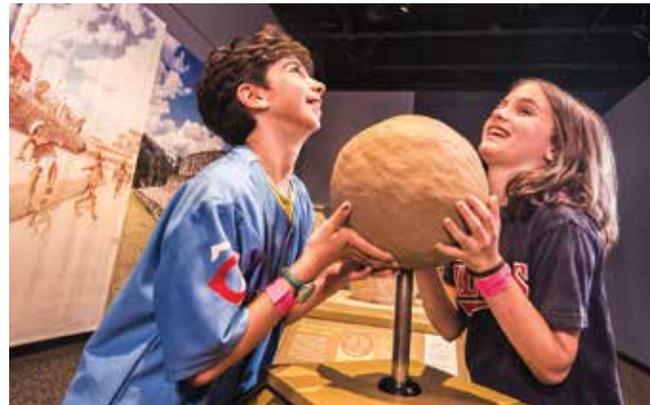
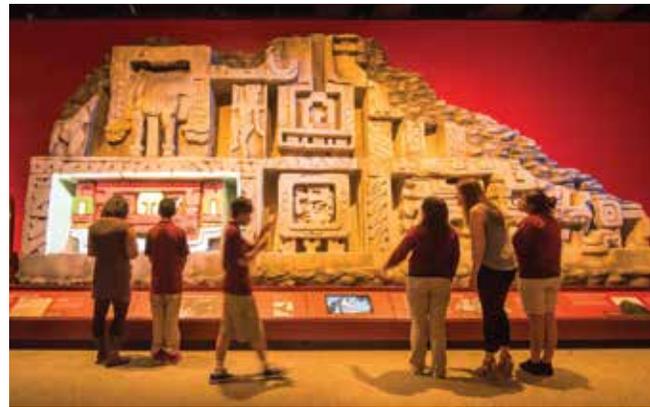
- See construction techniques, learn how a tumpline is used, and build a Maya arch.
- Explore a floor “map” of the city of Caracol, in Belize, and compare it to a 3-D model of the city’s center. The scientists used LiDAR (Light Detection and Ranging—a remote sensing method used to examine the surface of the Earth) to look into the hidden past which had yet to be uncovered.
- Examine the Maya ball game—believed to be one of the first team sports in human history. Watch a video of the ball game as it’s played today, learn how archaeologists think it was played, and pick up a ball game ball—it’s heavy!



A video, set against a star field and city scape, describes how and why the Maya charted the 365 day solar cycle, predicted solar and lunar eclipses, and precisely tracked the complex orbit of Venus. Astronomical phenomena are closely associated with seasonal changes

that inform important agricultural practices for planting maize. Knowledge of the skies could ensure a good harvest—and power.

- Artifacts and replicas illustrate the interaction of astronomy and human responses.
- A calendar translator shows you how the Maya calendar cycles intersect, allows you to correlate important dates in our time to the cycles of Maya time, and lets you print out a personalized stela.

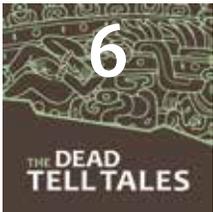




Hidden beneath the land of the living lay the underworld: *Xibalba*. Caves were physical portals to the underworld and prayers and sacrifices were offered inside. But *Xibalba* was a place of creation as well as death. It was the birthplace of the sun and moon, and life sprang from its depths. As priests ventured underground, they drew nearer to the gods and their prayers took greatest effect.

Artifacts recovered from these caves give a glimpse into rituals that helped priests and kings transcend the earthly world and speak with the gods of the underworld.

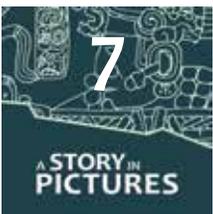
- Experience Actun Tunichil Muknal through a re-creation of this ritually important cave.
- Learn to decipher stone carvings from the Chiapas region in Mexico.



Explorations of Maya burials tell us about the structure of Maya society, their world view, and even their diet and lifestyle.

- Witness a recreated tomb and see the spectacular objects that accompanied elites on their journey through the underworld.

- A touch table allows you to digitally explore a royal burial. Learn how objects from a burial hint at political relationships between far-flung places.
- Examine photographs of human skeletons and find out what the histories written in our bones tell archaeologists about us.



More than a thousand years ago, Maya artists painted the walls of three small rooms in Bonampak with scenes of war, celebration, and life at court. Today, the murals of Bonampak provide an unparalleled view of elite life and warfare in ancient Maya society.

- Step into a recreated mural space to explore courtly life in the late 8th century.
- View images made with an infrared camera to see details of the murals invisible to the naked eye.
- Match objects with their counterparts in the murals. Use the pictures and artifacts to examine themes of elite privilege, ceremony, responsibility, connection, and competition.
- Take a photograph of yourself and see how you'd look wearing the costumes of various court figures.
- Assemble a bow drill and imagine using one to create dental inlays.





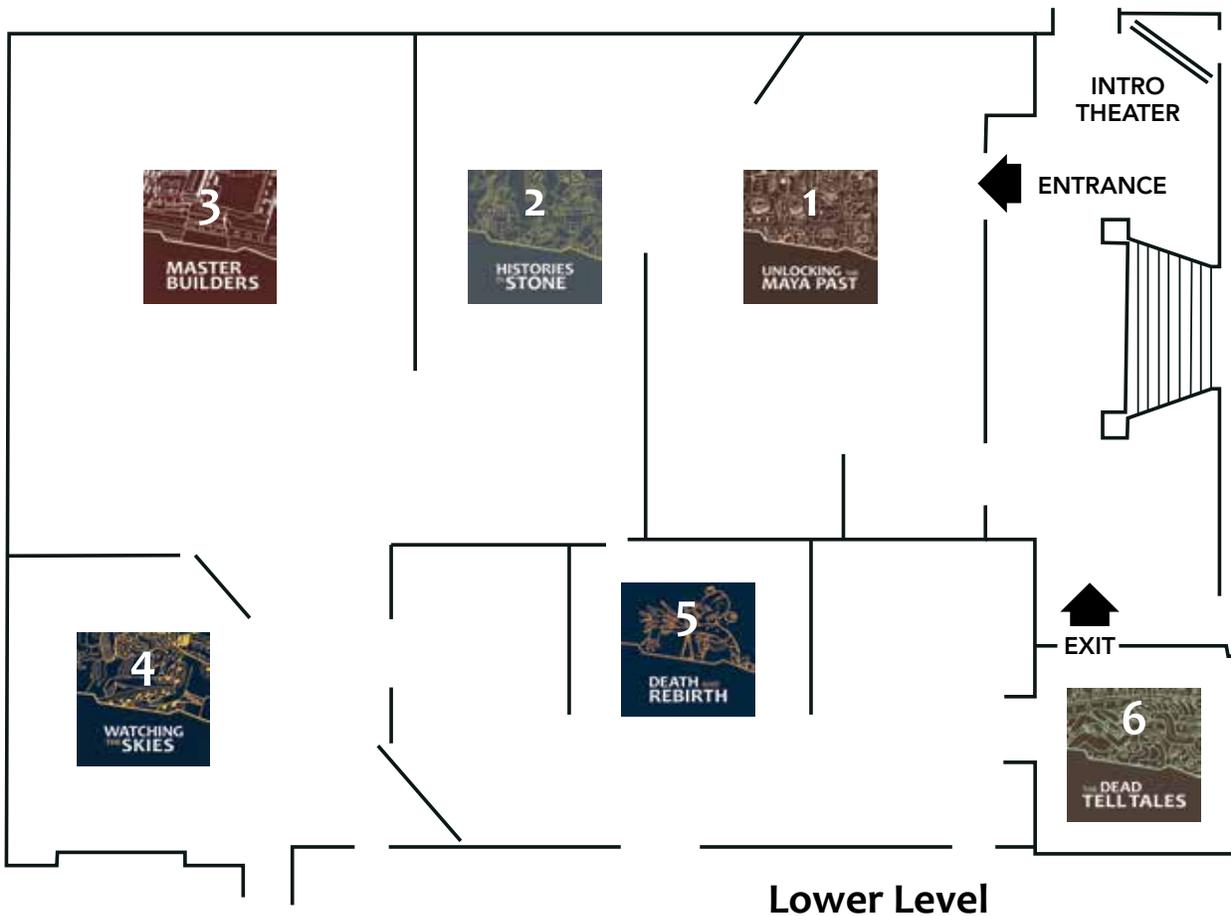
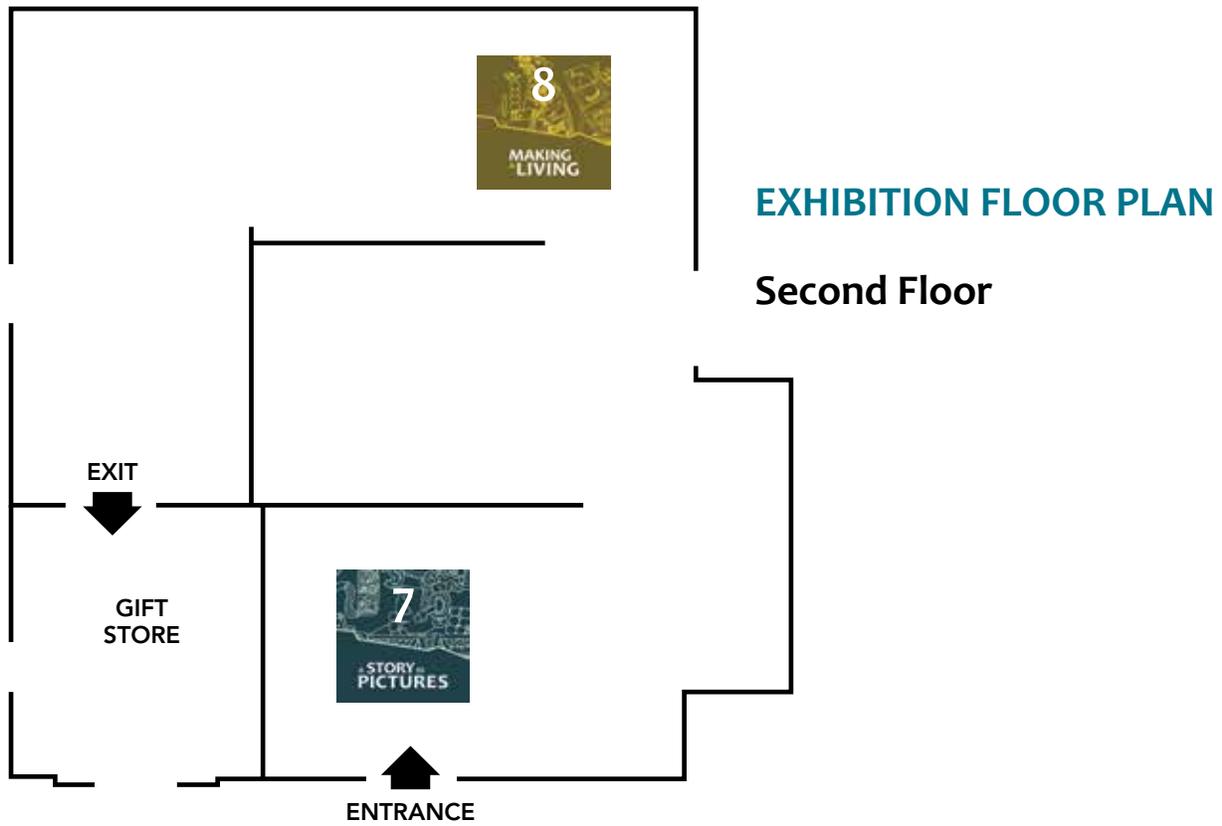
8

MAKING LIVING

During the 3rd -10th centuries, cities were densely populated, in some cases supporting many more people than the same areas do today. Individual households were the engine of the economy. Their residents worked together to produce and process food, raise children, and properly honor their ancestors. But many households also produced goods such as textiles, tools, jewelry, or pottery for market.

- Try your hand at creating a weaving pattern with blocks.
- See examples of traditions still practiced by Maya people today.







ABOUT THIS TOPIC

The term *Maya* comes from the Yucatec Mayan word that describes the language spoken by indigenous people of the Yucatán Peninsula, México. Western scholars have ascribed this term to all Maya people. Ancient Maya culture is characterized by monumental architecture; by symbols, images, and hieroglyphic writing; and by complex mathematical and astronomical systems.

(Living Maya Time, website: <http://maya.nmai.si.edu/the-maya/maya-people>)

The Maya were never a single empire, but lived in various densely-populated cities and surrounding regions that shared many aspects of culture throughout this region. As a whole, the Maya people created the longest lasting civilization of the New World. Their culture endured through changes, wars, and disasters until it was suppressed by the Spanish conquest in the 16th and 17th centuries. However, the Maya survived and today there are millions of Maya living in Mexico, Belize, Guatemala, El Salvador, and Honduras.

Vocabulary

Review of these terms would be helpful before your visit to *Maya: Hidden Worlds Revealed*. See *Connecting with the Classroom* section (page 11) for suggestions.



Archaeologists

Scientists who study the artifacts from a prehistoric people and their culture by excavation.

Artifact

Artifacts are objects made, used, or changed by humans.

Ceiba (*Ceiba pentandra*) also known as the silk cotton or kapok tree.

Trees of the Ceiba genus can grow up to 50 m tall,



with swollen trunks and large buttresses. As the sacred world trees of the Maya, Ceibas represent the intertwined celestial, earthly underworlds. Balboa Park has a variety of species from the genus *Ceiba* represented.

Classic Period of Maya Culture 250–900 AD

Much of *Maya: Hidden Worlds Revealed* focuses on this time period of Maya culture. But research indicates that distinctive signs of Maya culture first start appearing around 1800 BC.

Corbel Vault

Typical Maya architectural features included the corbel vault. The corbel vault has no keystone, as European arches do, making the Maya vault appear more like a narrow triangle than an archway.

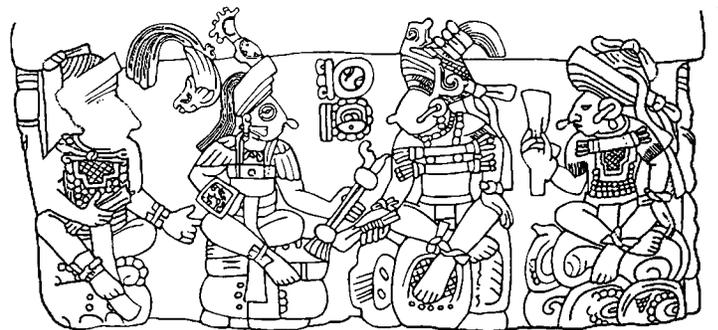


Elite

Small group of people who control the major share of wealth and/or political power.

Excavate

The process of revealing, recording, and retrieving artifacts.



Glyph

Symbolic figure or character, also called a hieroglyphic. All Maya glyphs are formed from various combinations of nearly 800 signs in the forms of humans, animals, supernatural creatures, objects, and abstract designs. These signs can express



meaning, denote sound values, or be pictorial (the picture is the word), and are used to write words, phrases, and sentences.

Glyphs appear as very intricate squares laid out in a grid like pattern. Each square is a glyph block that actually contains one to five glyphs, often forming a word or even a phrase. You will see glyphs on many objects throughout the exhibition.



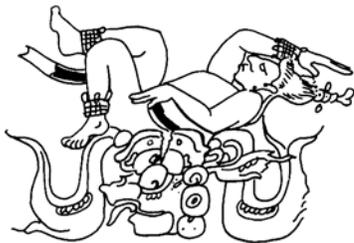
Huipil (we-peel)

Traditional garment made of a piece of rectangular cloth folded and usually stitched down the sides, worn as a blouse. Huipils have been made and

worn in this region for centuries. Huipils are still worn by the Maya today.

Maize ('māz; corn, subspecies *Zea mays*)

A staple food of Maya, past and present, with a major role in all aspects of Maya life. The Maize God story introduces you and your students to *Maya: Hidden Worlds Revealed* in the introductory theater. Many images or partial symbols of the Maize God occur on artifacts you will see in the exhibition.



Maize God emerging from a flower.

Scribe

Scribes prepared art and text for public displays glorifying the ruler's triumphs. Most Maya could not read and write during Classic times, so scribes had a very important role in Maya society to reinforce the power and authority of Maya rulers. They were from the noble class, sometimes from the royal family of the city.



Maya inkwell in the exhibition.

Stela (plural: stelae)

Freestanding stone pillars, often of limestone, with figures carved in relief and hieroglyphic text.

<http://deyoung.famsf.org/files/collectionicons/index1.html>

This interactive website helps students understand several aspects of Maya art and culture (symbols, glyphs, mathematics, and materials) through investigation of a stela in the DeYoung Museum's collections. This is recommended for upper elementary and above.



Tumpline

A strap attached at both ends to a load, and placed over the top of the head, just back from the hairline, so the weight of the load pulls straight down in alignment with the spine. The bearer then leans forward, allowing the back to help support the load. The Maya used this device (and still do today) to carry loads as heavy as their own body weight. Since much of the terrain in the region is uneven, narrow, or rocky, this was more efficient than using wheels or beasts of burden. The Maya did not use either during Classic times.



CONNECTING WITH THE CLASSROOM

Field trips are most effective when integrated with your curriculum. Below are activities that can be used as an introduction to topics included in *Maya: Hidden Worlds Revealed* exhibition. Many can also be used after your trip or as ongoing topic explorations.

BEFORE YOUR VISIT

All Grades

Review the activities to do at the Museum to cover any vocabulary that will be new to students. A suggested list of vocabulary is below. (See pages 9 and 10 for definitions) Add others that may be new to your students.

Archaeologist

Artifact

Ceiba

Corbel Vault

Elite

Excavate

Glyph

Huipil

Maize

Scribe

Stela (plural: stelae)

Tumpline

- Ask students to find the meaning of each word and make a drawing to help them remember the meaning of each word. Discuss each as a class.
- Locate the Maya region on a world map.
- Use images from the websites listed in the Resource section (page 34) to discuss what students will be seeing when they visit the exhibition.
- Gather class questions about the topic. What do students want to know? What do they think they will see and experience? What do they know or think about the Maya? Use their questions as a basis for your field trip guiding questions, or choose from the Explorations pages (13-26).

- Review the floor plan (page 8) of the exhibition with your students before your field trip. You can also provide floor plan copies to chaperones or individual students.
- Review schedule for the day with students, and share behavior expectations.

Grades K-2

There are no student pages for students in K-2. Please use the Chaperone Page (page 27) for suggestions for chaperones to use in discussing the exhibits and activities with students. Chaperones can also provide paper, pencils, and sturdy cardboard for drawing in the exhibition. Drawing is a great tool for students in an exhibition to focus attention, support observation skills, and provide a change of pace for young students. Drawings can also be used for many post-trip follow up activities.

Grades 3-5

Preparing for the visit:

- Identify questions, activities, and experiences students are expected to complete during the visit. There is a lot to see and do.
- Use the questions on the Exploration pages (13-16) as guiding questions for students during your visit to the exhibition. Questions should be used at the Museum just for note-taking and documentation to allow students to more fully experience the exhibits and activities.
- Consider dividing into smaller groups with different questions for each group, then sharing answers after returning to school. Using all of the questions on each page may be overwhelming for some students.
- Maya Math (pages 25-26) are pages for students to complete. Use all or several of the questions on the Maya mathematical notation system. This page can be used for any grade.
- Ask students to bring a journal, notebook, or folder to provide a writing surface as they take notes for their responses.



Grades 6-8

Preparing for the visit:

- Identify questions, activities, and experiences students are expected to complete during the visit.
- Use the Exploration pages (pages 17-20) as guiding questions for students during your visit to the exhibition. Questions should be used at the Museum for note-taking and documentation, to allow students to experience the exhibits and activities. We recommend that students complete their answers after they return to school, or as a homework assignment.
- Consider dividing into smaller groups with different questions for each group, then sharing answers after returning to school. Using all of the questions on each page may be overwhelming for some students.
- Ask students to bring a journal, notebook, or folder to provide a writing surface as they take notes for their responses. Copy the question pages (17-20) to use all of the questions, or ask students to answer specific questions.
- Maya Math (pages 25-26) are pages for students to complete. Use all or several of the questions on the Maya mathematical notation system. This page can be used for any grade.
- Review questions to consider throughout the whole exhibition. Share post-visit plans about summaries for these questions:
 - Describe “Maya Lands,” the places where the Maya lived in the past and live today. Record details about what the land looks like.
 - In this exhibition, you will find many places to try out activities. Keep a list of your favorites and your results.
 - Tradition: then and now. Find examples of things that people used in Classic Maya times and still have or do now.

Grades 9-12

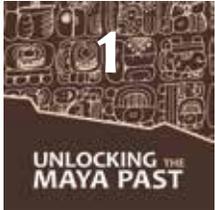
Preparing for the visit:

- Identify questions, activities, and experiences students are expected to complete during the visit.
- The Exploration pages (pages 21-24) provide guiding questions for students during your visit to the exhibition. Questions should be used at the Museum for note-taking and documentation, to allow students to experience the exhibits and activities. We recommend that students complete their answers after they return to school, or as a homework assignment.
- Ask students to bring a journal, notebook, or folder to provide a writing surface as they take notes for their responses. Copy the question pages (21-24) to use some or all of the questions. You can also ask students to answer specific questions.
- Divide students into small groups or pairs and ask each group to develop a question to investigate about Maya culture, past or present. As students go through *Maya: Hidden Worlds Revealed*, each section can help them with background information, ways to refine or revise their questions, and sources that provide evidence in developing answers or hypotheses. Question pages can be used to guide students to resources that will help them in working on their own question.
- Tradition: then and now. Ask students to find examples of things that people used in Classic Maya times and still have or do now. There are examples of contemporary Maya life for comparison, or they can compare Classic Maya life to their own lives today.
- Maya Math (pages 25-26) are pages for students to complete. Use all or several of the questions on the Maya mathematical notation system. This page can be used for any grade.

MAYA INVESTIGATIONS Grades 3–5

Find the title sign for each space in the Maya exhibition.

- On these pages, read the questions for that space.
- Take notes to answer the questions.
- Use the notes to write a complete answer to the question after you return to school.



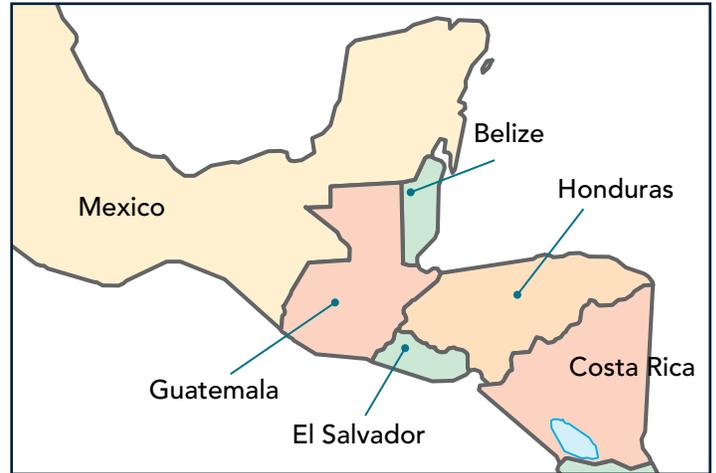
Unlocking the Maya Past

Use your pencil to shade in the map at right where most of the Maya towns and cities were.



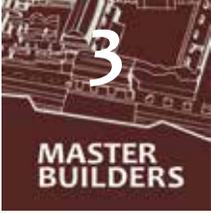
Histories in Stone

Look at the stone stelae or other stone sculptures. How many images of people can you find?



Draw a picture of one of them.

Draw a picture of yourself in the same style.



Master Builders

Caracol was a city in what is now the country of Belize.

Which of these gives you the most information about Caracol? Look at the exhibits in this section, then choose one. Explain why you chose the one you did.

- Map of the region _____
- Floor map *LiDAR* _____
- Small model of the "downtown" _____

What did the builders of Caracol need to build and use this city?

How did they change the land?

Write some ideas here: _____

Try out one of these activities: Use a tumpline OR Build a corbel arch

Draw a picture of your choice (tumpline or corbel arch). Write a caption for your drawing.



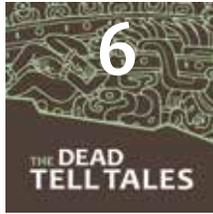
What was this used for in the past? _____

What could you use this for in your life today? _____



Watching the Skies

The Maya observed the movement of objects in the sky. Which ones were important to them?

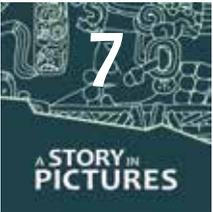


Death and Rebirth and The Dead Tell Tales

Archaeologists study objects to learn about the past. Find artifacts in this section that help you learn more. Complete this chart with your notes. (Hint: Unless there is one object mentioned, you can choose from many possibilities!)

Object	Location	Interesting fact, idea, or observation
Torch holder	CAVE, Belize	
	CAVE in:	This shows an animal from the region, it is a:
Shells	BURIAL, Belize	

Add to chart above: Find an object you like, tell where it is from, and list an interesting fact, idea, or observation.

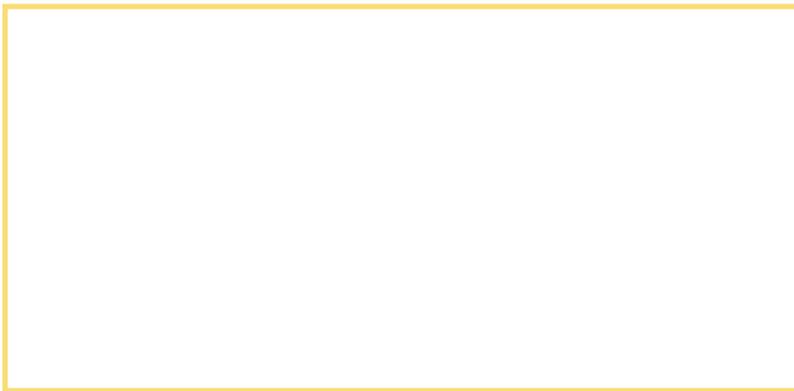


A Story in Pictures

Look at all of the pictures that artists painted 1300 years ago (about 800 AD). Find one item in a picture that tells you about life in that time and place.

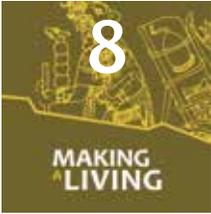
What is the item you chose? _____

Draw it here:



What does that item tell you about life in that time and place?

Is there an *object* in this section that is similar to the *item in the picture*? YES NO



Making a Living

Imagine that you were living in this city/region about 1000 years ago. Look around—find examples that show what your life might have been like. Add the examples to your notes in the questions below.

What kind of job would you do? Choose one—most Maya people may have had several of these jobs at the same time.

Choose one: farmer weaver shell artist scribe king ball player

Draw or describe your house:

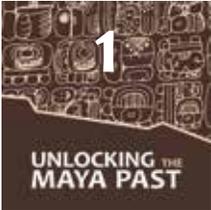
What food would you eat? Find examples.

If you were doing activities on your own or with other members of your family, where would you go? What would you do?

MAYA INVESTIGATIONS – Middle School

Find the title sign for each space in the *Maya* exhibition.

- On these pages, read the questions for that space.
- Take notes to answer the questions.
- Use the notes to write a complete answer to the question after you return to school.



Unlocking the Maya Past

There are many ways to learn about the “hidden worlds” of the Maya.

Name a fascinating discovery by archaeologists in this region. _____

Describe what they discovered. Be sure to add details. _____

What helps YOU understand this discovery? Check any that you used. You may learn more by seeing things in other sections.

- map
- artifact
- video
- written description
- model
- activity

Describe “Maya Lands.”

Record details about what the land looks like as you find evidence. Include details about water, cities, forests, type of terrain, and other things you find in photos, maps, artifacts, models, or video.



Histories in Stone

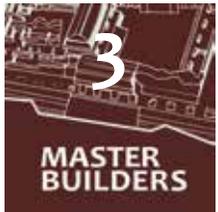
Find a story shown in a stone carving, artifact or painting. There are many possibilities. Look at the object and read the information to help answer the questions.

Who is the main character? _____

Where did he live? _____

When did he live? _____

Sketch a glyph from that object. What do you think that glyph might mean?



Master Builders and Making a Living

Make notes to describe a city in the Maya region. When you get back to school, you will use your notes to write a travel blog.

Where is the city located? _____

Add details so that someone reading your blog would like to visit the place you describe! Here are some ideas. You can use these or come up with your own thoughts.

- What is in the city?
- Are there different buildings?
- Are there neighborhoods?
- How big is the city?
- What do the buildings look like?
- What materials are used?
- What does the land look like?
- What would you do if you visited this city?

Try out *one* of these activities: Use a Tumpline OR Build a Corbel Arch

Describe how it works.

What was this used for in the past?

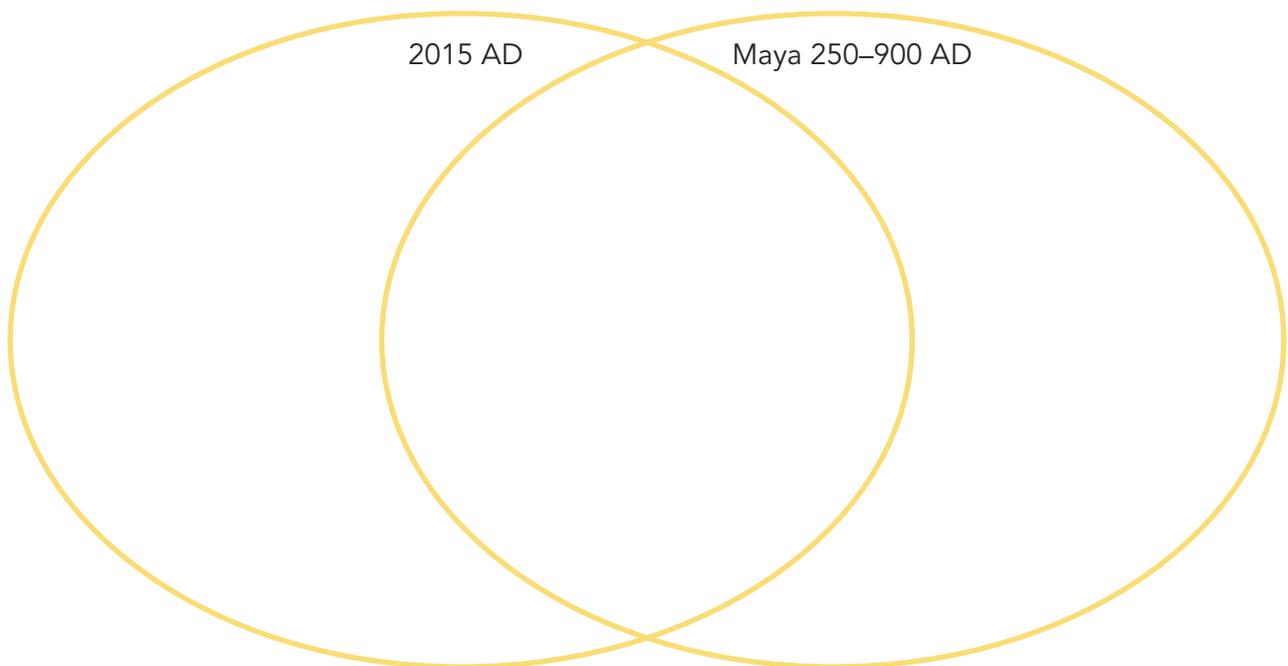
What could you use this for in your life today?

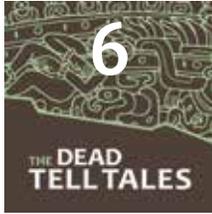
How would you change it to make it better for your purpose?



Watching the Skies

The Maya observed the movement of objects in the sky. Compare their experiences 1000 years ago to ours today. What is different and what is the same? Use the Venn diagram to make notes.





Death and Rebirth/The Dead Tell Tales/A Story in Pictures

Archeologists use objects to learn more about the past. Find artifacts in these sections that help you understand Maya life. Complete this chart with your notes.

(Hint: Unless there is one object mentioned, you can choose from many possibilities!)

Object	Location	Interesting fact, idea, or observation
Torch holder	CAVE, Belize	
	CAVE in:	Animal images are symbols of Maya beliefs. This one shows:
Shells	BURIAL, Belize	
	BONAMPAK, Mexico	This artifact shows that elite people used jewelry to show status.

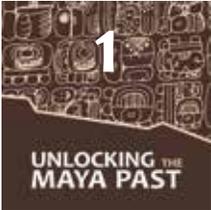
Sketch and describe a favorite object from this section.

(Use words describing color, shape, texture, use of space, pattern, repetition, and size.)

MAYA INVESTIGATIONS (High School)

Find the title sign for each space in the Maya exhibition.

- On these pages, read the questions for that space.
- Take notes to answer the questions.
- Use the notes to write a complete answer to the question after you return to school.



Unlocking the Maya Past

There are many ways to learn about the “hidden worlds” of the Maya.

What scientific technologies and methods have been used to understand life 1200 years ago?

Keep track of other methods as you continue throughout the rest of the exhibition and list them here:

_____	_____
_____	_____
_____	_____



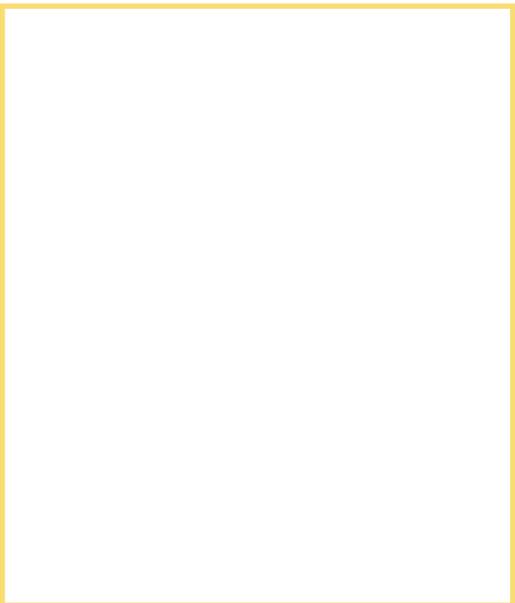
Histories in Stone

Find a story shown in a stone carving, artifact, or painting. There are many possibilities.

What is the name of this artifact? _____

What is the story? _____

Sketch one of the glyphs on this object.

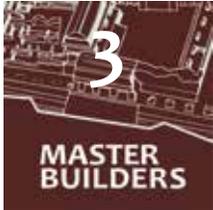


What kind of information does this glyph provide?

Write your own label for the object, adding the parts that you think are the most important.

Are cities in the Maya region more like cities in the Roman Empire or Greek city-states?

Explain your choice: _____



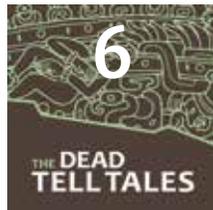
Master Builders and Watching the Skies

In these two sections, consider this quote:

“Maya architects and planners combined their engineering skills with their religious understanding of the world. They organized their cities to reflect social values and reinforce political and religious power.”

Find 3 examples that provide evidence for this statement.

<i>Example</i>	<i>Evidence for which part of the quote?</i>
1. _____	_____
2. _____	_____
3. _____	_____



Death and Rebirth/The Dead Tell Tales/A Story in Pictures

In these sections, look at exhibits, watch videos, and do activities to complete the chart.

Archaeologists use objects to learn more about the past. Find artifacts in these sections that help you understand Maya life during Classic times. Complete this chart with your notes.

<i>Object</i>	<i>Where was this object used?</i>	<i>Interesting fact, idea, or observation</i>
_____	_____	_____
_____	_____	_____
_____	_____	_____

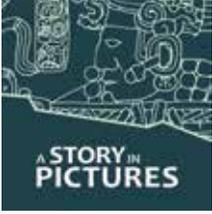


Making a Living

How did the Maya use their environment?
Find an example for each of the categories.

<i>Example</i>	<i>What part of the environment was used?</i>
Food _____	_____
Clothing _____	_____
Shelter _____	_____
Other _____	_____



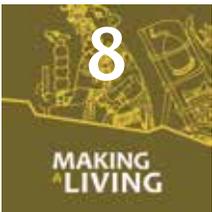


A Story in Pictures

Try the bow drill. How many pieces make up a bow drill?

A bow drill would be used to drill teeth for inlays. How many teeth in this section have these inlays?

Draw a picture of the drill and label the parts.



Making a Living

If you were a ballplayer, you would need to lift a ball that weighed pounds.
Pick up the ball. Use Maya numbers for your answers.

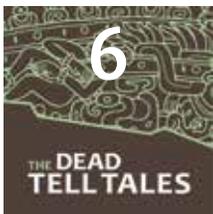
How far do you think you could throw this ball?

feet.

CHAPERONE PAGE

- Encourage students to look closely at the exhibits, try the activities, and share their discoveries and ideas with the rest of the group.
- Enjoy the exhibits with your group! Share your own discoveries, questions, and “I wonder...”
- Allow time for student exploration. The suggestions below encourage exploration in the exhibition. Check with the teacher for their expectations.
- Teachers may have provided students with guiding questions or question sheets to use. Check with the teacher for your own copy.
- Please stay with your group throughout the exhibition.
- If you have questions, please ask any of the staff in the exhibition.

Look for the section intro signs to help with orientation:



Here are some questions to share with your group. Develop your own exploration questions too!

- Archaeologists have many ways to learn about the past. Find examples of different ways they have learned about the ancient Maya.
- How does Maya writing look different from our writing? How is it the same?
- In any area, ask students to find an interesting object to describe to the rest of the group. Can the others identify the object from their description? Take turns sharing descriptions throughout the exhibition.
- Find examples of traditions contemporary Maya keep that are similar to ancient traditions.
- Try one or many of the activities. Ask students to compare what they learned from this activity with the rest of the group.
- Read labels in Spanish and English. What words are similar in both labels?



AFTER YOUR VISIT Grades 3–5

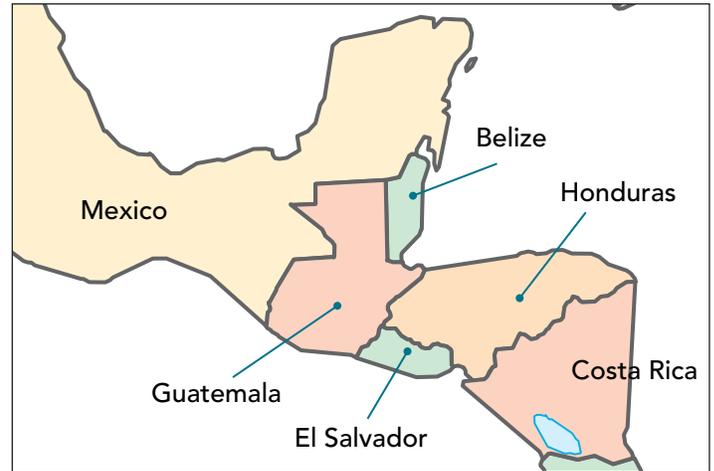
- Discuss student answers using suggestions below.
- Students can also use notes from the field trip to write more complete answers, incorporating their observations and reflections.



Unlocking the Maya Past

Use your pencil to shade in the map at right where most of the Maya towns and cities were.

Use a map of Maya towns and cities to mark and label several cities. (One source is: <http://mayagis.smv.org>)



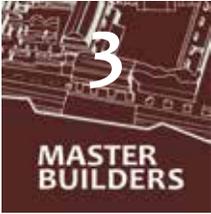
Histories in Stone

Look at the stone stelae or other stone sculptures. How many images of people can you find?

Draw a picture of one of them. Draw a picture of yourself in the same style.

Discuss what features of Maya style they used for drawing—compare to the pictures they saw in the reconstructed room at Bonampak (A Story in Pictures).





Master Builders

Caracol was a city in what is now the country of Belize. *Add Caracol to your outline map.*

Which of these gives you the most information about Caracol? Look at the exhibits in this section, then choose one. Explain why you chose the one you did.

Map of the region _____

Floor map *LiDAR* _____

Small model of the "downtown" *Caracol elevation model* _____

Discuss student choices. What details does each type of model, map, or aerial photo show? What are the pros or cons of each?

What did the builders of Caracol need to build and use this city?

How did they change the land?

Write some ideas here: _____

Natural resources: stones, wood

Tools: tumplines, cutting tools, etc.

Human resources: workers

Compare student answers to ideas about what it takes to build a city today. (Same categories, different technologies)

Grade 4 How does a city change the land it is built on? What changes do you think the Maya people noticed over the years as the city got bigger?

Grade 5 Compare the monuments of the Maya to ones students know (e.g. Capitol, public monuments in Washington DC, etc.). How do they look different? Why do you think they built them differently?

Did the Maya use any natural resources to build the city? Which ones? Ask students to choose one natural resource and find out how the Maya used it to build homes, large buildings, stelae, monuments.

Resources: websites, books, look at the material the artifacts are made from

Try out one of these activities: Using a tumpline OR Building a corbel arch

Draw a picture of your choice (tumpline or corbel arch). Write a caption for your drawing.

What was this used for in the past?

What could you use this for in your life today?

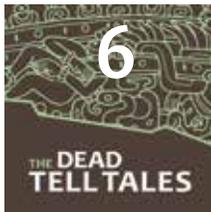
Ask students to write a paragraph explaining their chosen activity, what it was used for in the past, and their idea of how they would use it. Illustrate the paragraph with their drawing, and add labels to the drawing to explain main features of the tumpline or corbel arch.



Watching the Skies

The Maya observed the movement of objects in the sky. Which ones were important to them?

Sun, Moon, Venus, Mars, stars. What objects in the sky are important to you? For us all? Why? e.g. sun is source of energy for life, sun & moon movements organize the calendar we use today (the Maya also designed their calendar on the movement of important celestial objects). How do we use our calendar? Do you remember how the Maya use their calendar?



Death and Rebirth and The Dead Tell Tales

Archaeologists study objects to learn about the past. Find artifacts in this section that help you learn more. Complete this chart with your notes. (Hint: Unless there is one object mentioned, you can choose from many possibilities!)

Object	Location	Interesting fact, idea, or observation
Torch holder	CAVE, Belize	<i>varies (shows that people entered cave and needed light)</i>
Artifact with animal shown	CAVE in <i>name of country</i>	This shows an animal from the region, it is a <i>varies</i>
Shells	BURIAL, Belize	<i>varies</i>

Discuss: What objects from the student's life would tell future archaeologists the most about their life? What information could those future archaeologists understand from the objects the students chose?

Add to chart above: Find an object you like, tell where it is from, and add an interesting fact, idea, or observation.



A Story in Pictures

Look at all of the pictures that artists painted 1300 years ago (about 800 AD). Find one item in a picture that tells you about life in that time and place.

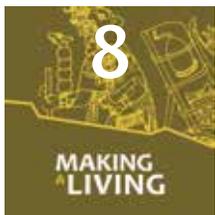
What is the item you chose? _____

Discuss

What does that item tell you about life in that time and place?

Is there an *object* in this section that is similar to the *item in the picture*? YES NO

Ask pairs or groups of 3-4 students to write a narrative (archeological interpretation) of life in Bonampak in about the year 800 AD, then compare the versions. What evidence would help support your interpretation?



Making a Living

Imagine that you were living in this city/region about 1000 years ago. Look around—find examples that show what your life might have been like. Add the examples to your notes in the questions below.

Discuss choices. What examples did they find to spark their ideas?

What kind of job would you do? Choose one—most Maya people may have had several of these jobs at the same time.

Choose one: farmer weaver shell artist scribe king ballplayer

Draw or describe your house:

What food would you eat? Find examples.

If you were doing activities on your own or with other members of your family, where would you go? What would you do?

AFTER YOUR VISIT Grades 6–8

Ask students to write complete responses to the Explorations questions, based on their notes. Review their answers as appropriate. Discuss in class to share insights, reactions, and perceptions.

Additional follow-up discussions and extensions for exhibition reflection.

- If you could create an additional display or room for *Maya: Hidden Worlds Revealed*, what would it be? Why would you choose this focus? What would it include?
- Select one of the interactive activities. Describe what you did. Record three things about the Maya you learned as a result of the activity. List student choices, along with things they learned. In a class discussion, determine if there are things they learned that are common to everyone. Are some things unique to a student and their own personal experience?
- Make a Venn diagram to compare a Maya public building with a public building in the U.S. What features would make the buildings last centuries? What features would disintegrate?
- Write a travel blog description of one Maya city. Where is it located? Why do you think this was a good place for this city? Use the details you gathered at the Museum so that someone reading your blog would like to visit the place you describe!

An example is shown below:

Along the coast of California is one of the largest tourist destinations year round, San Diego. With the sun shining daily, there was a lot we could do with our day. We explored the beauty and history of Balboa Park, containing architecture built over 100 years ago. The park is home to many museums and gardens which gives many options for anyone in your group. There is a museum dedicated to the natural history of San Diego and a koi pond filled with bright orange fish.

- Describe the role of caves in the life of the Maya. Research caves in California. Where are they located? This area is called “karst” topography. Are they similar to the caves in the Maya region?
- Discuss: What is the most interesting thing you have learned about the Maya culture?
- Think–Pair–Share: As an archeologist working to understand more, what question would you pursue next? What parts of the exhibit would be most valuable for you to revisit?

AFTER YOUR VISIT Grades 9–12

Ask students to write complete responses to the Explorations questions, based on their notes. Review their answers as appropriate. Discuss in class to share insights, reactions, and perceptions.

Additional follow-up discussions and extensions for exhibition reflection.

- What technologies or techniques that archaeologists use in the Maya region were new to students?
Mentioned in the exhibition: epigraphy, rubbings, analogies with contemporary people, LiDAR (Light Detection And Ranging), chemical analysis of speleothem, infrared light.
- How did the Maya use their environment?
Review student answers. Discuss: how would this use of the environment have impact on the environment? How does this compare with current life? Did students find any evidence in the exhibition that indicates major changes in the type of environment throughout time?

Ask students to summarize their observations of the exhibition in response to the following categories:

- Social organization: class structure and differences between class expectations and traditions
 - Political organization: was the structure similar to any political situations in the world today?
 - Relationship of religious beliefs to other parts of life
 - Artistic expression
 - Changes over time in the Maya region
- Think-Pair-Share: As an archeologist working to understand more, what question would you pursue next? What parts of the exhibit would be most valuable for you to revisit?
 - If you could create an additional display or room for *Maya: Hidden Worlds Revealed*, what would it be? Why would you choose this focus? What would it include?
 - Discuss: What is the most interesting thing you have learned about the Maya culture?



RESOURCES for Teachers and Students

Science Museum of Minnesota: *Maya: Hidden Worlds Revealed*

Background on the exhibition and associated programs, interview with exhibition archaeology curator, Dr. Ed Fleming, and images from exhibition development.

www.smm.org/maya

Caracol, a Maya city in Belize

Arlen and Diane Chase are archaeologists who have been working at Maya sites for over 30 years. Some of their research is highlighted in sections of the *Maya: Hidden Worlds Revealed* exhibition. Their website includes the main city of their research, Caracol, and includes current photos, videos and field reports, as well as this overview for young people.

www.caracol.org

Living Maya Time: Sun, Corn, and the Calendar

Includes sections about Maya people, past and present, locations of cities and population centers, worldview, the importance of corn, the Maya mathematical and calendar system, as well as further resources for educators. Developed by Smithsonian National Museum of the American Indian.

maya.nmai.si.edu

Very complete glossary of terms

maya.nmai.si.edu/sites/default/files/resources/site-glossary-en.pdf

Seeing Maya culture through examining a stela

This interactive website helps students understand several aspects of Maya art and culture (symbols, glyphs, mathematics, materials) through investigation of a stela in the DeYoung Museum's collections. Upper elementary and above.

deyoung.famsf.org/files/collectionicons/index1.html

Maya Glyphs

Maya glyph workbook

www.famsi.org/research/pitts/MayaGlyphsBook1Sect1.pdf

Background information about the Maya glyphs (as well as other scripts)

www.ancientscripts.com/maya.html

Maya Scribes

www.sfgate.com/news/article/Politics-of-the-ancient-Maya-rested-on-the-2896686.php

San Diego Museum of Man

www.museumofman.org/exhibit/maya-heart-sky-heart-earth



California Academic Standards

The San Diego Natural History Museum provides a field trip destination which allows teachers and students to reinforce the California Academic Standards (California State Standards, Common Core, or Next Generation Science Standards). Use of the materials in this guide in combination with a field trip to *Maya: Hidden Worlds Revealed* will help you link learning experiences to the following content standards.

GRADES 3-5

SOCIAL STUDIES—California State Content Standards

Grade 3

3.1 Students describe the physical and human geography and use maps, tables, graphs, photographs, and charts to organize information about people, places, and environments in a spatial context.

3.3 Students draw from historical and community resources to organize the sequence of local historical events and describe how each period of settlement left its mark on the land.

3.5 Students demonstrate basic economic reasoning skills and an understanding of the economy of the local region.

Grade 5

5.2 Students trace the routes of early explorers and describe the early explorations of the Americas.

ART—California State Content Standards

Grade 4

Visual Arts

1.1 Perceive and describe contrast and emphasis in works of art and in the environment.

1.2 Describe how negative shapes/forms and positive shapes/forms are used in a chosen work of art.

1.4 Describe the concept of proportion (in face, figure) as used in works of art.

1.5 Describe and analyze the elements of art (e.g., color, shape/form, line, texture, space, value), emphasizing form, as they are used in works of art and found in the environment.

3.1 Describe how art plays a role in reflecting life (e.g., in photography, quilts, architecture).

4.3 Discuss how the subject and selection of media relate to the meaning or purpose of a work of art.

4.5 Describe how the individual experiences of an artist may influence the development of specific works of art.

5.3 Construct diagrams, maps, graphs, timelines, and illustrations to communicate ideas or tell a story about a historical event.

ENGLISH LANGUAGE ARTS—California State Content Standards

Grade 3

RL 3.2 Recount stories, including fables, folktales, and myths from diverse cultures; determine the central message, lesson, or moral and explain how it is conveyed through key details in the text.

RI 3.7 Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).

W 3.8 Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.

Grade 4

RL 4.9 Compare and contrast the treatment of similar themes and topics (e.g., opposition of good and evil) and patterns of events (e.g., the quest) in stories, myths, and traditional literature from different cultures.

W 4.8 Recall relevant information from experiences or gather relevant information from print and digital sources; take notes, paraphrase, and categorize information, and provide a list of sources.

Grade 5

RI 5.6 Analyze multiple accounts of the same event or topic, noting important similarities and differences in the point of view they represent.

W 5.8 Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources.

SCIENCE—NGSS Science and Engineering Practices

Grades 3–5

Plan and Carry Out Investigations

Analyze and Interpret Data

Construct Explanations

Engage in Argument from Evidence

Connections to Engineering, Technology, and Applications of Science

Grades 3–5

Science is a Human Endeavor



Influence of Science, Engineering, Technology, and Science on Society and the Natural World

GRADES 6-8

SOCIAL STUDIES—California State Content Standards

Grade 6

6.1 Students describe what is known through archaeological studies of the early physical and cultural development of humankind from the Paleolithic era to the agricultural revolution.

Grade 7

7.7 Students compare and contrast the geographic, political, economic, religious, and social structures of the Meso-American and Andean civilizations.

ART—California State Content Standards

Grade 6

3.2 View selected works of art from a culture and describe how they have changed or not changed in theme and content over a period of time.

4.1 Construct and describe plausible interpretations of what they perceive in works of art.

4.2 Identify and describe ways in which their culture is being reflected in current works of art.

Grade 7

3.1 Research and describe how art reflects cultural values in various traditions throughout the world.

3.2 Compare and contrast works of art from various periods, styles, and cultures and explain how those works reflect the society in which they were made.

Grade 8

4.1 Define their own points of view and investigate the effects on their interpretation of art from cultures other than their own.

4.2 Develop a theory about the artist's intent in a series of works of art, using reasoned statements to support personal opinions.

4.3 Construct an interpretation of a work of art based on the form and content of the work.

ENGLISH LANGUAGE ARTS—California Common Core State Standards

Grades 6–8

W 6.1; 7.1; 8.1 Write arguments to support claims with clear reasons and relevant evidence.

RH 6.1 Cite specific textual evidence to support analysis of primary and secondary sources.

RH 6.4 Determine the meaning of words and phrases as

they are used in a text, including vocabulary specific to domains related to history/social studies.

RH 6.7 Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.

RH 6.8 Distinguish among fact, opinion, and reasoned judgment in a text.

RST 6.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6–8 texts and topics.

RST 6.8 Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.

WHST 6.7 Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.

WHST 6.8 Gather relevant information from multiple print and digital sources (primary and secondary), using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.

SCIENCE—NGSS

Connections to Engineering, Technology, and Applications of Science

Grades 6–8

Science is a Human Endeavor

Influence of Science, Engineering, Technology, and Science on Society and the Natural World

Interdependence of Science, Engineering, and Technology

Grades 9–12

SOCIAL STUDIES—California State Content Standards

Grade 10

10.10.1 Understand the challenges in the regions, including their geopolitical, cultural, military, and economic significance and the international relationships in which they are involved.

10.10.2 Describe the recent history of the regions, including political divisions and systems, key leaders, religious issues, natural features, resources, and population patterns.

ART—California State Content Standards

Grades 9–12

Advanced

3.1 Identify contemporary styles and discuss the diverse social, economic, and political developments reflected in the works of art examined.



3.3 Investigate and discuss universal concepts expressed in works of art from diverse cultures.

3.4 Research the methods art historians use to determine the time, place, context, value, and culture that produced a given work of art.

4.1 Describe the relationship involving the art maker (artist), the making (process), the artwork (product), and the viewer.

Proficient

3.1 Identify similarities and differences in the purposes of art created in selected cultures.

4.1 Articulate how personal beliefs, cultural traditions, and current social, economic, and political contexts influence the interpretation of the meaning or message in a work of art.

ENGLISH LANGUAGE ARTS—California Common Core State Standards

Grades 9–12

W 7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

SL 2 Integrate multiple sources of information presented in

diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source.

WHST 7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

WHST 8 Gather relevant information from multiple authoritative print and digital sources (primary and secondary), using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.

SCIENCE—NGSS

Connections to Engineering, Technology, and Applications of Science

Grades 9–12

Science is a Human Endeavor

Influence of Science, Engineering, Technology, and Science on Society and the Natural World

Interdependence of Science, Engineering, and Technology

Science Addresses Questions About the Natural and Material World