

King Tut

A pharaoh is an ancient Egyptian ruler. Ancient Egypt had hundreds of pharaohs. That is because its history is very long. The ancient Egyptian empire lasted from about 3150 BCE to about 31 BCE.

You can figure out how long that is by doing a simple subtraction problem.

There were about 170 pharaohs in all. Most Egyptologists, those are people who study ancient Egypt, think that Menes was the first pharaoh of Egypt, and they know that Cleopatra VII was the last.

### FIGURE IT OUT!

About 3150 BCF - About 31 BCE About 3119 Years

- 1) nemes crown
- 2) uraeus
- 3) Wadjet
- 4) false beard
- 5) flail
- 6) crook

### What the Pharaoh Wore

THINK INSIDE THE BOX

- 1) What is the pharaoh holding?
- 2) What might these objects symbolize?
- 3) What kind of head garment does the pharaoh wear?

Egyptian pharaohs wore ceremonial clothes. Many of the things that they wore or carried were symbols of their power and position in Egyptian society. Look carefully at the pharaoh that is pictured above then Think Inside of the Box!

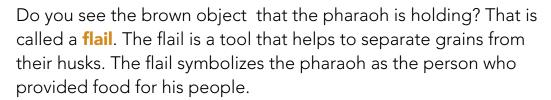
Let's start with the head of the pharaoh! The pharaoh is wearing a nemes crown. The Nemes is a striped head cloth that covers the entire back of the head and neck.



Some Egyptologists think that it is meant to look a little like a lion's mane. Whenever you see a pharaoh shown as a sphinx, they will be wearing this crown.

Do you see that tiny cobra on top of the nemes crown? It is called a **uraeus**. The uraeus is an upright cobra. It means that the pharaoh is ready to strike at his enemies with venom at any time. The uraeus is the symbol of the ancient Egyptian goddess **Wadjet**.

Have you ever noticed that pharaohs always have a beard? This is called a **false beard**. In real-life, most Egyptian men were cleanshaven, but pharaohs, even the female ones, wore fake beards. Usually the beards were plaited like a big braid. No one is really sure why the ancient Egyptian pharaohs did this, but it somehow connected the pharaoh to the gods.



What do an ancient Egyptian pharaoh and Little Bo Peep have in common? That striped object with the pharaoh is called a **crook**. A crook was a tool used by shepherds to help gather and move their flocks of sheep. **It's Time to Think Inside of the Box!** 





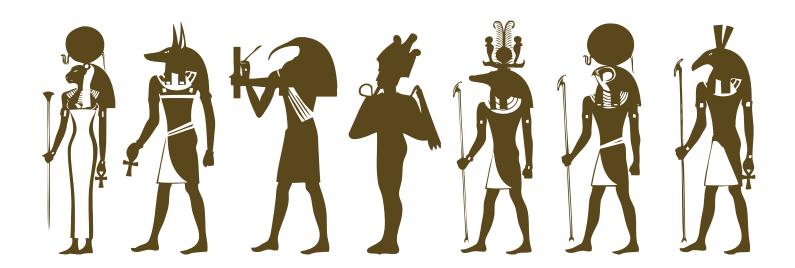
uraeus/false beard



Wadjet Eye

How can an ancient Egyptian pharaoh and a shepherd be compared?

> THINK INSIDE THE BOX



## Symbols of Pharaohs

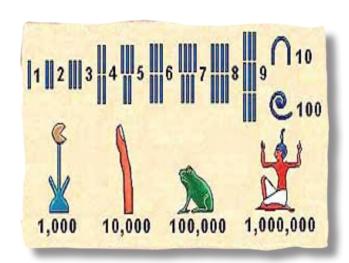
Ancient Egyptian pharaohs used many things to symbolize their power and leadership. Think of the nemes crown that looks like a lion's mane. The lion is strong and powerful. He is often called the king of the jungle! The uraeus features a venomous cobra about to strike! The crook, a tool of shepherds, shows that the pharaoh leads and protects his people. Moreover, the flail symbolizes the pharaoh's role as the provider of food for his people.

## Symbols of Presidents

Pharaohs are not the only leaders that are closely associated with symbols. This is the seal of the President of the United States. What things do you see here? What might they symbolize?



# Ancient Egyptian Math



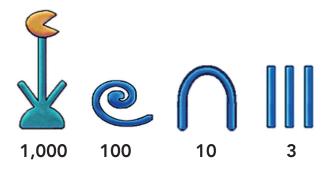
The ancient Egyptians had hieroglyphs to represent letter sounds, whole words, parts of words, and even complex ideas. They also had symbols to represent numerals.

The ancient Egyptians had to be pretty good at math too! Think of all those pyramids, tombs, sphinxes, massive statues, and palaces that they were famous for building. You can't make any of that stuff without mathematics. You also need math to trade goods and measure the land for planting crops.

Look at the symbols above to see how the ancient Egyptians wrote their numerals. Take a guess at what the numeral below and on the left is. Hint! Read the numeral from left to right. The larger numbers always come first.



Let's work it out! The stands for 10 and the stands for the numeral 7. So 10 plus 7 equals 17. The number is 17!



Let's try another one. Use the chart on this page to help you figure out the number to the left:

Look at each symbol carefully. What amount does each one represent? Look at the value of each symbol underneath of it to help you read this numeral. The numeral is 1,113.

# Ancient Egyptian Math

Just as our numerals have names, so do ancient Egyptian numerals. For example, when we talk about the numeral 1,000 we say the words one thousand. Study the symbols to learn what to call the numerals of the ancient Egyptians.















One (1) is a stroke.

Ten (10) is a hobble for cattle.

One hundred (100) is a coil of rope.

One thousand (1,000) is a lotus plant.

(10,000) is a finger.

Ten thousand One hundred thousand (100,000) is a frog.

One million (1,000,000) is an Egyptian god.

### Problem Solving

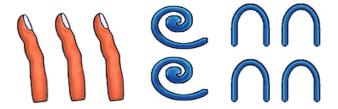
Now that you know all of the symbols for ancient Egyptian numerals, try a little ancient Egyptian numeral translation. See if you can read the following numerals. Write the numeral in standard form in the spaces provided.



Write your answer here.



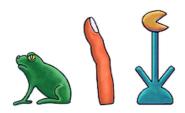
Write your answer here.



Write your answer here.



Write your answer here.



Write your answer here.



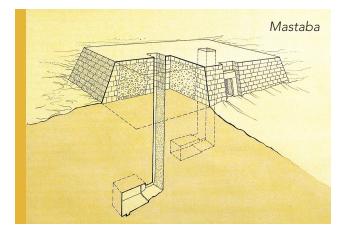
One of the things for which the ancient Egyptians are most famous is building pyramids. Pyramid building requires great skill, mathematical and engineering knowledge and practice! It took the ancient Egyptians a long time to figure out how to build the types of pyramids that are most closely associated with them.

Take a look at the **Pyramid of Djoser** (*doe-shur*). It is Egypt's oldest (first) pyramid. It is located in an area called Saqqara. **Saqqara** (*sak-kar-ah*) is a large ancient Egyptian burial ground. All ancient Egyptian pyramids marked the location of where people were buried.

What does this pyramid remind you of? Are you thinking of a flight of steps? The Pyramid of Djoser is called a **step pyramid**. A step pyramid is a kind of ancient Egyptian tomb that is constructed out of a series of **mastabas**. A mastaba is a rectangular structure

that has sides that slope outwards.

Mastabas were made of mud bricks. Look carefully at the diagram of the mastaba on the left. Do you see how the walls are sloped outward? This helps to keep the weight of the structure evenly distributed. The Step Pyramid of Djoser is made of five mastabas, one on top of the other. Do you see the burial chambers that descend beneath the mastaba?





- Pyramid of Djoser
- 2) Saggara
- 3) step pyramid
- 4) mastaba

VOCABULARY

# Pyramid Power





This is the **Bent Pyramid of Sneferu** (*s-nay-fer-oo*). **Sneferu** was a pharaoh. This is his burial place. It is located in an area called Dahshur.

The pyramid has a bent appearance because the bottom part of it inclines or slants to a greater degree than the top part of it.

The pyramid to the left is called the **Great Pyramid of Giza**. It is also one of the most famous structures that has ever been built. It is one of the Seven Wonders of the ancient world; the only one still standing.

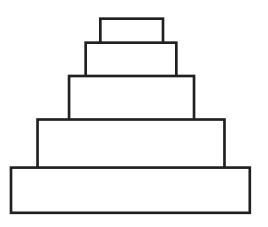
Look carefully at the dates of each pyramid. How many years have elapsed between each one? What conclusions can you draw about ancient Egyptian construction methods by considering when these pyramids were built and how the techniques changed?

Examine the three pyramids on the next page. Can you see how they changed over time? They are all fundamentally the same shape, but as the ancient Egyptians advanced, and their knowledge of engineering and mathematics improved, the sides of the pyramids became more sophisticated.



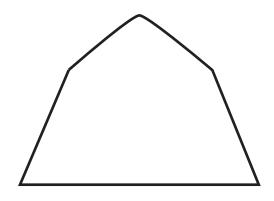






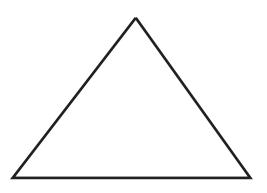
The Pyramid of Djoser was built in 2667 BCE.





The Bent Pyramid of Sneferu was built in 2600 BCE, 67 years later.





The Great Pyramid was built in 2560 BCE, 40 years later.

What is the first thing that pops into your head when you think about the ancient Egyptians? Is it a pyramid in the desert, some hieroglyphs etched into a block of stone, or a fearsome pharaoh?

Maybe it is some of those things. Maybe it is none of those things. Maybe what you think about is something that has been dead for thousands of years!

A mummy is a dead body that has been intentionally preserved. There are lots of different ways to preserve a corpse, but nobody did it as well as the ancient Egyptians. They had special techniques that they perfected over centuries. The ancient Egyptians were so good at the practice of mummification, that we are still discovering their mummies today.

		<b>***</b>
1)	mummy	R
2	) Mecca	I.A
3)	cremate	ABC
4	) embalm	)C/
5)	) ka	>
6	) ba	

Make a list of some religions that you know.

1)\_\_\_\_\_

2)\_\_\_\_\_

THINK INSIDE THE BOX

3)\_\_\_\_\_

4)\_\_\_\_\_

## Religious Beliefs

There are many different religions in the world. All of these religions have beliefs and rituals that are associated with death.

Some religions believe in a life after death, in heaven or hell. Others believe in reincarnation. There are people

who don't practice any religion who believe that the life you live on earth is the only life you will ever have.

Different religions also have different rituals



that they practice when someone dies. For example, Islam requires that Muslims be buried with their heads pointing toward Mecca. Mecca is the birthplace of the prophet Mohammad.

Traditionally, Jews believe that the body is the property of God and that it should not be defaced in any way. For this reason, Jews usually do not cremate or embalm their dead.

Cremate means to burn a body after death. Embalm means to use chemicals to temporarily preserve the body so it can be shown at a funeral.

Hindus and Buddhists prefer cremation. They believe that the burning of the body focuses the attention of the living on just how short and temporary life really is.

You can see that religious beliefs about what happens to a person after death, determines what happens to the body at the time of death. Knowing this will help you understand why the ancient Egyptians practiced mummification.





# Ancient Egyptian Religion

Like all civilizations, the ancient Egyptians held strong religious beliefs. They believed that all people had a ka and a ba. The ka is the life-force. Everybody's ka is exactly the same.

The **ba** is like your conscience or personality. It is made up of the good and the bad that you do during your life. The combination of the ba and the ka is similar to the Christian idea of a soul.

The ancient Egyptians believed that after a person died, the ka would leave the body and go to live with the gods. In order for the ka to be able to do this, it needed food and drink. This is why



the ancient Egyptians buried their dead with jugs of wine and bowls of food.

But what is the role of the ba? The picture on the right gives you a clue. The ancient Egyptians believed that the ba left the body during the day to be united with the ka, but at night it had to return.

Because the ba rested inside of the deceased body, the body itself had to preserved. This is why the ancient Egyptians practiced mummification. If nothing was done to the body after death, it would naturally decay. And if there was no body, where would the ba go to rest? The picture above shows the ba returning to the mummy to rest.

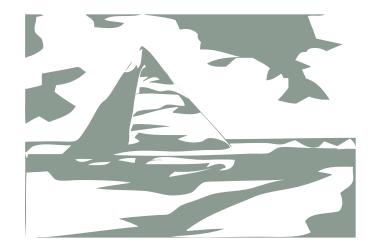
The ancient Egyptians, just like religious people today, had reasons for practicing the rituals that they did. To us, some of these may seem very unusual. But just imagine how odd a Christmas tree or the practice of yoga may seem to an ancient Egyptian!



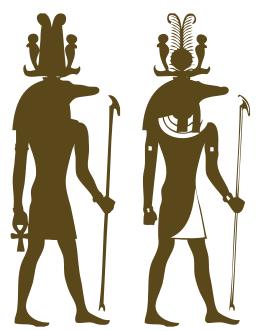
### The Mummification Process

The ancient Egyptians are famous for making mummies. But it took them centuries to figure out the best ways to preserve their dead.

Their techniques were so good that we still find Egyptian mummies today! Embalmers performed the mummification process. It was complex, took many days, and always began the same way...with a corpse!



- **Step 1:** Wash the body with palm wine and water from the Nile River.
- **Step 2:** Make an incision on the left-side of the abdomen.
- **Step 3:** Remove the lungs, stomach, liver and intestines through the incision.
- **Step 4:** Push a brain hook up into the left nostril and jiggle it around to liquify the brain.
- **Step 5:** Turn the body over and allow the brain to flow out through the nostrils and into a bowl.
- **Step 6:** Place the preserved liver, lungs, stomach, and intestines in canopic jars.



- Step 7: Bury the body in a kind of salt called natron to dry it out.
- **Step 8:** After 40 days, remove the natron. The body will be darker and much thinner.
- **Step 9:** Wash the body and stuff the cavity with resin-soaked linen.
- **Step 10:** Call the make-up artist to apply make-up to the face. He might want to fit the deceased with a wig.
- Step 11: Rub the body in scented oil.

## The Mummification Process

Step 12: Brush the body in melted pine resin (sap) to seal it.

Step 13: Place a golden plate with a Wadjet eye (the eye of Horus) over the incision.

Step 14: Waft incense to purify the air.

**Step 15:** Wrap the body in linen.

Step 16: Insert amulets (charms) in-between the layers of linens.

Step 17: Place a vulture amulet at the throat of the deceased.

**Step 18:** Place a special amulet called a heart scarab over the heart.



Wadjet Eye



Step 19: Place a mask over the face of the deceased.

**Step 20:** Label the deceased with their name.

Step 21: Place the mummy in a sarcophagus.

**Step 22:** Place the sarcophagus in a tomb.

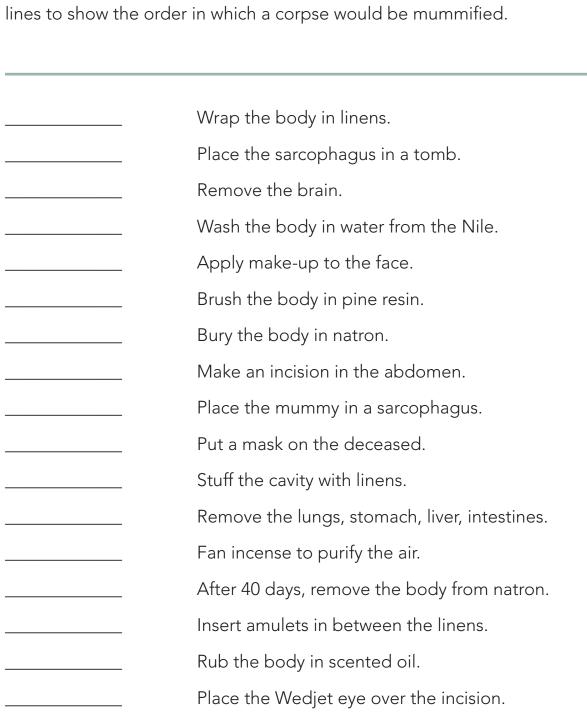
Heart Scarab

The ancient Egyptians recited spells or prayers from the *Egyptian Book of the Dead* to help the deceased in the afterlife. Below is one of these spells.

Come for my soul, O you wardens of the sky! If you delay letting my soul see my corpse, you will find the eye of Horus standing up thus against you...The sacred barque will be joyful and the great god will proceed in peace when you allow this soul of mine to ascend vindicated to the gods...May it see my corpse, may it rest on my mummy, which will never be destroyed or perish.

### Part | Directions

Do you have what it takes to be an ancient Egyptian embalmer? Put the steps of the mummification process in order by placing numbers on the lines to show the order in which a corpse would be mummified.



Label the deceased with his/her name.

### Part II Directions

Why do you think that most cultures and civilizations have, both in the past and now, elaborate rituals surrounding death? Use the space below to write what you think.			



### Part | Directions

Do you have what it takes to be an ancient Egyptian embalmer? Put the steps of the mummification process in order by placing numbers on the lines to show the order in which a corpse would be mummified.



13	Wrap the body in linens.
17	Place the sarcophagus in a tomb.
4	Remove the brain.
1	Wash the body in water from the Nile.
8	Apply make-up to the face.
10	Brush the body in pine resin.
5	Bury the body in natron.
2	Make an incision in the abdomen.
16	Place the mummy in a sarcophagus.
14	Put a mask on the deceased.
7	Stuff the cavity with linens.
3	Remove the lungs, stomach, liver, intestines.
12	Fan incense to purify the air.
6	After 40 days, remove the body from natron.
14	Insert amulets in between the linens.
9	Rub the body in scented oil.
11	Place the Wedjet eye over the incision.
15	Label the deceased with his/her name.

### Part II Directions

Why do you think that most cultures and civilizations have, both in the past and now, elaborate rituals surrounding death? Use the space below to write what you think.			

## Riddles of the Sphinx



According to Greek myth, any traveler who passed by the sphinx, outside the ancient city of Thebes, had to answer a riddle. If they were unable to answer, the Sphinx would kill them. See if you can figure out the answer to this riddle.

What goes on four legs in the morning, on two legs at noon, and on three legs in evening?

Give up? The answer is Man. He crawls on all fours as a baby, walks on two legs as an adult, and walks with a cane in old age.

#### Directions

The sphinx of Ramesses II has a few more riddles for you. Can you figure out the missing words?

From my face there once arose

A sculpted slender regal nose

But now it's gone not from corrosion

But from a process called \_\_\_\_\_\_

For over 60 years I reigned

My enemies were all contained

By fear I struck within their marrow

In Egypt I was called the \_\_\_\_\_



For millennia my name's been known

Of my greatness there is no denial

Along the banks of river \_\_\_\_\_\_.





The Canaanites were duly quelled

The Nubians were soon dispelled

I expanded the Egyptian state

I'm known as Ramesses the \_\_\_\_\_\_ .

I ruled in ancient desert lands

This monument to me still stands

The antique past and present links

A granite statue called the \_\_\_\_\_\_ .





The ancient Egyptians developed a sophisticated and unique written language that we call **hieroglyphs**. Hieroglyphs are pictures and symbols that stand for letter sounds, objects, and ideas.

Some of pictures or symbols stand for a single sound. These kinds of symbols are called **alphabetic**. For example, a picture of a foot stood for the sound that our letter "B" makes. A picture of an owl makes the same sound as our letter "M."



There are other symbols in Egyptian hieroglyphs that stand for the sound of a whole syllable. These kinds of hieroglyphs are called **syllabic**. The glyph to the right, called a pool with reeds, makes the sound sha. What word do you think the glyphs below makes?





Here are some more alphabetic hieroglyphs. Do you see any of them in the ancient Egyptian inscription at the top left of the page?





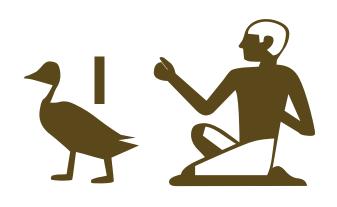


Another kind of Egyptian hieroglyph is called a **word-sign**. A word-sign is a picture that stands for a whole word. Look at the word-signs on this page. They are all hieroglyphs for the names of family members. What do the symbols have in common? What parts of the symbols are different?

Ancient Egyptian hieroglyphs were complex. Think of all of the words that you know that would be hard to explain by just using a picture. How would you show fairness or dishonesty?

The ancient Egyptians had a solution for that problem. They used something called **determinatives**. A determinative is a picture that tells the reader that the idea being expressed is abstract or very hard to show with just a picture.





SON

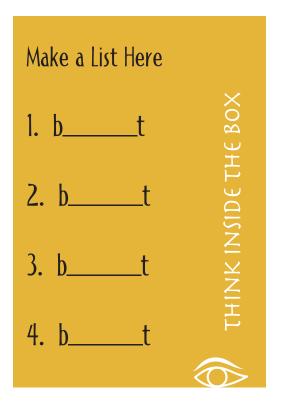




One thing that ancient Egyptian hieroglyphs did not have were symbols for all of the vowel sounds. It is not that they did not make vowels sounds; they just did not have a complete set of symbols for all the sounds that a, e, i, o, and u make! Imagine if you came across these hieroglyphs:

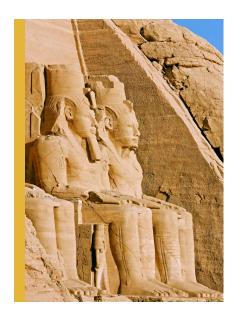


Do you remember what letter sounds these hieroglyphs make? The foot makes the sound of *B* and the loaf makes the sound of *T*. Without a glyph for the vowel sound this could be many words. How many different words could you make in English by just changing the vowel between a *B* and a *T*?



Because Egyptian hieroglyphs did not have lots of symbols for vowel sounds, it is sometimes hard to know what the words are and how they may have been pronounced.

You may notice that the names of famous Egyptians or Egyptian gods are spelled in lots of different ways. That is because of those missing vowel symbols.



The picture on the left is a statue of a very powerful and famous ancient Egyptian pharaoh. His name was:

- Ramesses II
- Ramses II
- Rameses II

**Egyptologists**, or people who are experts on ancient Egypt, cannot say for sure how the famous ruler's name was spelled because of the missing vowels!

### Your Turn

Think of how hard it would be to translate a language that does not have any symbols for vowels. When you **translate** a language, it means that you change the words from one language into another language. See if you can read the paragraph below. After you have read it, rewrite it with all of the missing vowels. Use the space provided. *Hint! The spaces within the paragraph stand for a one letter word!* 

Th ncnt gyptns usd frm of wrtng called hrglphs. Hrglphs ar pcturs r smbls
tht stnd fr the snds of lttrs, bjcts r ds. n knd f hrglyth s clld lphbtc. Ths stnds fr
sngl snd tht sngl lttr mks. Anthr knd f hrglyph s clld sllbc. Sllbc stnds
fr th snd f whl sllbl. Wrd-sgns r hrglphs tht stnd fr whl wrds. Fr xmpl, thr s
wrd-sgn fr fthr, mthr, sstr, and brthr. n f th thngs tht mks ncnt gyptn hrglphs
dffrnt frm nglsh, s tht thr r vry fw smbls fr vwl snds.
Translate the paragraph below.

## Answer Key

The ancient Egyptians used a form of writing called hieroglyphs. Hieroglyphs are pictures or symbols that stand for the sounds of letters, objects or ideas. One kind of hieroglyph is called alphabetic. These symbols stand for a single sound that a single letter makes. Another kind of hieroglyph is called syllabic. Syllabic stands for the sound of whole syllables. Word-signs are hieroglyphs that stand for whole words. For example, there is a word-sign for father, mother, sister and brother. One of the things that makes ancient Egyptian hieroglyphs different from English is that there are very few symbols for vowel sounds.

The words below are vocabulary that you learned during your trip to the Penn Museum's Egyptian galleries. Look carefully at each word. Rewrite the word to show its correct syllabication.

Exa	ample: granite	gra-nite	
1.	Egypt		
2.	sphinx		
3.	sarcophagus		
4.	natron		
5.	Nile		
6.	crook		
7.	desiccate		
8.	Osiris		
9.	gods		
10.	hieroglyphs		
11.	flail		
12.	afterlife		

12. afterlife

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Examp	le: granite	gra-nite
	e. granite	qı a-ı ii te

1.	Egypt	E-gypt
2.	sphinx	sphinx
3.	sarcophagus	sar-coph-a-gus
4.	natron	na-tron
5.	Nile	Nile
6.	crook	crook
7.	desiccate	des-ic-cate
8.	Osiris	O-si-ris
9.	gods	gods
10.	hieroglyphs	hi-er-o-glyphs
11.	flail	flail

af-ter-life

The words below are things or ideas that you learned during your trip to the Penn Museum's Egyptian galleries. Look carefully at each word. Use what you know about the patterns of syllabication to decide in which column the word belongs. Make sure you show the correct syllabication for each word. The first one has been done for you.

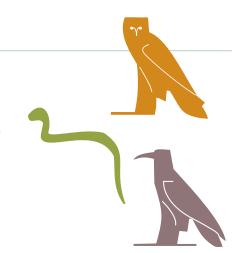


Word	VCV	VV	VCCV
1. stela	ste-la		
2. scarab			
3. linen			
4. mummy			
5. granite			
6. pharaoh			
7. cartouche			
8. embalm			
9. resin			
10. wedjet			
11. desert			

## Syllabication Patterns

### Directions

The words below are things or ideas that you learned during your trip to the Penn Museum's Egyptian galleries. Look carefully at each word. Use what you know about the patterns of syllabication to decide in which column the word belongs. Make sure you show the correct syllabication for each word. The first one has been done for you.



Word	VCV	VV	VCCV
1. stela	ste-la		
2. scarab	scar-ab		
3. linen	lin-en		
4. mummy			mum-my
5. granite	gra-nite		
6. pharaoh	phar-aoh		
7. cartouche			car-touche
8. embalm			em-balm
9. resin	re-sin		
10. wedjet			wed-jet
11. desert	des-ert		

Draw a line like a cobra snake from the items in Column A to match the items in Column B. You will have one left over.

### Column A

- 1. brain
- 2. canopic jar
- 3. Nile
- 4. inundation
- 5. cartouche
- 6. linen
- 7. sphinx
- 8. silt
- 9. heart scarab
- 10. Rosetta Stone
- 11. hieroglyphs
- 12. Ramesses II

- 1. ruler
- 2. lion-like statue
- 3. amulet
- 4. junk organ
- 5. fertile soil
- 6. writing system
- 7. translator aid
- 8. name plate
- 9. mummy wrap
- 10. organ container
- 11. river
- 12. flood
- 13. Lower Egypt



# Ancient Egypt Word Match I

### Directions

Draw a line like a cobra snake from the items in Column A to match the items in Column B. You will have one left over.

### Column A

- brain
- 2. canopic jar

10

11

12

8

9

2

5

3

7\_\_

6

1

- 3. Nile
- inundation
- cartouche
- 6. linen
- sphinx 7.
- silt 8.
- 9 heart scarab
- 10. Rosetta Stone
- 11. hieroglyphs
- 12. Ramesses II

- ruler 1.
- 2. lion-like statue
- 3. amulet
- junk organ 4.
- fertile soil 5.
- writing system 6.
- translator aid 7.
- 8. name plate
- 9. mummy wrap
- 10. organ container
- 11. river
- 12. flood
- 13. Lower Egypt



Draw a line like a cobra snake from the items in Column A to the match the items in Column B. You will have one left over.

#### Column A

- 1. uraeus
- 2. pharaoh
- 3. after-life
- 4. natron
- 5. embalmer
- 6. Nemes
- 7. false beard
- 8. crook and flail
- 9. stela
- 10. Osiris
- 11. mummy
- 12. sarcophagus

- 1. stone coffin
- 2 fake whiskers
- 3. head garment
- 4. signs of kingship
- 5. desiccated body
- 6. life beyond life
- 7. cobra ornament
- 8. Egyptian god
- 9. big boss
- 10. stone slab
- 11. salt substance
- 12. mummy maker
- 13. Upper Egypt



# Ancient Egypt Word Match II

### Directions

Draw a line like a cobra snake from the items in Column A to the match the items in Column B. You will have one left over.

#### Column A

- 1. uraeus
- 2. pharaoh
- 3. after-life

6

11

12

3

2

4

10

8\_\_\_8

5

1

- 4. natron
- 5. embalmer
- 6. Nemes
- 7. false beard
- 8. crook and flail
- 9. stela
- 10. Osiris
- 11. mummy
- 12. sarcophagus

- 1. stone coffin
- 2 fake whiskers
- 3. head garment
- 4. signs of kingship
- 5. desiccated body
- 6. life beyond life
- 7. cobra ornament
- 8. Egyptian god
- 9. big boss
- 10. stone slab
- 11. salt substance
- 12. mummy maker
- 13. Upper Egypt

