



TRAVEL TO AN EXOTIC AND EXTRAORDINARY LAND.



MACGILLIVRAY FREEMAN'S

# ARABIA

**Educator's Resource and  
Activity Guide**

[www.arabia-film.com](http://www.arabia-film.com)







## Educator's Resource and Activity Guide

### Introduction

The giant-screen film, *ARABIA*, is a thought-provoking learning adventure about a land steeped in myth and mystery. In the film unfolds the story of an extreme desert environment that, through its people's thirst for knowledge, the riches of global trade and a deep devotion to faith, has become one of the most powerful, yet least understood, regions on Earth today. Audiences will ride the dunes with a camel caravan, dive into the treasure-laden Red Sea, explore the ruins of a towering lost city, hurtle back into the Islamic golden age of invention, join three million Muslims on the *hajj* pilgrimage, and get to know the young Arabians transforming tomorrow's world. The result is a surprising and illuminating journey that not only unveils an oft-hidden world full of discovery—but also serves as a bridge between two cultures that have long misunderstood one another.

*ARABIA* is a film for IMAX®, IMAX Dome and IMAX 3D Theatres. [www.arabia-film.com](http://www.arabia-film.com)

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## BACKGROUND INFORMATION:

# Saudi Arabia and the Red Sea



*Note: MacGillivray Freeman Films has chosen to use the most uniformly accepted Saudi Arabian spelling for proper nouns related to Saudi Arabia.*

## The House of Saud

Saudi Arabia is the largest country on the Arabian Peninsula, a land mass bordered by the Red Sea to the west, the Persian Gulf to the east and the Arabian Sea to the south.

It is the geographic origin of the Islamic faith and the steward of the holy cities Makkah and Madinah. Each year, Saudi Arabia hosts one and a half to two million *hajjis*, or pilgrims, who are fulfilling one of the five pillars of Islam: to make a *hajj* to Makkah, the birthplace of Mohammed.

Sitting in western Asia and bordering Africa, the ancestors of today's Saudis enjoyed a key trading position in the Mediterranean world. Caravans of camels carried goods to the Roman Empire.

In 1932 Abdul Aziz al Saud II founded the modern country when he united Bedouin tribes and declared himself king of Saudi Arabia, "Arabia of the Sauds." The monarchy continued after his death when each succeeding king, a son of Abdul Aziz, ruled Saudi Arabia. (It is estimated that Abdul Aziz had 50-60 children.) Today, more than five thousand Saudis comprise the "royal family."

(Mackey, Sandra. *The Sauds: Inside the Desert Kingdom*. (W.W.Norton & Co.: NY), 2002: 193)



## A Parched Land

Saudi Arabia is the world's largest country with no rivers and streams. Approximately four inches of rain falls each year. There are ancient aquifers beneath the country, which hold water that is 10,000 years old. Talk about a non-renewable resource!

The Rub al Khali (also known as the Empty Quarter), covering one fifth of Saudi Arabia, is the world's most arid desert. In some places, sand goes 600 feet below the surface. During the spring season, Saudi Arabia is vulnerable to frequent sandstorms. During these sudden storms, 20-30 mile per hour winds can blow sand up to 180 feet wide and 3,000 feet high.

## Pockets of Petroleum

Today, the kingdom is the world's number one exporter of petroleum. One fourth of the world's oil reserves are found in the kingdom.

The word "petroleum" literally means "rock oil." Crude oil, or petroleum, sits far below the earth's surface. It developed from the fossilized remains of plants and animals, which decomposed millions of years ago when the environment was swampy and covered with water. Over the centuries, the decomposed organisms were covered by mud and earth and formed into rocks such as limestone. These sediments became tightly compressed and released hydrogen and carbon gases. When these hydrocarbons are brought to the surface, they are extracted as crude oil or petroleum. [NOTE: for reference, there is a helpful diagram at [www.kids.esdb.bg/oil.html](http://www.kids.esdb.bg/oil.html)]

Petroleum has become essential to humans. It is the gasoline that powers our cars; it heats our homes and is found in a myriad of household products such as plastics and even in crayons.



## Red Sea: A Uniquely Rich Sea

Most Saudis live along the kingdom's coasts, which includes the Red Sea, or *Bahr al Ahmar* in Arabic.

(Oceanography and Marine Science. Saudi Geological Survey, 7/7/2009 [www.sgs.org.sa/index.cfm?sec=221&page=](http://www.sgs.org.sa/index.cfm?sec=221&page=))

The formation of the Red Sea is a relatively recent geological phenomenon. The Arabian Peninsula used to be attached to the African continent. About 25 million years ago the Nubian Shield, the eastern part of Africa, began to separate from the Arabian shield. This rifting created the Red Sea.

[NOTE: for reference, there is a helpful diagram at [www.tulane.edu/~sanelson/images/eafrica.gif](http://www.tulane.edu/~sanelson/images/eafrica.gif)]

It is easy to identify the Red Sea on a map because its silhouette resembles a slug. It has an elongated shape which only developed in the last 4-5 million years.

(Oceanography and Marine Science. Saudi Geological Survey, 7/7/09 [www.sgs.org.sa/index.cfm?sec=221&page=](http://www.sgs.org.sa/index.cfm?sec=221&page=))

The sea is spreading from east to west at a rate of 1.5-2 centimeters each year.

(Dr. Waleed M. Agdulghanu, *Theories on Arabian Shield's Formation*, King Fahd University of Petroleum & Minerals 7/9/09, [ocw.kfupm.edu.sa/user/GEOL31801/Lecture%20notes.ppt](http://ocw.kfupm.edu.sa/user/GEOL31801/Lecture%20notes.ppt))

The northern part of the Red Sea resembles a bug's antennae where it separates into the Gulf of Aqaba in the northeast and the Gulf of Suez in the northwest. The Red Sea

is connected to the Mediterranean Sea via the Suez Canal in Egypt, providing a waterway passage between Southeast Asia and Europe. [NOTE: for reference, there is a helpful diagram at [mapsof.net/Red\\_Sea/](http://mapsof.net/Red_Sea/)]

The Red Sea is singular because no rivers or streams flow into it. The only introduction of life into this body of water is through the wind. Even so, the Red Sea is known for its active reef systems and diverse marine and plant life. More than twenty "deeps" can be found in the Red Sea. These are ancient salt and metal repositories.

(Oceanography and Marine Science. Saudi Geological Survey, 7/7/09)

Scuba divers boast about the beautiful marine life found in the Red Sea. Hundreds of species of coral reef and fish, dolphins, whales and marine turtles contribute to the Red Sea's biodiversity.

### Additional sources:

Chughtai, Osman & David Shannon. *Fossil Fuels Lecture*, 7/15/09, [www.umich.edu/~gs265/society/fossilfuels.htm](http://www.umich.edu/~gs265/society/fossilfuels.htm). [en.wikipedia.org/wiki/Arabian\\_Peninsula](http://en.wikipedia.org/wiki/Arabian_Peninsula)

Kids and Energy. *The Energy Story: Ch. 8: Fossil Fuels – Coal, Oil and Natural Gas*. [www.energyquest.ca.gov/story/chapter08.html](http://www.energyquest.ca.gov/story/chapter08.html) (accessed 7/13/2009).

Mackey, Sandra. *The Saudis: Inside the Desert Kingdom*. (W.W.Norton & Co.: NY), 2002.

Web Site of Saudi Arabia. [www.saudiembassy.net/about](http://www.saudiembassy.net/about)





## Amphorae

### What Are They?

Amphorae were double-handled ceramic vessels used to transport goods in the ancient world. The word *amphora* comes from the Greek words, *amphi* for “both sides” and *phoreus* for “carrier.” The Phoenicians, Sumerians, Greeks and Romans used amphorae as shipping containers to carry olive oil, wine, salted fish, grapes, grain and other produce throughout the Mediterranean region.



### Beer Bottle of the Ancient World

Like beer or soda bottles today, amphorae were ubiquitous (everywhere) from the 15<sup>th</sup> century B.C.E. through the 7<sup>th</sup> century C.E. And like today’s plastic containers, amphorae were often disposed of after one use.

### Ancient Landfill

Sometimes the Romans would use shards (broken pieces) of amphorae in their building materials. There is a famous hill called Mount Testaccio in Rome, which was the garbage dump for amphorae. The Romans also used amphorae shards as a building compound.

### A Standard Size

While amphorae often varied in size, shape and quality, depending on the skill and needs of the producers, amphorae used for wine usually held about 41 quarts. This became a standardized unit of measure in the Roman Empire called *amphora quadrantal*.

### Writing from the Ancients

Inscriptions and decorations have been found on some amphorae remains. Some of them contain stamps on their handles which probably identified the owners of the estates selling produce. Most amphorae had red letters on their necks which served as a mark of the package’s weight. The amphora would be weighed before and after it was filled and their difference was written down.

Leslie and Roy A. Adkins, *Handbook to Life in Ancient Rome*, (Oxford University Press), p. 321.

Some decorative amphorae were inscribed “I am one of the prizes from Athens,” indicating their likely use as prizes for athletic competitions. Other elegant amphorae were used as grave markers.

### A Clue to the Past

Amphorae were used as shipping containers by standing their pointed bottoms in heaps of sand and roping them together through their curved handles. Today, amphorae discovered underwater thrill scuba divers and archeologists who use them to piece together the mysteries of ancient trade.

History of Andalusia, Absolute Astronomy.com, *Handbook to Life in Ancient Rome*

## Ibn al Haytham

### Who Was He?

Ibn al Haytham was an Arabian scientist born in 965 who made significant contributions to the principles of optics and other scientific areas, and to science in general with his introduction of the scientific method.



### The Eyes Have It

He proved that light travels in a perfectly straight line and was the first scientist to explain correctly how the eye sees. He did experiments with upside-down images and anatomical eye exams to understand how the eye works.

### A.K.A

He is sometimes called al-Basri after his birthplace in the city of Basra and was also nicknamed Ptolemaeus Secundus (“Ptolemy the Second”) or simply “The Physicist” in medieval Europe. His full name was al-Hasan ibn al-Haytham (The name is latinized as Alhacen or Alhazen.)

### A Lover of Geometry

Geometry was Ibn al-Haytham’s forte: the subject in which most of his writings have survived and for which he was most appreciated. He was drawn to tackle problems in Greek mathematics, both elementary (Euclidean) and advanced (Apollonian and Archimedean), some of which he was the first to solve.

### A Philosopher and Scientist

An early essay of his, now lost, was entitled “All matters secular and religious are the fruits of the philosophical sciences.” In his time “philosophy” encompassed all of mathematics, the natural sciences, and theology or metaphysics. He wrote on arithmetic, astronomy, music, ethics, politics, and poetry; defended astrology as a science based on mathematical proof; and criticized contemporary Muslim theological theses as well as positions taken by followers of a Christian philosopher-theologian Philoponus.

[harvardmagazine.com/2003/09/ibn-al-haytham.html](http://harvardmagazine.com/2003/09/ibn-al-haytham.html), <http://www.ibnalhaytham.net/>, ARABIA



## DID YOU KNOW?



# Falcons

### What are they?

Falcons are birds of prey, or raptors. Flying up to sixty miles per hour, and diving at speeds of 150 miles per hour, falcons are one of the world's fastest birds. The birds are named for the sickle shape of their wings. In Latin, sickle is a *falx*.

### Trainable Hunters

Since 2,000 B.C. humans have used falcons for their hunting needs. Falconry, the practice of training falcons for hunting, was practiced in China, Japan, India and Iran.

Arabic legend tells that the first falconer was a king of Persia who changed from being a violent despot to an understanding and benevolent leader after learning the art of falconry. Bedouins in the desert of the Arabian Peninsula became particularly skilled at trapping the falcons and trained them to hunt for smaller birds. The prey was highly prized to augment a limited diet.

Jenny Walker, Stuart Butler, Terry Carter, Lara Dunston, Frances Linzee Gordon, *Lonely Planet: Oman, UAE, Arabian Peninsula*, (Lonely Planet: London, 2007), p. 285.

### How to Hunt Birds

Bedouin falconers catch falcons as they migrate from central Europe to south Asia. In a short period of two to three weeks, they train falcons to hunt houbara bustards, a large bird that migrates and breeds in the Arabian Peninsula. The falcons are trained through sleep deprivation and small feedings; they are rewarded with food. A falconer rides his horse with a falcon perched on his arm. At the end of the hunting season falcons are released into the wild.

### Falconry Today

There are approximately 2,000 falcons on the Arabian Peninsula today. While some falcons are still trapped in the Bedouin tradition, most falconers purchase these hunting raptors from bird markets.

National Geographic News, Thinkquest.org

# Frankincense

### What is it?

Frankincense is obtained from trees of the genus *Boswellia* that are found in Somalia and the Arabian Peninsula. Incisions are made in the tree trunks to allow a milk-like juice to seep out. The juice hardens on exposure to air to become a resin.

### Perfume the Air

Most incense contains frankincense. Its pungent and pleasant smell was essential to many ancient rituals, and its popularity has endured for thousands of years. Frankincense oil can take up to six hours to evaporate, making it an important ingredient in many perfumes and aromatherapy.

### A Hot Commodity

Frankincense was burned in temples all over Europe, making it an extremely desirable trading commodity and bringing prosperity to traders who made the arduous journey from Arabia to Europe.

### Chewing Gum

Frankincense is edible and used in various traditional Asian medicines for digestion and healthy skin. It is often chewed like gum, but it is stickier because it is a resin.

### Natural Medicine

Oil of Frankincense is used as treatment for a wide range of conditions including depression, bronchitis, arthritis, skin diseases and digestive problems. It is a component in many anti-wrinkle skin care creams and lotions.

### Kohl Eyeliner

Kohl is ground from frankincense resin and was used to beautify women's eyes as far back as ancient Egyptian times. Many women today still accentuate their eyes with black lines using a kohl eyeliner pencil.

### Mosquito Repellent

Burning frankincense is claimed to repel mosquitos and thus help protect people and animals from mosquito-born illnesses, such as malaria and West Nile Virus.

[www.britannica.com/EBchecked/topic/217294/frankincense](http://www.britannica.com/EBchecked/topic/217294/frankincense), [tibet-incense.com/blog/the-history-and-use-of-frankincense/](http://tibet-incense.com/blog/the-history-and-use-of-frankincense/), [www.botanical.com/botanical/mgmh/f/franki31.html](http://www.botanical.com/botanical/mgmh/f/franki31.html)



## Camels

### One Hump or Two?

There are two types of camel in the world: the Dromedary or Arabian camel and the Bactrian or Asian camel. 90% of the camels in the world today are Dromedary. This word comes from the Greek word, *dromos*, for rode.

To remember how many humps each type of camel has, turn the first letter of their names on the side. When you flip the “D” for the Dromedary camel, you see it has only one hump. If you flip the “B” for the Bactrian camel, you see it has two humps.

### Ships of the Desert

Camels were so valuable to survival in the Arabian Peninsula that there are more than 160 words in Arabic for this beast. Mules and strong horses may be able to carry close to 300 pounds but Dromedary camels can carry twice as much weight and Bactrian camels can carry up to 1,000 pounds! The rocking motion of a camel and its ability to haul goods gives camels the moniker “ships of the desert.”

### Beating the Heat and Dust

To cope with the extreme heat of the Arabian Desert, the Dromedary camel walks on its tippy toes! And to avoid burning their bodies when kneeling, camels develop tough calluses on their chest and leg joints when they are as young as five months old. Their eyes are uniquely adapted to survive sandstorms. Camels will also press together in the heat because their collective body temperature is still cooler than the air temperature in the desert heat.

### What a Hump!

A camel’s hump is a giant fat deposit which provides energy when food is scarce. When a camel goes hungry its hump shrinks, droops and can even slide to one side until a camel finds food.

### Every Drop of Water Matters

A camel stores water in its blood supply. This enables a camel to go without water for up to fifty days during the winter and up to a week during the scorching summers in the Arabian deserts. While humans sweat to keep cool, this would be a waste of precious moisture for the camel. Instead a camel’s body temperature fluctuates between 97.7° and 107.6° F to match the air temperature. When a camel has access to water, it can drink from 30-50 gallons in a few hours.

*Arabian (Dromedary) Camel.* National Geographic 7/8/09. [animals.nationalgeographic.com/animals/mammals/dromedary-camel.html](http://animals.nationalgeographic.com/animals/mammals/dromedary-camel.html)

*Camel Pictures and Facts.* 2007. fohn.net. [30 June 2009]. [fohn.net/camel-pictures-facts/index.html](http://fohn.net/camel-pictures-facts/index.html)

Lumpkin, Susan. Camels: Of Service and Survival. *Smithsonian Zoogoer*. September/October, 1999. 7/9/09.

[nationalzoo.si.edu/Publications/ZooGoer/1999/5/camelservicesurvival.cfm](http://nationalzoo.si.edu/Publications/ZooGoer/1999/5/camelservicesurvival.cfm)

“Mammals: Camel.” *San Diego Zoo* 7/8/09. [www.sandiegozoo.org/animalbytes/t-camel.html](http://www.sandiegozoo.org/animalbytes/t-camel.html)

Zentner, Joe. “The Great Southwestern Desert Camel Experiment.” *Desert USA*. 7/8/09.

[www.desertusa.com/mag05/sep/camel.html](http://www.desertusa.com/mag05/sep/camel.html)

Zagata, Danielle. “Interesting Fact About Camels.” *Associated Content*. 4 Oct. 2007. 7/6/09.

[www.associatedcontent.com/article/396604/interesting\\_facts\\_about\\_camels.html?cat=58](http://www.associatedcontent.com/article/396604/interesting_facts_about_camels.html?cat=58)



## Sandstorms

### What Is It?

A sandstorm occurs when storming winds drop to the hot ground and blow up dry, loose sand. The world’s deserts are susceptible to this meteorological phenomenon, especially in warmer months.

### How Does a Sandstorm Measure Up?

With little or no warning, winds can travel up to twenty to thirty miles per hour. When the wind touches ground, it creates a dust wall that can measure up to 60 miles wide and 3,000 feet high.

### What Happens to the Sand?

Shifting sand caused by the sandstorms become sand dunes. Sand dunes in Saudi Arabia’s deserts can measure taller than the Eiffel Tower.

### Life Halted

During the sandstorms and the following days, airports are closed, business is disrupted, cities are blanketed with dust, locals must stay indoors and people with respiratory problems need medical attention.

### Amazing Adaptation

Camels are uniquely suited in both anatomy and habit to survive sandstorms. They have two rows of long eyelashes and even a third eyelid that serves as a windshield wiper against sand. Glands in the eyes also supply extra moisture. During a sandstorm a camel will drop to its knees, close its eyes and nostrils and lay its neck flat against the ground

### The Interconnectedness of Weather

Sadly, the frequency and intensity of sandstorms have increased in recent years. Causes range from desertification (the growth of the world’s deserts), urban growth and deforestation. Now the good news: sandstorms in the eastern hemisphere may reduce the number of hurricanes in the west. Scientists have observed that when there is less dust from Sahara African sandstorms flowing into the Atlantic Ocean, there are more hurricanes, and vice versa.

“Dust Storms and Hurricanes: Improving Accuracy of Hurricane Forecasting,” *ScienceDaily.com*, 8/1/07 (7/17/09)

[www.sciencedaily.com/videos/2007/0801-dust\\_storms\\_and\\_hurricanes.htm](http://www.sciencedaily.com/videos/2007/0801-dust_storms_and_hurricanes.htm)

[AssociatedContent.com](http://AssociatedContent.com), [MapsofWorld.com](http://MapsofWorld.com), [Wikipedia.org](http://Wikipedia.org), [Weatheronline.co.uk](http://Weatheronline.co.uk)





# Islam

### What is Islam?

Islam is the religious faith of Muslims, based on the words and religious system founded by the prophet Mohammed and taught by the Quran. Islam is the second most practiced religion in the world. There are two main branches of Islam: Sunni and Shi'ite.

### What is the difference between Sunni and Shi'ite Muslims?

Sunnis, who comprise about 85 percent of Muslims worldwide, believe that the prophet's best friend, Abu Bakr, was selected by consensus of the majority to succeed him. Shi'ites, comprising about 15 percent of Muslims, believe that Ali, the cousin and son-in-law of the prophet Mohammed, was designated as Mohammed's successor.

### What is the basic principle of Islam?

The basic principle of Islam is absolute submission to a unique and personal god, Allah. Allah is the Arabic word for God, the same God worshipped by Christians and Jews.

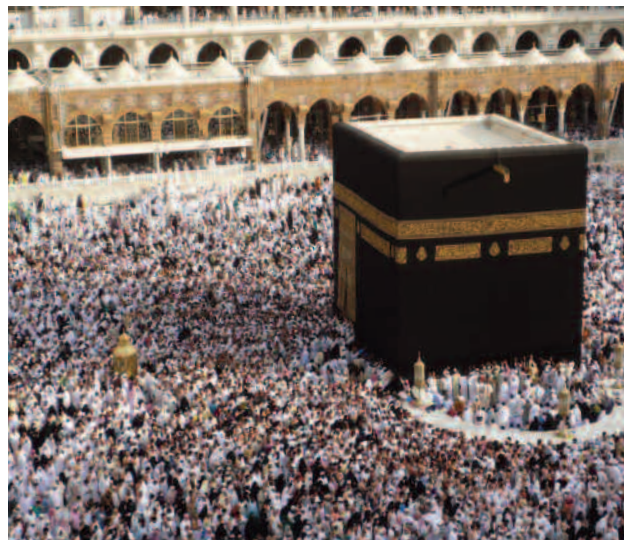
### What are the practices of Muslims?

There are five pillars or acts of worship in Islam

- **The Declaration of Faith (*shahada*):** The first act of worship is the declaration that "There is no deity except God and Mohammed is the messenger of God." Muslims repeat this statement many times a day during their prayers.
- **Prayer (*salat*):** Islam prescribes a brief prayer or ritual worship five times a day: at dawn, noon, late afternoon, sunset and night. The Friday noon prayer is special to Muslims and is offered in a mosque if possible. Muslims face in the direction of Makkah when they pray.
- **Charity (*zakat*):** Muslims are required to give to the poor and needy. Islam prescribes an obligatory charity based on two and a half percent of one's income and wealth.
- **Fasting (*sawm*):** Muslims are required to fast from dawn to sunset during the month of Ramadan, the ninth month of the lunar calendar. During this time, Muslims are to refrain from eating, drinking, smoking and sexual activities from dawn to sunset.
- **Pilgrimage to Makkah (*hajj*):** Every Muslim is required to make the pilgrimage to Makkah, located in Saudi Arabia, once in their lifetime if financially and physically able.

### What are the major celebrations in Islam?

- **Eid al-Fitr (*eed' al fi'-ter*),** or the "Festival of the Fast-Breaking," celebrates the completion of the Ramadan fast and occurs on the first day of the month after Ramadan. This is a day of celebration, prayers, feasts and gift giving.
- **Eid al-Adha (*eed' al ad'-ha*),** or the "Festival of the Sacrifice," is the second major holiday in Islam. It falls on the tenth day of the month at the conclusion of the pilgrimage, and is celebrated by all Muslims with special prayers, feasts, gifts and the sacrifice of an animal (usually a lamb or goat).



### What is the holy book for Islam?

Islam contains many rules for daily life and human relationships. The first source of these rules is the Quran, which was revealed by God to Mohammed during the month of Ramadan; the second source is the hadith or reports of the prophet Mohammed's words or actions.

### Who was Mohammed?

Muslims believe Mohammed was the last in the chain of divinely appointed prophets through whom God sent his message to humankind. Mohammed was born in the year 570 C.E., in the town of Makkah on the Arabian peninsula. Muslims believe that he was the recipient of God's last divine revelation, the Quran.

### What is the Role of Women in Islam?

Islam gives women many rights, including the right to inherit, to work outside the home, and to be educated. As in all cultures and communities, these rights are often violated. This is the result of the intersection of Islam with existing cultural norms, which may reflect male-dominated societies. Muslim women are permitted to participate in all walks of life as long as their modesty is not affected. Both men and women are expected to present themselves in a manner that emphasizes modesty. Hijab or covering, for example, is worn so that women's sexuality will not become a source of temptation or enter into their interactions with men.

### How do you convert to Islam?

If someone wants to convert to Islam, he or she makes the declaration of faith (*shahada*) as an entry into Islam. There is no formal ceremony for conversion. Converts are expected to practice the religion's five pillars. Some people also change their names to Muslim names when they convert.

### Which countries have the largest Muslim populations?

Indonesia, followed by Pakistan, Bangladesh, India, Turkey and Iran.

Sources: Beliefnet, Dictionary.com, ARABIA, FRONTLINE Muslims Teacher's Guide



# Sandstorms

## Purpose:

To show the dramatic conditions of a sandstorm

## Materials Needed:

- ☐ Laminated color images of sandstorms (see below for images available on the Web)
- ☐ *Did You Know: Sandstorms* (available as a handout, or enlarged, laminated and posted)

## Procedure:

- 1** Download images of sandstorms. It is recommended to enlarge them and laminate them.
- 2** Invite visitors to examine the pictures and imagine what it would be like to be caught in a sandstorm. Pose or post the following questions:
  - How hot or cold would the sand be?
  - How might the sand impact your noses, ears and eyes?
  - What would you need to do to protect yourself from a sandstorm?
- 3** You may wish to download “*Worst-Case Scenarios: How to Survive a Sandstorm.*” Enlarge and post it for visitors to read. [www.popularmechanics.com/science/worst\\_case\\_scenarios/1289311.html](http://www.popularmechanics.com/science/worst_case_scenarios/1289311.html)
- 4** You may wish to download news stories about recent sandstorms. (See below.)
- 5** If relevant to your region, display pictures of local snowstorms for purposes of comparison. Invite visitors to think about the similarities and differences between sandstorms and snowstorms.
- 6** Ask visitors to look at the handout or poster to learn more about sandstorms.

Sample image of a sandstorm:

[www.guardian.co.uk/world/gallery/2009/mar/10/saudiarabia-sandstorms?picture=344389520](http://www.guardian.co.uk/world/gallery/2009/mar/10/saudiarabia-sandstorms?picture=344389520)

Images of sandstorms:

[www.aramcoexpats.com/Phtotos/life-in-saudi-arabia/aramco-camps/3805.aspx](http://www.aramcoexpats.com/Phtotos/life-in-saudi-arabia/aramco-camps/3805.aspx)

Recent news coverage about sandstorms

“Sandstorms blanket Iraq, sends hundreds to hospital,”

[www.reuters.com/article/environmentNews/idUSTRE56-419520090705](http://www.reuters.com/article/environmentNews/idUSTRE56-419520090705)

“Sandstorms scour US troops, Iraqis,”

[www.usatoday.com/weather/news/2009-07-09-iraqweather\\_N.htm](http://www.usatoday.com/weather/news/2009-07-09-iraqweather_N.htm)

# Smells of the Ancient World

## Purpose:

To smell and learn about frankincense.

## Materials Needed:

- ☐ Frankincense
- ☐ Other incense that includes frankincense (see below for ordering information)
- ☐ *Did You Know: Frankincense* (available as a handout or enlarged, laminated and posted.)

## Procedure:

- 1** Display tins of frankincense and other incense.
- 2** Invite visitors to smell the frankincense and describe the smell to each other.
- 3** Ask visitors to smell the other incense mixtures and guess which of them contain frankincense. (The answer is all.)
- 4** Ask visitors to look at the handout or poster to learn more about frankincense.
- 5** You may wish to include signage indicating that the ancient smells of frankincense are still enjoyed today in incense and aromatherapy oils.

## Incense Warehouse

[www.incensewarehouse.com/Resin-incense\\_c\\_89.html](http://www.incensewarehouse.com/Resin-incense_c_89.html)

This site sells small tins of Frankincense and the following incense mixtures, all of which contain Frankincense.

(cost is \$5 - 8 per tin)

Frankincense & Myrrh, Dragons Blood, Celtic Blend, Pontifical Blend, Gloria Church Blend, Kashmiri Blend, Three Kings, Basilica Blend, Black Ethiopian, Egyptian Gardenia

# Thirsty Camel

## Purpose:

To visualize how much a camel can drink in one sitting

## Materials Needed:

- ☐ One 32-gallon garbage can
- ☐ One rectangular recycling wastebasket (holds around 14 gallons)
- ☐ One empty water cooler container (holds 5 gallons)
- ☐ One empty half gallon container of juice or milk
- ☐ Placards identifying the volume of each container
- ☐ *Did You Know: Camels* (available as a handout, or enlarged, laminated and posted)

## Procedure:

- 1** Display the four containers with a reversed placard that identifies the volume of each container. (Display the information on the back or underside of the placard.)
- 2** Post a sign asking visitors to guess how many gallons of water each container can hold.
- 3** Invite visitors to guess which representative water vessel could be consumed by a camel in one sitting. (Answer is the large garbage can.)
- 4** Share the following information and question: “Humans are advised to consume eight cups or a half gallon of water daily. How does this compare to water consumption for camels?”
- 5** Ask visitors to read the handout or poster to learn more about camels.

# Draw As I Say

## Purpose:

Participants will learn about the anatomy of a camel through a collaborative, communication-based drawing exercise.

**NOTE: Do not use the word “camel” before doing the activity.**

## Materials Needed:

- ☐ Drawing paper, pencils, clipboards (if available)
- ☐ Handouts: *Did You Know Camels?* (optional), *Draw as I Say* prompts (cut copy page in quarters)

## Procedure:

### Pre-Activity:

- 1** Introduce the activity as a team building exercise that requires effective communication and listening skills from the participants.
- 2** Have the group count off by twos: the ones will be the drawers (listeners); the twos will be the coaches (communicators).
- 3** Assure the participants that this activity is not dependent on artistic ability but rather it is about working effectively as a team and being creative.
- 4** Share the following instructions: The coaches will direct drawers to create an image by giving prompts listed on the handout. The catch is that the coaches **cannot** reveal the end result.
- 5** Distribute drawing paper, pencils and clipboards to the ones
- 6** Distribute the *Draw as I Say* prompts to the twos

### Post-Activity:

- 1** After 10-15 minutes make sure the partners are still in their separate roles and ask the drawers to reveal their work.
- 2** Encourage the coaches to unveil the camel.
- 3** Discuss the physical features of camels:
  - Suggestion #1: Lead teams through each of the drawing prompts (or have independent discussion in pairs) and discuss how each of the traits are advantageous for camels.
  - Suggestion #2: Distribute copies of *Did You Know: Camels*.

### Walk Like a Camel:

Inform the participants that camels have a pacing gait: they use two legs on the same side of their bodies on the same step. Encourage the group to get down on all fours and try to crawl like a camel walks. Ask if it is easy or difficult to move like camels. “Ships of the desert” is not only the camels’ nickname because they are pack animals, but also because this gait can make riders seasick as if they were on a boat rocking back and forth.



## Draw As I Say

Shhhhhh..... don't reveal this image to your partner:

### Prompts

*(you can share these in any order that makes sense to you):*

- ☐ protruding brow and bushy eyebrows
- ☐ long eyelashes on upper and lower lids
- ☐ three eyelids: upper, lower and one that moves side-to-side
- ☐ small, round ears covered in hair
- ☐ split upper lip
- ☐ long, flat neck
- ☐ thick torso with a fatty bulge
- ☐ calloused chest
- ☐ four long legs with calloused joints
- ☐ large, broad feet with two toes atop leathery pads
- ☐ thick, woolly hair

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- ☐ thick, woolly hair

# Pinhole Camera

**Purpose:** To apply the Muslim scientist Ibn al Haytham's theories about light, lines and sight by creating a camera.

**NOTE:** It is recommended that teachers or museum educators make a pinhole camera themselves before leading this activity.

## Materials Needed:

- ☐ A darkened room
- ☐ Camera-making pack for each individual or group: Black card stock (one letter size and one half letter size), pencil, a roll of transparent tape, sheet of tracing paper, scissors, a pin
- ☐ Flashlight or candle
- ☐ Handout: *Muslim Scientists and their Achievements in the Middle Ages*

## Procedure:

- 1** Ask participants how the invention of the camera impacts our lives.
- 2** Share that principles of photography were first understood by the Muslim scientist, Ibn al Haytham in the *Book of Optics* in the 11<sup>th</sup> century. He observed an upside-down image on his wall when sunlight poured into his room through a crack in his shade.
- 3** Distribute a camera-making pack to each participant. If materials are limited, divide participants into groups of two or three.

## Making the camera:

Direct the groups to make a pinhole camera with the following instructions:

- 1** Roll a sheet of black card stock into a tube and place tape around either end, going all the way around the circumference of the tube. Place a long piece of tape along the seam.
- 2** Stand the tube on the half sheet of card stock and trace the end of the tube.
- 3** Draw another circle that is half an inch bigger than the first circle.
- 4** Cut out the bigger circle. Cut tabs between the outside circle and the smaller circle.
- 5** Place the tabbed circle on top of the tube and tape the tabs down. (Look through the tube to make sure no light is seeping in. If it is, tape additional layers of black card stock.)
- 6** With a pin, make a hole in this end.
- 7** Cut a circle from the tracing paper that is  $\frac{3}{4}$  to one inch bigger than the tube.
- 8** Tape this circle to the empty end of the tube. This end, with the tracing paper, will be the screen.

## Using the camera

- 1** With the room effectively darkened, turn on a flashlight or light a candle.
- 2** Instruct the participants to point the pinhole end of the tube to the light.
- 3** Ask the participants what they notice on their cameras' screens.
- 4** Encourage the participants to play with their cameras:
  - What must be done to move the image?
  - What must be done to change the size of the image?
  - Move the flashlight or candle and have them observe what happens on their cameras' screens.

## Bring it all together:

- Optional: Distribute copies of *Muslim Scientists and their Achievements in the Middle Ages*.
- Invite participants to think about this information and reflect on what they know by ending with 3-2-1. Ask participants to jot down:
  - Three facts they learned from this activity
  - Two facts they knew before the activity
  - One question that remains that they might like to explore further

1001 Inventions, 2008 Foundation for Science, Technology and Civilisation, UK  
Patricia Willet, "Making a Pinhole Camera," An Educators Reference Desk Lesson Plan, May 1994.



# Name Five Pre- and Post-Viewing Activity

## Activity Objectives

Students will:

- Collectively assess their knowledge pertaining to Arab culture and history
- Conduct research about Saudi Arabia

## Materials needed

- ☐ Teacher answer sheet
- ☐ Paper and writing utensils

## Time needed

15-25 minutes: pre-viewing activity and brief discussion

20-40 minutes: post-viewing activity and brief discussion

## Procedure: Pre-viewing:

- 1** Explain to the students that they are going to assess their knowledge related to Arabia. Assure the students this is not a test.
- 2** Divide students into groups of three or four. Instruct them to number a sheet a paper from 1-5, four times, leaving space to write next to each number.
- 3** Introduce the activity as “Name Five.” You will call out a category and each group needs to jot down five appropriate responses, or as many as they are able to. Encourage groups to be discreet and prevent accidental or deliberate sharing with other groups.
- 4** Go through all four of the “Name Five” categories below and give students a few minutes to complete each category. It is highly probable that students will not be able to complete most categories. Encourage them to be comfortable with this performance.
- 5** Call out “Name Five:”
  - **English words that have Arabic derivation**
  - **Countries with the largest Muslim populations**
  - **Muslim contributions to math and science from the 8<sup>th</sup> to 11<sup>th</sup> centuries**
  - **Countries that border or directly face Saudi Arabia**
- 6** After calling out all four of the “Name Five” categories, give students a few minutes to independently jot down their reactions to this exercise. Direct them to describe how they felt being able to answer or not answer these areas. Have the groups discuss their reactions for a couple of minutes.
- 7** As a whole class, discuss how many groups were able to complete each of the categories. Pose the following questions to the class:
  - Why did groups demonstrate limited knowledge of this information?
  - Which areas were you the most confident answering?

- Which made you the least confident?
- If I had asked you about European scientific contributions or geography, how successful would your group have been in responding?”
- What does *Name Five* indicate about your education up until this point?

- 8** While watching *Arabia*, encourage students to fill in gaps in their “Name Five” answers.

## Procedure: Post-Viewing:

- 1** Go over each of the *Name Five* categories. (Refer to the Teacher Answer Sheet.)
  - **Arabic words:**  
Ask students how the English language absorbed many Arabic words. Possible explanations can include the Muslim conquests into Europe, the Crusades, the world-wide migrations of Arab speakers, Muslim contribution to science and technology in the Middle Ages.
  - **Muslim populations:**  
Highlight the reference from *ARABIA* that more than 80% of the world’s Muslims live outside of Arabia. After reviewing the most populated Muslim countries, emphasize that only one of the top eight countries is Arab (people whose ancestors originated from the Arabian Peninsula).  
Ask students how Islam spread from the Arabian Peninsula to other parts of Asia, Africa and Europe.
  - **Muslim contributions to math and science** (Note: You may wish to download and distribute the handout, *Muslim Scientists in the Middle Ages*.  
Ask students why scholarship and inquiry flourished during the Middle Ages in the Muslim world but was stagnant in Europe.
  - **Countries that border or directly face Saudi Arabia:**  
Ask students about the geographic challenges and advantages of the Arabian Peninsula.
- 2** Place students in their small work groups. Pose the following questions for small group discussion:
  - What do you think was the filmmakers’ viewpoint in making the film?
  - Do you think they succeeded in advancing this perspective of Saudi Arabia?
  - What was most surprising for you to learn in this documentary?
  - If other Americans were to see this film, what do you think would be most surprising for them to learn about Saudi Arabia?
- 3** Based on the student responses to the last query, students will further research this aspect of the film. Under the title, “Dispelling Misconceptions of Saudi Arabia” students will prepare brief presentations. Their broader audience will be Joe or Jane America and their presentation should be grounded in current research. Teachers can either collect a collaborative one-page document with appropriate citations or hold in-class presentations.

# Name Five

## 1 English words that have Arabic derivation<sup>1</sup>

alcohol	chemistry	mocha
alcove	coffee	orange
algebra	cotton	ream
alkaline	damask	sesame
alfalfa	giraffe	sherbet
algorithm	gerbil	soda
almanac	genie	sofa
apricot	guitar	talc
artichoke	jar	zero
assassin	magazine	
carafe	mattress	

Al-Bab [www.al-bab.com/arab/language/lang.htm](http://www.al-bab.com/arab/language/lang.htm)

## 2 Countries with largest Muslim populations<sup>2</sup>

Indonesia	212,900,000
Pakistan	157,500,000
India	129,600,000
Bangladesh	119,800,000
Egypt	72,800,000
Turkey	69,000,000
Iran	67,300,000
China	65,300,000

U.S. News & World Report [www.usnews.com/usnews/graphics/religion/islams\\_global\\_reach.htm](http://www.usnews.com/usnews/graphics/religion/islams_global_reach.htm)

## 3 Muslim contributions to math and science in the 8<sup>th</sup>-11<sup>th</sup> centuries, before the European Scientific Revolution

- Recovered research from the Greeks
- Developed Arabic numerals, the decimal point, the concept of zero
- Developed algebra and geometry
- Discovered chemical processes
- Categorized plants and herbs and found medicinal applications for them
- Developed the Scientific Method
- Studied astronomy and understood the rotation of the planets
- Discovered optics

## 4 Countries that border or directly face Saudi Arabia

- Egypt
- Eritrea
- Yemen
- Oman
- United Arab Emirates
- Qatar
- Kuwait
- Iraq
- Jordan
- Israel



# The Birth of the Sea

## The Red Sea And The Arabian Peninsula

### Activity Objectives

Students will:

- Understand the geography of the Arabian Peninsula and how it was formed
- Follow the development of the Red Sea
- Identify environmental concerns facing the Red Sea
- Propose measures to protect the Red Sea's ecosystem

**Grades:** 9-12, Social Studies, World History and Geography

**Standards:** This lesson corresponds to the following standards articulated by McREL [Mid-continent Research for Education and Learning](#): Geography standard 7 and 14, Earth and Space Science standard 2

### Materials needed

- ☐ Class copies of continents (exclude the present-day diagram and cut out each diagram):  
[pubs.usgs.gov/gip/dynamic/historical.html](http://pubs.usgs.gov/gip/dynamic/historical.html)
- ☐ Projection or distribution of a present-day world map
- ☐ Optional: Internet access projection
- ☐ Measuring tape(s)
- ☐ Class copies of Student Handout: "To Save a Sea"

### Time needed

15 minutes for How was the Arabian Peninsula Formed?

15 minutes for Creation of the Red Sea

20 minutes for Red Sea today

### Procedure:

#### Part One: How Was the Arabian Peninsula Formed?

- 1** Introduce the topic for examination: the physical formation of the Arabian Peninsula and the Red Sea. (Review that the geography term "peninsula" means a piece of land bordered by water on three sides.) Distribute copies of the continent diagrams, one at a time. Make sure to exclude the present-day diagram. In partners or small groups, students should circle the Arabian Peninsula on each of the diagrams.
- 2** Invite the groups to propose an explanation for the creation of the Arabian Peninsula.
- 3** Reconvene and review their responses. Write the following terms on the board and review them with the students:
  - *Continental Drift Theory* This scientific theory states that the continents used to be one giant land mass and that pieces (the continents) migrated away from each other.
  - *Plate Tectonics* The earth's outer shell is broken into separate plates (about a dozen) and they move.

- *Divergent Boundaries* This occurs when two plates move *away* from each other.

Share the following information:

- Between 600-545 million years ago (MYA) the Arabian Peninsula was part of Africa; this area was referred to as the Arabian/Nubian Shield.
- Between 100 – 65 MYA the ancient land mass of *Gondwanaland* divided; the Arabian plates joined the land mass *Laurasia*.
- Optional: Project or access this interactive illustration which demonstrates a divergent plate boundary: [geology.com/nsta/divergent-plate-boundaries.shtml](http://geology.com/nsta/divergent-plate-boundaries.shtml)  
Project or distribute a contemporary map so the students can identify the location of the Arabian Peninsula. Pose the following question to the students:
  - As earth scientists, what evidence would you use to support this explanation of plate tectonics and how the Arabian Peninsula was formed.
  - Examine the rocks in both eastern Africa and western Arabia to determine if they match
  - Search for animal and plant fossils on the two continents that are similar
  - Research the locations and types of volcanoes and earthquakes

#### Part Two: Creation of the Red Sea

- 1** Ask students what physical changes were brought by this shift in plates (the formation of the Red Sea and the Gulf of Aden).

(Note: [geology.com/plate-tectonics.shtml](http://geology.com/plate-tectonics.shtml) allows you to zoom in and examine the shoreline of the Red Sea. This illustrates the matching borders of the Nubian/Arabian Shield, which broke apart.)

Explain/discuss:

- When plates move divergently (away from each other) they create a rift (a space).
  - 65 MYA the rift between Africa and Arabian Peninsula widened.
  - 25 MYA the rift filled with water to become the Red Sea (its elongated shape was created 4-5 MYA).
  - The Red Sea is spreading from east to west at a rate of 1.5-2 cm a year; at its widest it is 300 km wide (30,000,000 cm).
- 2** Have a student or groups of students (depending on how many tape measures are available) measure the width of the classroom and report this number (in cm) to the class. Given the rate that the Red Sea spreads per year, ask the students to calculate how many years it took for the Red Sea to be as wide as your classroom.

#### Part Three: The Red Sea Today

- 1** Remove any contemporary political maps. Inform the students that nine countries share a border with the Red Sea. In small groups or partners, students should try to determine the nine countries. Reconvene and review: Israel, Jordan, Saudi Arabia, Yemen, Somalia, Eritrea,

Djibouti, Sudan, and Egypt.

**2** Direct small groups to discuss the following question:

- Considering factors such as geography and natural resources, what do you think has been and continues to be the importance of the Red Sea for the communities that border it?

Students should offer detailed examples. Reconvene and review. Appropriate examples should include:

- Geography: trading and shaping opportunities with south and east Asia, Africa and, with the construction of the Suez Canal in 1869, trade with Europe; the Red Sea states have additional export opportunities from their land-locked neighbors.
- Depth and reef systems: the Red Sea is a particularly deep body of water with rich biodiversity; fishing and tourism (scuba diving) are important industries.

**3** Distribute copies of the Student Handout: “To Save a Sea” and direct students to read the article. In small groups students must develop a four-point action plan to preserve the ecosystem of the Red Sea. (Note: Directions are included on the handout.)

**4** (Optional) Students can research contemporary measures taken since the publication of “To Save a Sea” (1980) to maintain a healthy ecosystem in the Red Sea and present their findings.

**Methods of Assessment:**

- Participation in class and group discussions
- Completion of “To Save a Sea” exercise
- Research contemporary environmental measures (optional)

Dr. Waleed M. Abdulhanu lecture, King Fahd University of Petroleum and Minerals, [ocw.kfupm.edu.sa/user/GEOL31801/Lecture%20notes.ppt](http://ocw.kfupm.edu.sa/user/GEOL31801/Lecture%20notes.ppt), (accessed 7/9/09)

Saudi Geological Survey, “Oceanography and Marine Science,” [www.sgs.org.sa](http://www.sgs.org.sa), (accessed 7/9/09)

Cavendish, Marshall, World and Its Peoples: Arabian Peninsula, (Marshall Cavendish Corp.: White Plains, 2007)

United States Geological Society, “Understanding Plate Motions,” [pubs.usgs.gov/gip/dynamic/understanding.html](http://pubs.usgs.gov/gip/dynamic/understanding.html), (accessed 8/13/09)

Gonzalez, Joseph and Thomas E. Sherer, *The Complete Idiot’s Guide to Geography*, (Penguin Books: New York, 2004)

Wikipedia, [www.en.wikipedia.org](http://www.en.wikipedia.org), “Red Sea,” (accessed 8/18/09)

# To Save a Sea<sup>3</sup>

“...the Red Sea is extremely vulnerable. Because, like the Mediterranean, the Red Sea is enclosed, any pollutants that do get into it will stay there; there are virtually no tides or currents to flush them out, nor rivers to dilute them. The governments of Saudi Arabia and other coastal countries, therefore, are already beginning to worry about the potential dangers involved in industrial development along the shoreline, and in increased shipping.

Already, in fact, some effects of increased shipping have been seen. Since the 1976 reopening of the Suez Canal traces of garbage and oil have been noted and as expansion continues, observers fear, this will get worse. Even now, delays at some Red Sea ports sometimes force ships to wait outside—with a consequent increase in discharge. And when Saudi Arabia completes two new refineries with oil-loading terminals, now under construction at Yanbu’ close supervision during terminal operations will be vital to prevent spillage.

In addition, there is the danger of shipwrecks and collisions. The Red Sea is notorious for its navigational difficulties and dangerous reefs; thus when tanker traffic expands, additional care will be necessary to guard against collisions and navigational hazards.

As to industrialization, development in several coastal countries is proceeding rapidly; several modern ports and industrial cities are being built. But ports and new installations are often placed on the natural creeks and coves which occur on both sides of the Red Sea and are very likely to be important spawning and nursery grounds for fish, shrimps and other forms of marine life.

In coastal cities, meanwhile, rapidly growing populations have, in some cases, resulted in the discharge of sewage directly into the sea. The same is true of suburban residences and vacation homes now being built along the coasts from many cities. As most of the coast is enclosed by the fringing reef, and as there is little tidal action, such wastes are flushed from the lagoon

at a slow pace. At some point, the reef corals are bound to be affected.

Another threat arises, ironically, from the incredible beauty and variety of the Red Sea’s marine life. Drawn by reports of colorful reefs teeming with fish, skin divers, scuba divers and shell collectors have begun to ravage the coasts in alarming numbers. Added to the losses from small reef-based industries—such as the collection of shellfish (*Trochus niloticus*) for mother-of-pearl and black coral for jewelry—and the use of conch for food, this incursion might already be affecting the delicate ecosystem.

In Jeddah, furthermore, the population is already so large that it has had an impact. Fishermen for example have already used up the area’s modest stock of spring lobster, a local favorite; close to Jeddah there are virtually no more. And observations in a recreation area north of Jeddah, suggest that the populations of predatory fish such as groupers and coral trout, and of branching corals such as *Acropora* and *Stylophom*—and thus of small fish, like angelfishes and butterfly fishes, which shelter in them—are all lower than in most comparable reef areas. A further effect, often overlooked, is that swimmers, divers, and outboard engine propellers stir up sand that settles on the coral, blocks the sunlight needed and kills it. This appears to be happening, to some extent, in Sharm Obhor.

**Directions:** Considering the importance of the Red Sea to the economics of Red Sea states, what measures should be taken to ensure its ecosystem? Develop a four-point action plan for Red Sea states to implement. Your plan must:

- Identify a specific area of concern
- Describe the impact of the problem
- Propose a solution to address this issue and predict its economic impact

<sup>3</sup> Gunnar Bemert, Excerpt from “To Save a Sea,” *Saudi Aramco World*, Sept./Oct., 1980, [www.saudiaramcoworld.com/issue/198005/to.save.a.sea.htm](http://www.saudiaramcoworld.com/issue/198005/to.save.a.sea.htm)



# The Power of the Nabataeans

## Activity Objectives

Students will:

- Analyze the role of the Nabataeans in Arabian and Mediterranean trade
- Review general ancient history and geography pertaining to the Incense Route

**Grades:** 9-12, Social Studies, World History and Geography

**Standards:** This lesson corresponds to the following standards articulated by McRel [Mid-continent Research for Education and Learning](#): World History standard 18, Geography standard 11 and Geography standard 16

## Materials needed

- ☐ Class copies of Student Handout: “Mapping a Fragrance” (Cut copy page in half)
- ☐ Copy of outline map for class viewing (use an overhead or LCD projection)
- ☐ Access to atlases
- ☐ Optional: *Did You Know: Frankincense* and *Did You Know: Camels*

## Time needed

20 minutes for Masters of Trade: the Nabataeans’ Water Collection Skills

15- 20 minutes for Global Demand for Frankincense

15-20 minutes for Nabataeans Pitch their Expertise

## Procedure: Part I – Masters of Trade: The Nabataeans’ Water Collection Skills

- 1** Introduce the Nabataeans as ancestors to today’s Arabs who lived in the Arabian Peninsula, earned wealth from controlling the frankincense trade, and built sophisticated cities such as Madain Saleh and Petra.
- 2** Ask the students to consider the geography that the Nabataeans lived with. How were they so successful in trade in the Arabian Peninsula? Prompt students to consider the camel, the Nabataean familiarity with the desert, their social networks and water collection skills.
- 3** Point out that the Nabataeans were skilled at water collection, which helped them dominate the frankincense trade for several centuries. Have students brainstorm ways to collect water in the desert in large quantities. Answers might include:
  - A dam to collect run-off rain from winter flash floods in the desert
  - An aqueduct to bring water from springs into Nabataean cities and settlements

- A channel to direct the run-off water from mountains into settlements and fields
- A cistern to store water

Direct students to read the article about water collection at [nabataea.net/water.html](http://nabataea.net/water.html) and to summarize the various ways in which the Nabataeans collected water.

## Procedure: Part II – Global Demand for Frankincense

- 1** Hold a brief discussion about the use and importance of frankincense in the ancient world. Distribute the student handout “Mapping a Fragrance” and instruct groups to use the handout clues, their collaborative knowledge, and access to atlases to map eight positions on their maps that pertain to the trade of frankincense between the first century BCE and into the first century CE. Circulate among the groups to assist.

- 2** When the groups are finished with the map activity, review their responses with a projected map image. (Note: for the responses pertaining to Israel and Gaza, the relative geography is very small. Encourage students to draw arrows.)  
Answers:

Clue 1: Yemen and Oman

Clue 2: Near Rome in Italy

Clue 3: Alexandria on the Mediterranean coast of Egypt

Clue 4: Near Bethlehem in Israel

Clue 5: Mountain range: Himalayas; China

Clue 6: Iran

Clue 7: Near Athens in Greece

Clue 8: Gaza

- 3** Direct the students to draw overland routes of frankincense from its source to the Romans, Greeks and Egyptians. Review the trade routes starting in Yemen, going through the Arabian Peninsula, and then west to the Mediterranean. (Note: “Caravan Kingdoms: Yemen and the Ancient Incense Trade” has a marvelous simulation that shows the areas of frankincense’s cultivation and trade routes. Select “The Incense Trade and Map.”  
[www.asia.si.edu/exhibitions/online/yemen/default1.htm](http://www.asia.si.edu/exhibitions/online/yemen/default1.htm))

Hold a class discussion about the geographic challenges of this trade route.

- The Arabian Desert is actually an extension of Africa’s Sahara Desert.
- There are mountain ranges with some peaks as high as 12,000 feet.
- There are no rivers or streams and there is as little as two to four inches of rain a year.
- There are deserts: the Nefud is rocky, the Rub al Khali is the most arid desert on earth and has sand as deep as 600 feet.

**Procedure: Part III – Nabataeans Pitch their Expertise**

Instruct the students in their groups to assume the role of Nabataean traders. Each group must create an advertisement “pitching” their expertise in the frankincense trade. They need to produce:

- A document with text and images
- An identified potential client
- An effective sales pitch

Encourage the students to use their notes from this lesson to assist in their brainstorming.

**Methods of Assessment**

- Participation in class and group discussions
- Completion of map exercise
- Completion of the advertisement pitch

American Museum of Natural History, Britannica, Smithsonian – Freer and Sackler Galleries, , CIA World Fact Book, National Geographic's XPeditions, Middle Eastern Institute, Petra National Trust, Saudi ARAMCO World, Tibet-incense.com

# Mapping a Fragrance

## Instructions for obtaining a blank map for this exercise:

Go to [nationalgeographic.com/xpeditions/atlas](http://nationalgeographic.com/xpeditions/atlas). Click on “Middle East Region.” Select “basic” detail level.

Download the map as a PDF and use it to fill in the answers to the questions below.

**Discuss each of the clues listed below and determine the general placement of each location on your map. Clearly label your map accordingly but do not worry about the exact location for cities. However, be sure to identify them in the appropriate country.**

Clue 1: Frankincense is produced from the hardened sap in trees from the family *Boswellia*. It was cultivated in these two modern-day countries on the southern side of the Arabian Peninsula.

Clue 2: Here in the capital of his empire, Emperor Nero bought huge harvests of frankincense to burn at the funeral of a loved one.

Clue 3: In this major port city with a famous ancient library, frankincense was used to fill body cavities after they were disemboweled and before they were mummified.

Clue 4: When Jesus was born here, Christians believed that Three Magi from the East brought gifts. The most valuable was considered frankincense.

Clue 5: Beyond this tallest mountain range in the world, frankincense was referred to as *fan hun xiang* or “soul fragrance” and was used here to mourn the dead and honor the ancestors. Today, this country has the largest population in the world.

Clue 6: As a tribute to the Persian emperor Darius, frankincense was brought to this modern day Islamic Shiite republic.

Clue 7: Here in the capital of the Greek empire, the wealthy burned frankincense to warm their homes.

Clue 8: Today this Mediterranean city is in modern-day Palestine. In ancient times, it was a key exit port from which frankincense was shipped throughout the Roman Empire.

# Mapping a Fragrance

## Instructions for obtaining a blank map for this exercise:

Go to [nationalgeographic.com/xpeditions/atlas](http://nationalgeographic.com/xpeditions/atlas). Click on “Middle East Region.” Select “basic” detail level.

Download the map as a PDF and use it to fill in the answers to the questions below.

**Discuss each of the clues listed below and determine the general placement of each location on your map. Clearly label your map accordingly but do not worry about the exact location for cities. However, be sure to identify them in the appropriate country.**

Clue 1: Frankincense is produced from the hardened sap in trees from the family *Boswellia*. It was cultivated in these two modern-day countries on the southern side of the Arabian Peninsula.

Clue 2: Here in the capital of his empire, Emperor Nero bought huge harvests of frankincense to burn at the funeral of a loved one.

Clue 3: In this major port city with a famous ancient library, frankincense was used to fill body cavities after they were disemboweled and before they were mummified.

Clue 4: When Jesus was born here, Christians believed that Three Magi from the East brought gifts. The most valuable was considered frankincense.

Clue 5: Beyond this tallest mountain range in the world, frankincense was referred to as *fan hun xiang* or “soul fragrance” and was used here to mourn the dead and honor the ancestors. Today, this country has the largest population in the world.

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# Learning About the *Hajj*

## Activity Objectives

Students will:

- Understand the global demographics and geography of the Islamic faith
- Interpret data from maps and charts
- Learn about the ritual of *hajj*
- Identify practical concerns for the Saudi Arabians in hosting *hajj*
- Role-play and problem-solve about logistical dilemmas related to *hajj*

**Grades:** 9-12, Social Studies, World History and Geography

**Standards:** This lesson corresponds to the following standards articulated by McRel [Mid-continent Research for Education and Learning](#): Geography Standards 1 and 10; World History Standard 13

## Materials needed

- ☐ Projection of Nusret Colpan's *World of Islam* or colored copies for students to share:  
[en.wikipedia.org/wiki/File:IslamicWorldNusretColpan.jpg](http://en.wikipedia.org/wiki/File:IslamicWorldNusretColpan.jpg)
- ☐ Copies or access to "The Atlas of Religion: Islam" (Note: Ideal to print in color; if not, highlight that Guinea, Chad, Sudan, Uzbekistan, Kyrgyzstan and Brunei are 50-79% Muslim. Scroll down to see the Islam map.)  
[http://www.opendemocracy.net/arts/atlas\\_religion\\_4598.jsp](http://www.opendemocracy.net/arts/atlas_religion_4598.jsp)
- ☐ Copies or access to "Islam's Global Reach"  
[www.usnews.com/usnews/graphics/religion/islams\\_global\\_reach.htm](http://www.usnews.com/usnews/graphics/religion/islams_global_reach.htm) (Click to display top 20 Muslim countries by population.)
- ☐ Copies of Student Handout: "Troubleshooting *Hajj*"

## Time needed

20-30 minutes for A Gathering of Believers

30-40 minutes for Hosting *Hajj*

## Procedure:

### Part I: *Hajj*: A Gathering of Believers

- 1** Display the image *World of Islam*<sup>1</sup> without sharing the title. In partners, have the students "read" the painting from side to side and top to bottom. Hold a short discussion, prompting with the following questions: (Students should support their responses with details from the painting.)
  - Where is the viewer's eye drawn and why?
  - From what century do you think this painting was produced?
  - What do you think is the artist's message?
  - Propose a title for the painting.

- 2** Make sure the concept of *hajj* is understood by reviewing the following:

- One of the five "Pillars of Faith" of Islam is to make a pilgrimage to Makkah. The pilgrimage is called *hajj*. (The other four Pillars are: belief in one god Allah; pray five times a day; fast during the month of Ramadan; give to charity.)
- Every Muslim who is physically and financially able to do so should go on *hajj* at least one time in his or her life.
- *Hajj* is the world's largest religious event.
- Only Muslims can go to Makkah and perform *hajj*.
- There is an equal ratio of male to female pilgrims.

- 3** Post the following information:

### *Hajj* Attendance

- 19<sup>th</sup> century 100,000-200,000  
½ attendees from outside Saudi Arabia
- 1908 ~ 200,000
- 1927 ~ 300,000  
150,000 from outside Saudi Arabia
- 1970 >1 million  
479,339 from outside Saudi Arabia
- 1980 1.8 million
- 2008 2.9 million  
1.73 million from 178 countries

Ask students to discuss the following question in small groups.

- Looking over these statistics, what factors could account for the remarkable rise in international attendance over the 20<sup>th</sup> century?
- 4** Reconvene to review. Students might acknowledge developments in information and technology to support issuing visas, coordinating flights, providing transportation and air conditioning for so many pilgrims. Emphasize that the 1970s marked an escalation in attendance because of the kingdom's oil boom and the government's investment into building a *hajj* infrastructure.
  - 5** Distribute or access "Atlas of Religion: Islam" and "Islam's Global Reach" (links provided in "Materials Needed") and hold a discussion about the worldwide Muslim population. Suggested highlights:
    - There are 1.3 billion Muslims worldwide. One in three humans is Muslim. Islam is the world's second largest religion.
    - More than 80% of Muslims live outside the Middle East. To what extent is this surprising to learn?
    - Which countries have the highest Muslim population? How many of them are Arab?
    - Where is Islam a state religion? What does this mean?
    - Which countries in Europe have large Muslim populations? Use history to support this population distribution (the Mongols and then the Ottoman Empire; perhaps discuss the ethnic divisions brought out by the break-up of Yugoslavia.)
    - Historically, what accounts for the Chinese Muslim population (the Mongols)?

## Part II: Hosting Hajj

- 1 Share the following quote: “If you can, imagine having twenty Super Bowls in one stadium where two million people will come to the same stadium... Add to that the fact that these two million people will actually be taking part in playing the game as well. It may give you a glimpse of the preparations needed for *hajj*.”<sup>2</sup> Ask the students to interpret the meaning of this quote.
- 2 Distribute the Student Handout “Troubleshooting Hajj” (Cut the copy pages in half) and instruct student groups to consider the preparations for hosting *hajj*. They need to brainstorm the logistical concerns when hosting almost three million people in Makkah, Saudi Arabia.
- 3 Reconvene and review the exercise using the following information.
  - **Scenario 1: Qurbani**  
The Saudi government distributes vouchers for sheep to be slaughtered in honor of a *hajji* and the meat is distributed to the needy. It is a proxy-slaughter. Coupons are available at: [www.adahi.org/adahisite/Default.aspx](http://www.adahi.org/adahisite/Default.aspx)
  - **Scenario 2: Heat**  
Tent cities are built to accommodate the *hajjis*. They are air conditioned with heat-resistant tiles. Saudi television features information about preventing heat stroke. The spring water that is believed to have saved Hagar and Ishmael, Zam Zam water, is bottled and widely distributed.
  - **Scenario 3: Physical demands**  
The Saudi government has built escalators and tunnels. It licenses 14,000 buses to shuttle *hajjis* around Makkah. This past winter, Saudi Arabia awarded a contract to the Chinese to build a monorail around Makkah. Additionally, health requirements dictate that pilgrims cannot be younger than 12 or older than 65.
  - **Scenario 4: Contagion**  
The Ministry of Health requires that all *hajjis* be vaccinated against the seasonal flu and against the H1N1 virus, if it is available. Additionally, people in impaired health are banned, and depending on a *hajji's* country of origin, he or she may be subject to additional vaccinations. (See the web site for specifics: [www.hajjinformation.com/main/xy2414.htm](http://www.hajjinformation.com/main/xy2414.htm)). Additionally, other countries can prevent its citizens from attending *hajj*. Iran has mandated that its citizens return from Saudi Arabia by the end of the summer—months before *hajj*.
  - **Scenario 5: Security**  
With respect to fires, Saudi authorities banned portable tents and provides fireproof tents. Gas cooking burners are also prohibited. Platforms at holy sites have been expanded to accommodate several million people to avoid the stampedes of the past. Saudi Arabia restricts the number of visas issued. (Note: It is difficult to find out this information but generally, 1,000 visas are issued for every one million Muslims in a country). 100,000 security agents were deployed to safeguard Hajj 2008.
- 4 Instruct students to pretend they are *hajjis* participating in *hajj* this year. They need to write a series of three to

four postcards to their families describing a different aspect of the *hajj* ritual and experience. Encourage them to research to achieve an authentic description and to cite their sources. To prepare for this task, students can visit the PBS *Virtual Hajj* web site and the BBC's *Hajj in Pictures*.

[www.pbs.org/muhammad/vh\\_step1.shtml](http://www.pbs.org/muhammad/vh_step1.shtml)

[www.bbc.co.uk/religion/galleries/hajj/](http://www.bbc.co.uk/religion/galleries/hajj/)

If possible, encourage students to interview members of their community who have participated on a *hajj*.

## Methods of Assessment

- Participation in class and group discussions
- Completion of troubleshooting exercise
- Completion of the *Hajj* postcards

1 Nusret Colpan (1952-2008), Turkish; *World of Islam*

2 Iyad Madani, Minister of Hajj, 2003.

ABC News, Ministry of Hajj – Saudi Arabia, National Geographic News, Open Democracy, Progressive Policy Institute, Saudi-US Information Service, U.S. News & World Report, Wikipedia

# Troubleshooting *Hajj*

Your group is the Ministry of *Hajj* in Saudi Arabia and is devising plans for the next *hajj*. Examine the process of *hajj* and troubleshoot potential safety and logistical considerations. Identify these concerns with your group. Consider that pilgrims must do the following activities:

- Bathe, don *Ihram*, the white garments, and say a statement of pure intention
- Go to Makkah to perform *tawaf*, and circle the Ka'ba stone seven times
- Stay overnight in a makeshift camp city of Mina
- Travel to the valley of Arafat where Muslims believe the patriarch Abraham showed his devotion to Allah by preparing to sacrifice his son, Ishmael. Pilgrims pray here.
- Go to Muzdalifa to spend the night and gather 49-72 small stones
- Return to Mina to throw stones at the pillars of Jamraat; to Muslims, these pillars symbolize the devil who tried to prevent Abraham's sacrifice for Allah
- Slaughter a sacrificial sheep, a *qurbani*, to give to the poor
- For men, shave their heads and for women, cut their nails and a piece of their hair
- Return to Makkah to perform *tawaf*, circling the Ka'ba stone seven times
- Stay in Mina for three to four days and throw stones at the pillars of Jamraat
- Return to Makkah to perform another *tawaf*, and circle the Ka'ba stone seven times
- Claim the title *hajji* for men and *hajjah* for women upon completion of *hajj*

A map of the *hajj* route, which covers approximately 50 miles, is available at [www.hajjinformation.com/main/f20.htm](http://www.hajjinformation.com/main/f20.htm)

Your group must develop specific action plans to address each of the following scenarios.

**Scenario 1:** Part of the *hajj* ritual is the practice of *qurbani* where an animal is sacrificed and given to the poor. How can this ritual be observed hygienically and safely?

**Scenario 2:** While *hajj* is never a fixed time of year because Muslims follow a lunar calendar, it will not take place during cool weather in Makkah. Average temperatures range between 84° and well into the 100s°. How can *hajjis* avoid heat stroke, heat exhaustion and dehydration?

**Scenario 3:** Much of *hajj* involves physical activity. What accommodations should you provide?

**Scenario 4:** The World Health Organization has predicted the further contagion of the H1N1 virus. *Hajjis* come from more than 170 countries—what measures should you take to prevent the spread of the virus here?

**Scenario 5:** Past *hajjs* have ended tragically with fires, stampedes and violence. How can you provide for the physical safety of the pilgrims?

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# Timeline of Saudi Arabia

## Nabataeans and Ancient Times:

- 2<sup>nd</sup> century BCE** Rise of Nabataeans, the ancestors of Arabs, in the Arabian Peninsula; they controlled the Incense Route and built the city Madain Saleh.
- 106 CE** Romans annex Arabia; downfall of the Nabataeans.
- 4<sup>th</sup> century CE** Arabian Peninsula is a key location in trade routes between the East (China and India) and the West (Persian and Roman/Byzantium empires).

## Birth of Islam:

- 570** Birth of the prophet Mohammed in Makkah
- 610** Muslims believe that Mohammad receives his first revelation from Allah, God.
- 613** Mohammad begins preaching his monotheistic faith
- 622** Mohammad and his followers immigrate to Madinah and found the first Muslim settlement.
- 625-628** Battles occur between Muslims and other Arabian, polytheistic tribes.
- 630** Arabian Peninsula is united under Islam.
- 632** Mohammed returns to Makkah with his followers to perform *hajj* pilgrimage.
- 632** Mohammed dies.
- 650** Quran is compiled; it is the written version of Mohammad's revelations.

## Spread of Islam:

- 633-637** Islamic armies conquer Syria, Palestine, most of Mesopotamia.
- 640s** Islamic armies conquer Egypt and North Africa.
- 651** Persia is conquered.
- 711-718** Northwest India (Sind), northwest Africa, the Iberian Peninsula and central Asia are all part of the Islamic empire.
- 700-1000** Golden Age of Islam
- 1517** Ottoman Empire rules Makkah and Madinah.

## Saudi/ Wahhabi Alliance

- 1703** Conservative Muslim preacher Mohammed ibn Abd al Wahhab is born; he preaches in favor of a "pure" and Arabized Islam free from foreign influences like caliphates and the Ottomans.
- 1740** Mohammad ibn al Saud, a tribal leader, is converted to Wahhab's views and offers him protection; the Wahhab/Saudi alliance is born and continues.
- 1803** After a successful series of military conquests, the first Saudi/Wahhabi empire stands.
- 1814** Ottomans recapture Riyadh and execute Saudi leader.

- 1824** Riyadh is back in Saudi hands until it is captured by an enemy tribe, the al-Rashids in the 1890s.

## Birth of Modern Saudi Arabia

- 1902** Abdul Aziz ibn Abdul Rahman ibn al Saud captures Riyadh with the help of his Wahhabi army and loyal Bedouin tribes.
- 1925-26** Abdul Aziz captures Makkah and Madinah and proclaims himself King.
- 1932** Abdul Aziz declares the formation of the Kingdom of Saudi Arabia founded on the principles of Wahhabism; oil is discovered in Arabian Peninsula.
- 1933** First oil concession is granted to American oil company.
- 1937** Oil is discovered in Riyadh and Damman, Saudi Arabia.
- 1943** U.S. President Franklin D. Roosevelt notes that Saudi Arabia is "vital for defense of the U.S."

## Balancing Modernization vs. Tradition

- 1960** Organization of Petroleum Exporting Countries (OPEC) is formed to coordinate oil pricing.
- 1974** Oil embargo against the United States for their support of Israel during the Yom Kippur War (1973); oil prices quadruple.
- 1974-1980** Oil boom in Saudi Arabia brings unprecedented wealth as well as influx of foreign workers.
- 1979** Great Mosque in Makkah is taken over by 250 extremists; 129 dead.
- 1990** Gulf War—U.S. troops are stationed in Saudi Arabia; Saudi son, Osama bin Laden, vehemently opposed the presence of non-Muslims on Saudi soil; Saudi women protest by driving in Saudi Arabia. (There remains a ban on women driving.)
- 1991** Moderates call for government reforms.
- 1993** Consultative Council composed of Saudi citizens, is formed.
- 2001** 19 terrorists, 15 of whom were Saudi, drive planes into the U.S. Pentagon and the World Trade Center.
- 2003, 2004** Terrorists attack Saudis and westerners in Riyadh and al-Khobar Towers—50% of Americans and 30% European workers leave the kingdom.
- 2005** First municipal elections take place; Saudi Arabia joins the World Trade Organization.

Bentley, Jerry H., Herbert F. Ziegler. *Traditions and Encounters: A Global Perspective on the Past*. (McGraw Hill: New York: 2000).

Butler, Stuart, Terry Carter, Lara Dunston, Frances Linzee Gordon, Jonny Walker. *Lonely Planet: Oman, UAE and Arabian Peninsula*. (Lonely Planet: London, 2007).

Mackey, Sandra. *The Saudis: Inside the Desert Kingdom*. (W.W.Norton & Co: New York, 2002).

North, Peter and Harvey Tripp. *Culture Shock! A Survival Guide to Customs and Etiquette: Saudi Arabia*. (Marshall Cavendish Corp: Tarrytown, 2006).

[www.pbs.org/muhammad](http://www.pbs.org/muhammad), "Muhammad: Legacy of a Prophet," (accessed 18/8/09)

[en.wikipedia.org](http://en.wikipedia.org): "Saudi Arabia," "Wahhabism," "Mohammad" (accessed 18/8/09)

# Muslim Scientists and Their Achievements in the Middle Ages

## **Jabir ibn Haiyam (b.721-d.803)**

Largely considered the father of chemistry, Jabir ibn Haiyam made important discoveries for the everyday application of science. His contributions include making steel, dye and rust inhibitors as well as discovering many different acids.

(Windows to the Universe, University Corporation for Atmospheric Research, University of Michigan, [www.windows.ucar.edu/tour/link=/people/middle\\_ages/ibnhaiyan.html](http://www.windows.ucar.edu/tour/link=/people/middle_ages/ibnhaiyan.html))

## **Mohammad al Khwarizmi (b.780-d.850), Uzbekistan**

Author of the text, *Hisab Al-Jabr W'al Mugabalah* ("the science of reunion and reduction"), Khwarizmi's work was in the field of algebraic mathematics. (Europeans took the word *al-jabr* and referred to it as "algebra.") His work on algorithms, also a word of Arabic derivation, is still applied today to approach problems with a particular set of rules.

San Jose State University: History of Mathematics, Science and Technology: a Culturally Affirming View  
[www.sjsu.edu/depts/Museum/aamenu.html](http://www.sjsu.edu/depts/Museum/aamenu.html)

## **Abu Yusef Yaqoub ibn Ishaq al Kindi (b.805-d.873), Iraq**

Known as "the philosopher of the Arabs," al Kindi was also a renowned chemist who was committed to the process of testing hypotheses and refuting the practice of alchemy. al Kindi's work had useful application for perfumes and pharmaceuticals.

## **Abu Rayhan Muhammad ibn Ahmad al Biruni (b.973-d.1048), Uzbekistan**

al Biruni was a well-rounded scholar who studied astronomy, anthropology, geology, mathematics and countless other subjects. He had an advanced understanding of the rotation of the planets.

## **Abu Ali al-Hussain Ibn Abdallah Ibn Sina (b.980-d.1037), Persia**

Ibn Sina was a preeminent physician and pioneer in the field of medicine. He advanced doctors' understanding of contagion of particular diseases, such as tuberculosis, the spread of disease, and the relationship between psychology, the study of the mind, and general well being.

## **Ibn al Haytham (b.995-d.1040), Iraq**

A pioneer in the field of optics, Ibn al Haytham, or Alhazen, observed the relationship between light and vision. He was the first to understand how the eye sees and he was able to replicate this process by building an early camera. He is also credited with developing the scientific method through his process of testing a hypothesis through experimentation.

([ibnalhaytham.net](http://ibnalhaytham.net))

## **Omar Khayyam (b.1044-d.1123), Persia**

A mathematician, astronomer and poet, Khayyam wrote *Treatise on Demonstration of Problems of Algebra* which was revolutionary in solving cubic equations. Khayyam also developed an accurate calendar and possibly understood that the earth revolved around the sun.

## **Abu Muhammad Abdallah Ibn Ahmad Ibn al-Baitar Dhiya al-Din al-Malaqi (b.?-d.1248), Spain**

ibn al Baitar was an accomplished scientist and botanist. He studied over 3,000 species of plants and identified their applications in medicine. Many of his discoveries about the healing properties of plants are used in herbal and conventional medicine today.

## **Ibn al Nafis (b.1213-d.1288), Syria**

This physician was the first to revive important knowledge about how blood circulates around the body after this information lay dormant for thousands of years. al Nafis' discovery added to doctors' understanding of the circulatory system.

Arabia, [wordnetweb.princeton.edu/perl/webwn](http://wordnetweb.princeton.edu/perl/webwn),

Muslim Scientists and Scholars [www.ummah.net/history/scholars/index.html](http://www.ummah.net/history/scholars/index.html),

Muslim Heritage.com [www.muslimheritage.com/day\\_life/default.cfm?ArticleID=370&Oldpage=1](http://www.muslimheritage.com/day_life/default.cfm?ArticleID=370&Oldpage=1)

# ARABIA Educational Slide Show Content

An educational slide show can be easily created in Powerpoint. Below are suggestions for images and topics that could appear on each slide.

## Arab

- Arabs are people whose ethnic or national background is from an Arab country and who speak Arabic as their first language. There are approximately 200 million Arabs in the world.
- Most Arabs are Muslims, but there are also millions of Christian Arabs and thousands of Jewish Arabs. Approximately 15 percent of Muslims in the world are Arabs.
- Arabic is spoken in more than 46 countries and is the 6th most common language in the world <sup>1</sup>

## City of Jeddah or the fountain

- Jeddah is a port city in western Saudi Arabia on the Red Sea near Makkah.
- The Jeddah fountain rises some 853 feet (260 meters) from the sea and is the highest of its type in the world
- As a major seaport and with the airport that *hajjis* (Muslim pilgrims) use when visiting Makkah, Jeddah is the most cosmopolitan of all Saudi Arabia's cities.<sup>2</sup>

## Woman wearing Abaya

- An Abaya is a long black overgarment worn by some women in Saudi Arabia and other countries of the Arabian Peninsula.
- Abaya is a traditional form of hijab or Islamic dress that is worn outside the home.
- Abaya is worn so that women's sexuality will not become a source of temptation or enter into their interactions with men.<sup>3</sup>

## Camel(s)

- Camels were so valuable to survival in the Arabian Peninsula that there are more than 160 words for this beast in Arabic.
- There are two types of camel: the Dromedary or Arabian camel and the Bactrian or Asian camel. 90% of the camels in the world today are Dromedary.
- The royal family sponsors an annual camel race.<sup>4</sup>

## Bedouin Man or Bedouin Tent

- Bedouins are nomadic Arabs of the Arabian, Syrian, or North African deserts who are renowned for their hospitality.
- A Bedouin tent is customarily divided by a curtain into two sections, one for the men and most guests, and the other for women to cook and receive female guests.
- The most easily recognized aspect of a Bedouin man's attire is his headgear, which consists of the kufiyya-cloth and 'agal-rope.<sup>5</sup>

## Map of Red Sea

- The Red Sea's elongated shape developed in the last four to five million years. The Red Sea is unique because no rivers or streams flow into it.
- Hundreds of species of coral reef and fish, dolphins, whales and marine turtles call the Red Sea home.<sup>6</sup>



## A Shipwreck

- Coral reefs of the Red Sea created barriers that caused ships to sink.
- The vast number of shipwrecks in the Red Sea demonstrates how active the trade route was. Shipwrecks today form part of the same coral reef system that caused ships to sink.<sup>7</sup>

## Amphora

- An amphora is an ancient ceramic jar with two handles and a narrow neck that was used to hold oil or wine.
- Roman carvings on old amphora are used to find out how old it is and what it was used for.
- The Romans used shards of broken amphorae as building materials in their roads.<sup>8</sup>



## Madain Saleh

- Madain Saleh is an archaeological site where Nabataeans lived.
- It was a thriving center of learned, literate and wealthy people that contains 111 monumental tombs and water wells that are outstanding examples of the Nabataeans' architectural accomplishment and hydraulic expertise.
- Madain Saleh is the first Unesco World Heritage property to be inscribed in Saudi Arabia. <sup>9</sup>

## Sandstorm

- A sandstorm occurs when storming winds drop to the hot ground and blow up dry, loose sand.



- Sand dunes formed from sandstorms in Saudi Arabia's deserts can measure taller than the Eiffel Tower. Sandstorms today cripple Middle Eastern cities causing airports to close and disrupting business and people's everyday lives.<sup>10</sup>

### **Boswelia Tree/frankincense**

- Frankincense is tapped from the Boswelia tree that creates a resin used to treat diseases and as aromatherapy and an ingredient of incense.
- Frankincense is ground to make kohl eyeliner pencil.
- Frankincense was a highly valued trade commodity carried in ancient times across the Arabian Desert to the Roman Empire for use in their temples.<sup>11</sup>

### **Muslim praying**

- Islam is the religious faith of Muslims, based on the words and religious system founded by the prophet Mohammed and taught by the Quran.
- Muslims pray five times a day, facing in the direction of Makkah.
- Islam is the second most practiced religion in the world.<sup>12</sup>

### **Muslim Scientist**

- The word "algebra" comes from Arabic. Muslim astronomers understood that the earth circles the sun centuries before Europeans observed this.
- Muslim scientists studied the healing properties of plants. Their discoveries are still used today in herbal and conventional medicine.<sup>13</sup>

### **Ibn al Haytham**

- Ibn al Haytham was an Arabian scientist born in 965 who proved that light travels in a perfectly straight line and was the first to explain how the eye sees.
- Ibn al Haytham made significant contributions to science in general with his introduction of the scientific method
- Geometry was Ibn al-Haytham's forte: the subject in which most of his writings have survived and for which he was most appreciated.<sup>14</sup>

### **Abdul Aziz**

- In 1932 after recapturing his family's lands, Abdul Aziz (Ibn Saud) united the tribes into the Kingdom of Saudi Arabia. As Saudi Arabia's first king, he frequently traveled throughout the kingdom to be accessible to his subjects. He was the father of the current Saudi Arabian King Fahd bin Abdul Aziz and is estimated to have had 50-60 children.<sup>15</sup>

### **Oil field**

- Petroleum formed from the fossilized remains of plants and animals which decomposed millions of years ago. Over the centuries, heat and pressure turned this rock into petroleum.
- One quarter of the world's petroleum reserves are in Saudi Arabia. Saudi Arabia is the world's number one exporter of petroleum.<sup>16</sup>



### **Makkah**

- Makkah, located in western Saudi Arabia, is the holiest of Muslim cities.
- All devout Muslims attempt a pilgrimage, or *hajj*, to Makkah at least once in their lifetime. Each year some two million *hajjis* (pilgrims) from all over the world come to Makkah.<sup>17</sup>

### **Ka'ba**

- The Ka'ba is an oblong stone building located approximately in the center of the quadrangle of the Grand Mosque in Makkah.
- Set in silver in the eastern corner of the Ka'ba is the sacred Black Stone, the focal point of the *Hajj*, and the only remnant of the shrine which Abraham built when it was given to him by the angel Gabriel.
- During the *Hajj*, Muslim pilgrims walk around the Ka'ba seven times to become one unit with all human beings around them and with earth and the sun, because everything moves in this counter-clockwise movement.<sup>18</sup>

### **Skyscraper or other Modern Day Saudi Arabia image**

- Saudi Arabia plans to build the largest women's university in the world for women to study medicine, management and computer science.
- King Abdullah University of Science and Technology is partnering with UC Berkeley, Univ. of Texas (Austin) and Stanford University to build a preeminent graduate-level research university in Saudi Arabia.
- Today Arabia may be poised on the brink of its next Golden Age.<sup>19</sup>

- 1 [www.pbs.org/frontline/teach/muslims/beliefs.html](http://www.pbs.org/frontline/teach/muslims/beliefs.html), *Ethnologue Volume I: Languages of the World*, 14th ed. (2000), [www.usccr.gov/pubs/sac/dc0603/ch2.htm](http://www.usccr.gov/pubs/sac/dc0603/ch2.htm)
- 2 [wordnetweb.princeton.edu/perl/webwn](http://wordnetweb.princeton.edu/perl/webwn), [www.saudinf.com/main/a85.htm](http://www.saudinf.com/main/a85.htm)
- 3 [en.wikipedia.org/wiki/Abaya](http://en.wikipedia.org/wiki/Abaya), [www.pbs.org/frontline/teach/muslims/beliefs.html](http://www.pbs.org/frontline/teach/muslims/beliefs.html)
- 4 Danielle Zagata. "Interesting Fact About Camels." *Associated Content*. 4 Oct. 2007. [6 July 2009]. [www.associatedcontent.com/article/396604/interesting\\_facts\\_about\\_camels.html?cat=58](http://www.associatedcontent.com/article/396604/interesting_facts_about_camels.html?cat=58)
- 5 Sandra Mackey. *The Saudis: Inside the Desert Kingdom*. (W.W.Norton & Co: NY, 2002).
- 6 [www.merriam-webster.com/dictionary/bedouin](http://www.merriam-webster.com/dictionary/bedouin), [www.geographia.com/egypt/sinai/bedouin02.htm](http://www.geographia.com/egypt/sinai/bedouin02.htm)
- 7 [www.tulane.edu/~sanelson/images/eafrica.gif](http://www.tulane.edu/~sanelson/images/eafrica.gif), [www.sgs.org.sa/index.cfm?sec=221&page=ARABIA](http://www.sgs.org.sa/index.cfm?sec=221&page=ARABIA)
- 8 [wordnetweb.princeton.edu/perl/webwn](http://wordnetweb.princeton.edu/perl/webwn), *ARABIA*
- 9 [whc.unesco.org/en/list/1293](http://whc.unesco.org/en/list/1293)
- 10 [www.wikipedia.org/wiki/Habooob](http://www.wikipedia.org/wiki/Habooob), [www.ireport.com/](http://www.ireport.com/)
- 11 [www.britannica.com/EBchecked/topic/217294/frankincense](http://www.britannica.com/EBchecked/topic/217294/frankincense), [tibet-incense.com/blog/the-history-and-use-of-frankincense/](http://tibet-incense.com/blog/the-history-and-use-of-frankincense/), [www.botanical.com/botanical/mgmh/f/franki31.html](http://www.botanical.com/botanical/mgmh/f/franki31.html)
- 12 [www.Dictionary.com](http://www.Dictionary.com) and *ARABIA*
- 13 [www.sjsu.edu/depts/Museum/aamenu.html](http://www.sjsu.edu/depts/Museum/aamenu.html), [www.ummah.net/history/scholars/index.html](http://www.ummah.net/history/scholars/index.html)
- 14 [harvardmagazine.com/2003/09/ibn-al-haytham.html](http://harvardmagazine.com/2003/09/ibn-al-haytham.html), [www.ibnalhaytham.net/](http://www.ibnalhaytham.net/), *ARABIA*
- 15 [www.kingfahdbinabulaziz.com/main/b10.htm](http://www.kingfahdbinabulaziz.com/main/b10.htm) and *ARABIA*
- 16 [www.kids.esdb.bg/oil.html](http://www.kids.esdb.bg/oil.html), Sandra Mackey. *The Saudis: Inside the Desert Kingdom*. (W.W.Norton & Co: NY, 2002)
- 17 [www.saudinf.com/main/a83.htm](http://www.saudinf.com/main/a83.htm)
- 18 [www.saudinf.com/main/a832.htm](http://www.saudinf.com/main/a832.htm)
- 19 *ARABIA*, [news.cnet.com/8301-10784\\_3-9885362-7.html](http://news.cnet.com/8301-10784_3-9885362-7.html), [www.pbs.org/wnet/wideangle/uncategorized/saudi-arabias-first-womens-university/3486](http://www.pbs.org/wnet/wideangle/uncategorized/saudi-arabias-first-womens-university/3486)

# Arabia: Glossary

**Abaya** A long black overgarment worn by some women in Saudi Arabia and other countries of the Arabian peninsula. It is a traditional form of hijab, or Islamic dress.

[en.wikipedia.org/wiki/Abaya](http://en.wikipedia.org/wiki/Abaya)

**Abdul Aziz** In 1932 after recapturing his family's lands, Abdul Aziz (Ibn Saud) united the tribes into the Kingdom of Saudi Arabia. He was the father of the current Saudi Arabian King Fahd bin Abdul Aziz and is estimated to have had 50-60 children.

[www.kingfahdbinabdulaziz.com/main/b10.htm](http://www.kingfahdbinabdulaziz.com/main/b10.htm) and *ARABIA*

**Amphorae** Ancient ceramic jars with two handles and a narrow neck used to hold oil or wine.

[wordnetweb.princeton.edu/perl/webwn](http://wordnetweb.princeton.edu/perl/webwn)

**Arab** A person whose ethnic or national background is from an Arab country. Approximately 15 percent of Muslims in the world are Arabs.

[www.pbs.org/wgbh/pages/frontline/teach/muslims/beliefs.html](http://www.pbs.org/wgbh/pages/frontline/teach/muslims/beliefs.html)

**Arabian Peninsula** A peninsula in the Middle East, bordered by Iraq and Jordan to the north, the Persian Gulf to the northeast, the Red Sea to the southwest and the Indian Ocean to the southeast. Saudi Arabia comprises 80% of the Arabian Peninsula.

[en.wiktionary.org/wiki/Arabian\\_Peninsula](http://en.wiktionary.org/wiki/Arabian_Peninsula)

**Bedouin** A nomadic Arab of the Arabian, Syrian, or North African deserts.

[www.merriam-webster.com/dictionary/bedouin](http://www.merriam-webster.com/dictionary/bedouin)

**Camels** Cud-chewing mammals used as draft or saddle animals in desert regions.

[wordnetweb.princeton.edu/perl/webwn](http://wordnetweb.princeton.edu/perl/webwn)

**Caravan** A procession (of wagons or mules or camels) traveling together in single file. Also sometimes called a camel train.

[wordnetweb.princeton.edu/perl/webwn](http://wordnetweb.princeton.edu/perl/webwn)

**Falcon** A bird of prey active during the day with long pointed powerful wings adapted for swift flight.

[wordnetweb.princeton.edu/perl/webwn](http://wordnetweb.princeton.edu/perl/webwn)

**Frankincense** Common name for the aromatic resins and oils of trees from the Boswellia family, found chiefly in the southern Arabian Peninsula and used in a variety of ways.

[www.saudiaramcoworld.com/issue/200504/glossary/popup.html](http://www.saudiaramcoworld.com/issue/200504/glossary/popup.html)

## Golden Age

The first Golden Age, lasting three hundred years during the time of the Nabataeans, saw the blossoming of a common alphabet, the root of today's Arabia language.

*ARABIA*

The second Islamic Golden Age, also sometimes known as the Islamic Renaissance, is traditionally dated from the 7th to 13th centuries C.E., but has been extended to the 15th and 16th centuries by more recent scholarship. During this period, artists, engineers, scholars, poets, philosophers, geographers and traders in the Islamic world contributed innovations and inventions to the arts, agriculture, economics, industry, law, literature, navigation, philosophy, sciences, sociology, and technology.

[en.wikipedia.org/wiki/Islamic\\_Golden\\_Age](http://en.wikipedia.org/wiki/Islamic_Golden_Age)

**Hajj** Every Muslim is required to make the pilgrimage or *Hajj* to Makkah, located in Saudi Arabia, once in their lifetime if she or he is financially and physically able.

[www.pbs.org/wgbh/pages/frontline/teach/muslims/beliefs.html](http://www.pbs.org/wgbh/pages/frontline/teach/muslims/beliefs.html)

**Ibn al Haytham** Arabian scientist who proved that light travels in a perfectly straight line and was the first to explain correctly how the eye sees. Born in 965, he made significant contributions to the principles of optics and other scientific areas, and to science in general with his introduction of the scientific method.

*ARABIA* and [en.wikipedia.org/wiki/Alhazen](http://en.wikipedia.org/wiki/Alhazen)

**Islam** The religious faith of Muslims, based on the words and religious system founded by the prophet Mohammed and taught by the Quran. The basic principle of Islam is absolute submission to a unique and personal god, Allah. Islam is the second most practiced religion in the world.

[Dictionary.com](http://Dictionary.com) and *ARABIA*

**Jeddah** A port city in western Saudi Arabia on the Red Sea near Makkah.

[wordnetweb.princeton.edu/perl/webwn](http://wordnetweb.princeton.edu/perl/webwn)

**Ka'ba** The very first "house of God" located in Makkah, sometimes called Cube or holy magnet. Muslims believe it was built by Abraham, patriarch of three religions, Jewish, Christian and Islamic. Muslim pilgrims walk around the Ka'ba seven times.

*ARABIA*

**Madain Saleh** The Archaeological Site of Al-Hijr (Madain Saleh) is the first Unesco World Heritage property to be inscribed in Saudi Arabia. With its 111 monumental tombs, 94 of which are decorated, and water wells, the site is an outstanding example of the Nabataeans' architectural accomplishment and hydraulic expertise.

[whc.unesco.org/en/list/1293](http://whc.unesco.org/en/list/1293)

**Makkah** The holiest of Muslim cities located in western Saudi Arabia. Mohammed, the founder of Islam, was born in Makkah, and it is toward this religious center that Muslims turn five times daily for prayer. All devout Muslims attempt a pilgrimage, or *hajj*, to Makkah at least once in their lifetime.

[www.saudinf.com/main/a83.htm](http://www.saudinf.com/main/a83.htm)

**Mosque** Place of worship for Muslims. Many mosques are recognized by their tall minarets or towers; however, minarets are not a physical requirement of mosques. Typically, mosques have a prayer hall covered with carpets, and people take their shoes off at the door to maintain the cleanliness of the prayer area.

[www.pbs.org/wgbh/pages/frontline/teach/muslims/glossary.html](http://www.pbs.org/wgbh/pages/frontline/teach/muslims/glossary.html)

**Muslim** One who follows the religion of Islam; literally, one who "submits to the will of God."

[www.pbs.org/wgbh/pages/frontline/teach/muslims/glossary.html](http://www.pbs.org/wgbh/pages/frontline/teach/muslims/glossary.html)

**Nabataeans** Ancient people of northwestern Arabia, centered in modern Jordan. They formed a kingdom in the 4th century BCE that lasted about 450 years. Nabataeans were the first people to call themselves Arabs. They developed the Arabic language and script and the Arabic cultural identity.

[looklex.com/e.o/nabataeans.htm](http://looklex.com/e.o/nabataeans.htm) and *ARABIA*

**Red Sea** A long arm of the Indian Ocean between northeast Africa and Arabia; linked to the Mediterranean at the north end by the Suez Canal. It is unique in that no rivers flow into it.

[Saudi Geological Survey](http://Saudi Geological Survey), [wordnetweb.princeton.edu/perl/webwn](http://wordnetweb.princeton.edu/perl/webwn)

**Riyadh** The joint capital (with Makkah) and largest city of Saudi Arabia, located in the central oasis area.

[wordnetweb.princeton.edu/perl/webwn](http://wordnetweb.princeton.edu/perl/webwn)

**Sandstorm** Particles of sand carried aloft by strong wind. The sand particles are mostly confined to the lowest ten feet, and rarely rise more than fifty feet above the ground. The Arabian desert is famous for its high winds creating a tidal wave of sand and dust, lasting hours or even weeks.

[www.srh.noaa.gov/jetstream/append/glossary\\_s.htm](http://www.srh.noaa.gov/jetstream/append/glossary_s.htm) and *ARABIA*

# Community Resources and Potential Partners

Of the many topics covered in the *Arabia* film, two lend themselves especially well to community partnering: Islam/Muslims and geography. Below are some suggestions for partners and resources in the community.

## ISLAM

### Islamic Society of North America

[www.isna.net](http://www.isna.net)

This national organization provides services to the Muslim community of North America. There are many local and regional chapters and conferences held in different cities and regional zones over the course of each year. A local chapter or the national Office of Community Outreach can provide speakers and offer suggestions for local resources.

### Islamic Networks Group

[www.ing.org/](http://www.ing.org/)

ING strives to increase interreligious understanding and mutual respect among all Americans. They offer a speaker's bureau.

### Universities and Colleges

Most large universities have departments of Islamic Studies that offer classes, community activities and workshops. Professors can be invited to serve on a panel or speak at an event. Students would likely be interested in seeing the film.

### Local Mosques

Many mosques encourage community visits for people of all faiths to learn about Islam and visit a mosque.

## GEOGRAPHY

### National Council for Geographic Education (NCGE)

The National Council for Geographic Education works to enhance the status and quality of geography teaching and learning. The NCGE collaborates with National Geographic to offer conferences and learning opportunities. Most states have a "Geographic Alliance" affiliated with NCGE. Contact your state chapter to find speakers and geography teachers.

### Universities and Colleges

Most colleges and universities offer courses in the many geography topics addressed in the film: geology, coral reefs, the Red Sea, crude oil formation, and the geography of Saudi Arabia. Professors can be invited to serve on a panel or speak at an event. Students would likely be interested in seeing the film.

# Web Sites

## SAUDI ARABIA

### US State Department

[www.state.gov/r/pa/ei/bgn/3584.htm](http://www.state.gov/r/pa/ei/bgn/3584.htm)

The official US Department of State Web site gives comprehensive background information on all aspects of Saudi Arabia.

### National Geographic

[travel.nationalgeographic.com/places/countries/country\\_saudi-arabia.html](http://travel.nationalgeographic.com/places/countries/country_saudi-arabia.html)

National Geographic's Web site includes information, videos, maps and a photo gallery.

### SAMIRAD, the Saudi Arabia Market Information Resource

[www.saudinf.com/main/a.htm](http://www.saudinf.com/main/a.htm)

This Saudi Web site "provides visitors with answers to any questions they may have about the history, development, government and economy of the Kingdom." A comprehensive table of contents makes it easy to search by topic. The map allows for satellite images and viewing of photos of any city.

### Internet Islamic History Sourcebook from Fordham University.

[www.fordham.edu/halsall/islam/islamsbook.html](http://www.fordham.edu/halsall/islam/islamsbook.html)

This collection of history texts provides educators and students with rich documentation from the pre-Islamic Arab world through modern times. Areas of focus include religion, government, ethnicity in the Muslim world and geography.

## ISLAM

### The Islam Project

[www.theislamproject.org](http://www.theislamproject.org)

Produced in collaboration with a PBS documentary, this is a comprehensive Web site for "everyone who wants to know more about Islam—its story, its beliefs, and its increasingly prominent role in the modern world." Of special use is their overview and rating of other Islam Web sites at

[www.islamproject.org/education/gw\\_general\\_islam.htm](http://www.islamproject.org/education/gw_general_islam.htm)

### FRONTLINE Muslims

[www.pbs.org/wgbh/pages/frontline/shows/muslims/](http://www.pbs.org/wgbh/pages/frontline/shows/muslims/)

This companion site to the FRONTLINE four-part documentary includes a primer on Islam, responses to frequently asked questions, interviews with many Muslims and experts and a variety of readings.

### The Guardian/Mosques

[www.guardian.co.uk/education/2003/sep/23/primaryschoolteachingresources.primaryeducation1](http://www.guardian.co.uk/education/2003/sep/23/primaryschoolteachingresources.primaryeducation1)

This site offers concise explanations of all aspects of the buildings and the activities that take place within a mosque.

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