

RESEARCHING ISLAMIC CIVILIZATION

Grade Level: Grade Four
Presented by: Frank Fowler, Twin Peaks Charter Academy, Longmont, Colorado
Jeannette Hoerner, Elbert Country Charter School, Elizabeth, Colorado
Length of Unit: Five Lessons

I. ABSTRACT

- A. This unit is based upon the important contributions of the Islamic culture to Western civilization. It encompasses and details the areas of science, mathematics, art, architecture, and significant individuals affecting the culture. Through research, the student will gain an understanding of the effects the Islamic culture had on the world.

II. OVERVIEW

- A. Concept Objectives
1. Students understand how science, technology, and economic activity have developed, changed and affected societies throughout history.
 2. Students know how to use the processes and resources of historical inquiry.
- B. Content from the *Core Knowledge Sequence* (Fourth Grade World History)
1. Contributions to science and mathematics: Ibn Sina, Arabic numerals
 2. Muslim scholars translate and preserve writing of Greeks and Romans
 3. Thriving cities as centers of Islamic art and learning, such as Cordoba.
 4. Growing trade and cultural exchanges between east and west.
- C. Skill Objectives
1. Students will read and understand a variety of materials.
 2. Students will use a variety of materials to communicate both orally and in writing.
 3. The students will create an astrolabe.
 4. The students will research a topic on Islamic Civilization.
 5. The student will evaluate the importance of the zero.
 6. The student will use researched information to write a paragraph.
 7. The student will create a paragraph about the topic researched.
 8. The students will orally present their research information.

III. BACKGROUND KNOWLEDGE

- A. For Teachers
1. Section III A. History and Geography grade four Core Knowledge Sequence.
- B. For Students
1. The students will have background information provided in grade one Core Knowledge Sequence.
 2. The students will have an understanding the religion of Islam from the Core Knowledge Unit “Mini Historians Documenting Islamic History.”

- IV. RESOURCES** (The resources listed are those found to be the most beneficial.)
- A. The World of Islam. Jackdaw Study Guide. Amawald, New York: Golden Owl Publishing Company, 1993, ISBN 1-56696-041-X.
 - B. Beshore, George. Science in Early Islamic Cultures. New York: Franklin Watts, 1998, ISBN 0-531-20335-7.
 - C. Mantin, Peter & Mantin, Ruth. The Islamic World: Beliefs and Civilizations 600-1600. New York: Cambridge University Press, 1993, ISBN 0-512-40609-9.
 - D. Jesop, Joanne. The X Ray Picture Book of Big Buildings of the Ancient World. Danbury: Franklin Watts, 1993, ISBN 0-531-14286-8.
 - E. Hirsch, E.D. Jr. What Your 4th Grader Needs To Know: Fundamentals of a Good Fourth-Grade Education. New York: Dell Publishing, 1994, ISBN 0-385-31260-1.

V. LESSONS

Lesson One: Important Islamic cities and their contributions to learning

- A. *Daily Objectives*
 - 1. Lesson Content
 - a. Thriving Islamic cities
 - b. Important geographical locations
 - 2. Concept Objective(s)
 - a. Students understand how science, technology, and economic activity have developed, changed, and affected societies throughout history.
 - b. Students know how to use the processes and resources of historical inquiry.
 - 3. Skill Objective(s)
 - a. Students will read and understand a variety of materials.
 - b. Students will use a variety of materials to communicate both orally and in writing.
- B. *Materials* (For 24 students)
 - 1. Transparency of APPENDIX A-1-Map of Islamic cities
 - 2. APPENDIX A-2 (Student Map)-24 copies
 - 3. APPENDIX B-Major cities-3 copies of both pages
 - 4. APPENDIX C-Jigsaw Learning Procedure (copy for teacher)
 - 5. APPENDIX D-City Information Organizer-24 copies of both pages
 - 6. APPENDIX E-ABC Book of Islamic Civilization Instructions (copy for teacher)
 - 7. APPENDIX F-ABC Book of Islamic Civilization (student page)-24 copies
 - 8. APPENDIX G-“ABC Book Word List” (copy for teacher)
- C. *Background Notes*
 - 1. TRADE
 - a. Arab Muslims were heavy traders. Location had much to do with this as they were situated somewhat in the middle of the Asian continent and could therefore reach Africa, China, and Europe from where they were. They were skilled traders and merchants buying sought-after products such as gold, ivory and slaves from Africa, and silk and porcelain from China. They traveled in

caravans sometimes hundreds of camels long through harsh conditions in the Sahara and the mountains of China. The extensive trade that the Arabs did helped in the growth of the Muslim religion and the concentration of ancient knowledge from all over the world in the Arabian region.

2. CITIES

- a. In accordance with Muhammad's saying "cleanliness is half of faith" the Muslims built beautiful cities with running water, drains, well-planned streets, schools, and libraries long before any of these existed in Europe.

D. *Key Vocabulary* (These cities are fully defined in APPENDIX B.)

1. Mecca or Makkah
2. Medina
3. Jerusalem
4. Baghdad
5. Cairo
6. Damascus
7. Cordoba
8. Timbuktu

E. *Procedures/Activities*

1. Review religion of Islam from Core Knowledge Unit "Mini Historians Documenting Islamic History."
2. Review cities labeled on the map using transparency. (APPENDIX A-1)
3. Add the following cities to the map: Mecca or Makkah, Jerusalem, Baghdad, Cairo, Damascus, Cordoba, Timbuktu.
4. Have students label places on their copies of map.
5. Use a "Jigsaw" method of research. Directions are included in APPENDIX C. Students will do small-group research.
6. Begin ABC Book of Islamic Civilization. See APPENDIX E for complete instructions. This process will take 5 days to complete. Begin with **Day 1:**
 - a. Give each student a blank copy of the ABC Book page (APPENDIX F).
 - b. Using APPENDIX G, assign each student a letter of the alphabet and the word that corresponds with it. (For example, A-Astronomy)
 - c. Have the students write the letter they were assigned in the box and the words they were assigned in the correct place.
 - d. These pages will be assembled into a class book on Day 5.

F. *Evaluation/Assessment*

1. Evaluate the completed city chart from the Jigsaw Research exercise.

Lesson Two:

A. *Daily Objectives*

1. Lesson Content

- a. Islamic contribution to science in the areas of astronomy, chemistry, and optics
1. Concept Objective(s)
 - b. Students understand how science, technology, and economic activity have developed, changed, and affected societies.
 - c. Students know how to use the processes and resources of historical inquiry.
9. Skill Objective(s)
 - a. The students will create an astrolabe.
 - b. The students will research a topic on Islamic Civilization.
- B. *Materials* (For 24 students)
 1. 24 3x5 cards
 2. APPENDIX H-Directions for “Zip Around” Review Activity
 3. APPENDIX I-Directions for making an Astrolab
 4. 24 six-inch square pieces of cardboard
 5. 24 protractors
 6. 24 straws
 7. Tape
 8. Needles
 9. 24 pieces of string
 10. 24 washers
- C. *Background Notes*
 1. SCIENCE
 - a. The Qu’ran encouraged men to seek knowledge wherever they went. Muslim thinkers found information from other cultures such as Greece, India, Persia, and China. These powerful ideas were translated into Arabic. If it were not for the questions, observation, and study the Arabs did much of ancient wisdom would have been lost.
 2. ALCHEMY- CHEMISTRY
 - a. Muslim alchemists believed that they could develop a means to change base metals like iron and lead into gold or silver. Through the course of their experiments they discovered chemicals and elements. Muslim metal workers were able to make soft iron from the ground harder by adding other elements. This led to the making of steel.
 2. ASTRONOMY
 - a. The Muslims originally became interested in Astronomy as a means of figuring out which way to face in order to pray facing Makkah.
 - b. By charting the movement of stars, planets, and the moon they devised very accurate calendars. Omar Khayyam (1048-1131), a famous poet and astronomer developed a calendar that was accurate to within 1 day in 5000 years. His calendar is more accurate than the calendars we use today.
 - c. Muslims built massive observatories.

- d. Muslim scientists considered the concept that the Earth revolved around the sun. This idea was lost for hundreds of years until 1543 and Copernicus.
- e. The idea of astrology became highly developed under the Muslims. They believed Allah gave indications of the future through the movement of the heavens. Some Muslim rulers still have official astrologers.
- f. Traders and merchants brought back significant geographical information to the Muslim world. Muslims used instruments like the astrolabe from Greek inventors to create detailed maps. By viewing the North Star with the astrolabe latitude could be determined. The astrolabe could also be used to determine time.
- g. They determined that the world was round hundreds of years before this became an accepted idea in the time of Columbus. They determined this by noticing that the shadow of the Earth on the moon was curved and that when a ship is on the horizon at some distance all you can see is the sail.

D. Key Vocabulary

- 1. Astronomy-the study of stars and planets
- 2. Astronomer-scientists who study the stars and planets
- 3. Astrolab-an instrument used to measure the angles of the sun, stars, and planets
- 4. Alchemy-the search for knowledge through mystical means
- 5. Optics-the understanding of photography and the eye

E. Procedures/Activities

- 1. Play “Zip Around.” See APPENDIX H for directions.
- 2. Present the information included in the Background Notes.
- 3. Make an “astrolabe.” See APPENDIX I for instructions.
- 4. Continue with “ABC Book of Islamic Civilization” **Day 2:**
 - a. The students will find eight to ten facts about their topic. The students will write these facts down and keep them with their copy of the ABC Book page.

F. Evaluation/Assessment

- 1. Assess the facts and details collected by each student.

Lesson Three: More Contributions to Science

A. Daily Objectives

- 1. Lesson Content
 - a. Muslim contributions to science: medicine, human circulatory, optics, and light
 - b. Scientific process
- 2. Concept Objective(s)
 - a. Students understand how science, technology, and economic activity have developed, changed, and affected societies throughout history

- b. Students know how to use the processes and resources of historical inquiry
- 3. Skill Objective(s)
 - a. The student will use researched information to write a paragraph.

B. *Materials*

- 1. Drawing of human internal organs from Islamic text The Anatomy of the Human Body (see Science in Early Islamic Cultures, page 39) or a similar drawing can be found on internet site
http://www.nlm.nih.gov/exhibition/Islamic_medical/Islamic_10.html
- 2. Glass of water with a straw
- 3. Prism and card with a hole for light to pass through

C. *Background Notes*

- 1. MEDICINE
 - a. Cleanliness was a big part of the practice of medicine in the Islamic world. Many of the practices were developed at a time when Europeans still believed in superstitious cures.
 - b. Al-Razi studied medicine in Baghdad. He built a very advanced hospital there. He wrote a medical encyclopedia that was still used in Venice in the 1700s.
 - c. Ibn-al-Nafis described the circulation of blood in the human body long before William Harvey was given credit for such a discovery
 - d. Ibn-Sina (Avicenna) is considered the greatest physician from the ancient Islamic world. He was also a great philosopher. He stressed the importance of diet, influence of climate on health, emotional health can produce physical illness, disease can be spread by water, and the importance of sleep for healing.
 - e. Muslims did not dissect the human body, as they believed the body would be physically resurrected on Judgment Day so a person's body should be intact.
 - f. Since surgery was not an option Muslims relied on diet and drugs for cures to illness.
 - g. They developed sedatives and painkillers and were the first to use these medical techniques.
 - h. They used antiseptics to clean wounds. This idea was not accepted in the west until 1800.
 - i. They developed the use of sutures from animal intestines and silk.
 - j. They created surgical instruments.
- 2. OPTICS
 - a. Muslims carried out some of the earliest experiments with optics. Ibn-al-Haytham suspected that light travels through materials that are transparent. He also discovered that light travels through the air and water at different speeds. When light passes through a transparent material it bends and slows down. (This is the reason why a straw in a drinking glass appears to be out of line.)

- b. Muslim scientists also discovered how rainbows form. The sunlight passes through the raindrops and is separated into all of the colors of the rainbow.

D. *Key Vocabulary*

1. Reflection-the image appears back
2. Refraction-a wave of energy changes direction
3. Lens-the light focusing part of the eye
4. Circulatory system-the body's blood pumping system
5. Dissection-the cutting and separating of body parts

E. *Procedures/Activities*

1. Teacher will have a discussion with students asking, "How would a person discover the inner workings of the heart and lungs if their religious belief prevented them from cutting open a human body, alive or dead?"
2. Generate a discussion of A. William Harvey vs. Ibn-al-Nafis using Background Notes. "William Harvey is attributed with the discovery of the workings of the human circulatory system. Why do you think that is so when Arab/Muslim drawings showed it hundreds of years before?" Show the students the drawing of the human circulatory system on the provided web site.
3. Have a teacher-guided discussion on Islamic medical advances. Refer to Background Notes.
4. Begin a discussion of optics. Refer to Background Notes.
5. Teacher will use the glass of water to demonstrate the refraction, or bending, of light.
 - a. Hold up the glass and drop a straw into the glass. Allow the students to look through the glass to see how it appears that the straw has broken.
6. The Muslims conducted an experiment much like this:
 - a. Make a small hole in a piece of cardboard.
 - b. Place the cardboard in front of a window and allow the sunlight to pass through it.
 - c. Hold a glass filled with water in front of the sunlight that is coming through the hole in the cardboard.
 - d. The sunlight will be dispersed and reflected forming a rainbow.
7. Discuss how these observations, and others, led to Ibn-al-Haytham's theory that light is reflected off of objects back to the human eye. His observations mark the beginning of our modern knowledge of light and vision.
8. Continue "ABC Book of Islamic Civilization" **Day 3:**
 - a. Using the information the students collected on Day 2, the students will write a) a topic sentence b) supporting details c) a conclusion.

F. *Evaluation/Assessment*

1. Assess the materials the students wrote for the "ABC Book of Islamic Civilization."

Lesson Four: Literature and Math

A. Daily Objectives

1. Lesson Content
 - a. The contributions of Ibn-Sina
 - b. Islamic contributions in the field of mathematics
 - c. Islamic contributions to literature
2. Concept Objective(s)
 - a. Students understand how science, technology, and economic activity have developed, changed, and affected societies throughout history.
 - b. Students know how to use the processes and resources of historical inquiry.
3. Skill Objective(s)
 - a. The student will evaluate the importance of the zero.
 - b. The student will create a paragraph about the topic researched.

B. Materials

1. "ABC Book of Islamic Civilization"
2. The Islamic World: Beliefs and Civilizations 600-1600 by Peter Mantin and Ruth Mantin, p.52

C. Background Notes

1. LITERATURE
 - a. A big concept that Muhammad proposed in his religion is that God or Allah is a part of everything. For this reason Muslims were very interested in learning because they felt that through learning they could get closer to Allah.
 - b. As the Roman Empire was crumbling, the Catholic Church, which was very powerful, was putting down or suppressing scientific investigation. It was believed to be sinful. Scientists were called heretics or enemies to the church. This set the stage for scientific inquiry and learning moving into the region of Persia and Arabia where the Muslim religion was growing and learning was admired.
 - c. Some of the best-known stories from the Arabian Islamic culture are a collection known as *The Arabian Nights*, which includes Ali Baba and the 40 Thieves, Aladin, and Sinbad the Sailor. Poetry was held in high esteem in the Muslim world. One Caliph had 400 poets in his court. Poets were considered to be mystics and hold secrets that revealed Allah to others. Omar Khayyam was the author of *The Rubaiyat*, a collection of poems that is still praised today. The Qur'an is considered one of the greatest religious books in existence.
 - d. Possibly the greatest achievement of Muslim writers was the translation and therefore preservation of ancient works such as the writings of Aristotle and Plato, the medical knowledge of Galen and Hippocrates, and Ptolemy's geography. The greatest technological advances of the Greeks, Romans, Persians, and Indians were saved and improved upon and ultimately made their

way to Europe and set the stage for the Renaissance, and Age of Enlightenment.

2. IBN-SINA OR AVICAENNA (980-1037)
 - a. One of the greatest thinkers in the world of Islam was a man named Ibn-sina or Avicenna. He was very curious and studied ancient Greek and Roman philosophy. He wrote over 300 books about medicine and reason or a man's ability to think about his own existence, good and evil, and why he is alive. His greatest achievements were in the area of medicine. One of his books on medicine was still used in Europe in the 17th century.
3. MATH
 - a. The Muslims were great mathematicians.
 - b. The Muslims adopted symbols for math from the Hindus of India. These symbols were an improvement over Roman Numerals because the Hindus had started using a symbol called a sifr, which the Muslims perfected as a placeholder, which acted as a zero. Sifr means empty. The zero concept and these numerals are the ones we use today and they are called Arabic numerals since the Arabs in the Muslim world gave them to us. The zero was not used in Europe for 250 years.
 - c. Al-Khwarizmi improved a form of math with the help of the zero he called "al-jabr." What he had developed was a form of math we call Algebra. The Muslim mathematicians also worked with ideas in Trigonometry to calculate the distance to an object.

D. *Key Vocabulary*

1. Algebra-mathematics using numbers and symbols
2. Philosophy-a system of thought concerning concepts such as truth and existence
3. Reason -thinking in a logical, rational manner

E. *Procedures/Activities*

1. Teacher will go over the effects the Muslim culture had on history as their strong desire for learning and knowledge caused them to build numerous libraries and universities. Much of what they learned from ancient civilizations was passed on to the European culture. Had they not done this, much ancient knowledge would have been lost.
2. Discuss the accomplishments of Ibn-Sina (Avicenna) and his study of philosophy.
3. Discuss the Islamic contributions in the field of math. For a visual aid, refer to page 52 of The Islamic World: Beliefs and Civilizations 600-1600.
4. Discuss the importance of zero. Zero was not used in Europe for 250 years. Ask the students, "What would happen if we did not have zero?" Possible answers may include: "We would not have a million dollars" or "We could not have a tens place."
5. Continue "ABC Book of Islamic Civilization" **Day 4:**
 - a. Revise the paragraph that was written on Day 3.
 - b. Word-process the final product.

- F. *Evaluation/Assessment*
1. Final draft of the ABC Book paragraph is revised and word-processed.
Check for the following components:
 - a. The page is completed
 - b. Neatness
 - c. Accuracy in details

Lesson Five: Art and Architecture

- A. *Daily Objectives*
1. Lesson Content
 - a. Islamic contributions in art and architecture
 - b. How Islamic architecture was used
 2. Concept Objective(s)
 - a. Students understand how science, technology, and economic activity have developed, changed, and affected societies throughout history
 - b. Students know how to use the processes and resources of historical inquiry
 3. Skill Objective(s)
 - a. The students will orally present their research information.
- B. *Materials*
1. Mantin, Peter & Mantin, Ruth. The Islamic World: Beliefs and Civilizations 600-1600. New York: Cambridge University Press, 1993, ISBN 0-512-40609-9
- C. *Background Notes*
1. ART
 - a. The Muslims made high quality pottery, metal work, glass, crystal, ivory, wood, stone, and stucco, which they traded throughout Asia, Africa, and Europe.
 - b. Living things were not represented in their art as Muhammad had proclaimed that such efforts would be copying God's work and this was sinful. He had stated that representations of living things on a building would prevent the angels from entering that building on Judgment Day and that the inhabitants would not be saved.
 - c. Calligraphy was a highly enjoyed art form in the Islam world as Muslims considered it an honor to copy the Qu'ran. Calligraphy and quotes from the Qu'ran were used as decoration on buildings.
 2. ARCHITECTURE
 - a. Islamic architecture is very distinctive. Tall minarets, great domes, and arches were adopted by European architects centuries after they were used in Arabia.
 - b. The Muslims developed a way of creating a specific type of arch, which is very graceful. This arch was used to build the beautiful mosques that were erected throughout the Islamic world. The outline of this arch structure found its way to Europe where it transformed into the Gothic form of architecture.

- c. Muslim mosques were places of worship and were often covered with mosaic designs made from porcelain tiles. The Muslims had perfected the art of porcelain and had invented some of the first low fire glazes. Mosques were open at all times and were used for many purposes. People can pray anywhere but on Fridays at noon. Every day men have to pray in a mosque
- d. The Taj Mahal, one of the wonders of the world, was built as a tomb for a man's favorite wife. It took 22,000 workers 22 years to build it.
- e. Since Muslim artists would not depict any living being, sculpture and painting did not develop. This restriction forced artists to perfect other means of artistic expression, which were often in the form of crafts. The Muslims excelled in the making of glass, ceramics, weaving of textiles and carpets, metalwork, and the carving of wood, stucco, and ivory. Persian rugs are still considered to be the finest rugs made in the world.

D. *Key Vocabulary*

- 1. Arch-an opening with a curvature
- 2. Mosque-a Muslim place of public worship
- 3. Mosaic-a picture or decoration made of small pieces of stone or glass
- 4. Architecture-design of buildings

E. *Procedures/Activities*

- 1. Discuss the importance of and types of Islamic art. Examples of Islamic art are provided in The Islamic World: Beliefs and Civilizations 600-1600 by Peter Mantin & Ruth Mantin.
- 2. Discuss Islamic architecture. Examples of Islamic architecture are provided in The Islamic World: Beliefs and Civilizations 600-1600 by Peter Mantin & Ruth Mantin.
- 3. Culminating Activity.

F. *Evaluation/Assessment*

- 1. Oral presentation of Culminating Activity.

VI. CULMINATING ACTIVITY

- A. Alphabetical presentation of "ABC Book of Islamic Civilization."

VII. HANDOUTS/WORKSHEETS

- A. Appendices A-I

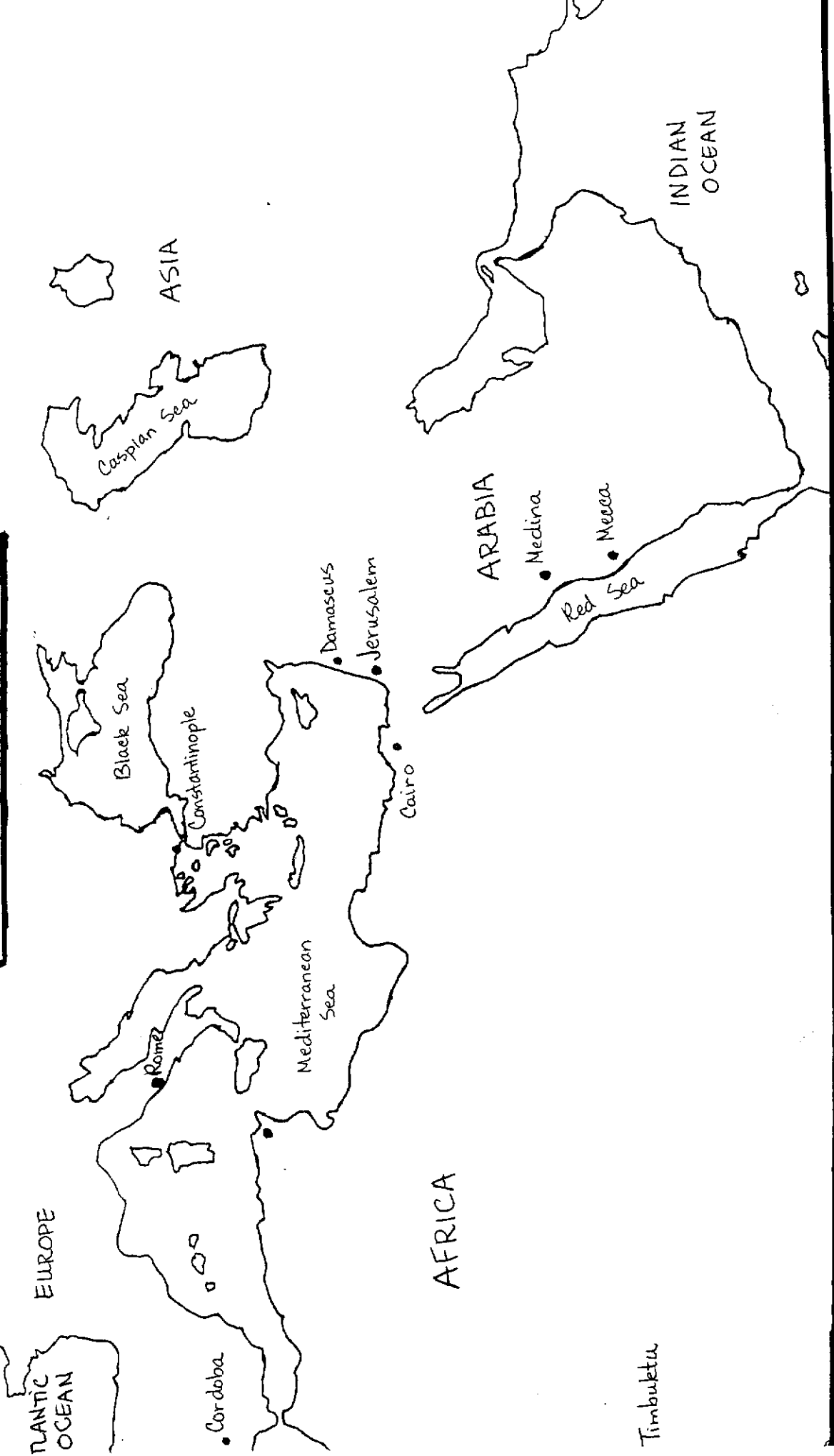
VIII. BIBLIOGRAPHY

- A. Beshore, George. Science in Early Islamic Cultures. New York: Franklin Watts, 1998, ISBN 0-531-20335-7.
- B. Dunn, John. The Spread of Islam. San Diego: Lucent Books, 1996, ISBN 1-56006-285-1.
- C. Hirsch, E.D. Jr. What Your 4th Grader Needs To Know: Fundamentals of a Good Fourth-Grade Education. New York: Dell Publishing, 1994, ISBN 0-385-31260-1.

- D. Jesop, Joanne. The X Ray Picture Book of Big Buildings of the Ancient World. Danbury: Franklin Watts, 1993, ISBN 0-531-14286-8.
- E. Mantin, Peter & Mantin, Ruth. The Islamic World: Beliefs and Civilizations 600-1600. New York: Cambridge University Press, 1993, ISBN 0-512-40609-9.
- F. Martell, Hazel Mary. Looking Back: The World of Islam Before 1700. Austin: Raintree Steck-Vaughn Publishers, 1999, ISBN 0-8172-5430-7.
- G. Penney, Sue. Islam: Discovering Religions. Austin: Raintree Steck-Vaughn Publishers, 1997, ISBN 0-8172-4394-1.
- H. The World of Islam. Jackdaw Study Guide. Amawald, New York: Golden Owl Publishing Company, 1993, ISBN 1-56696-041-X.

Appendix A-1

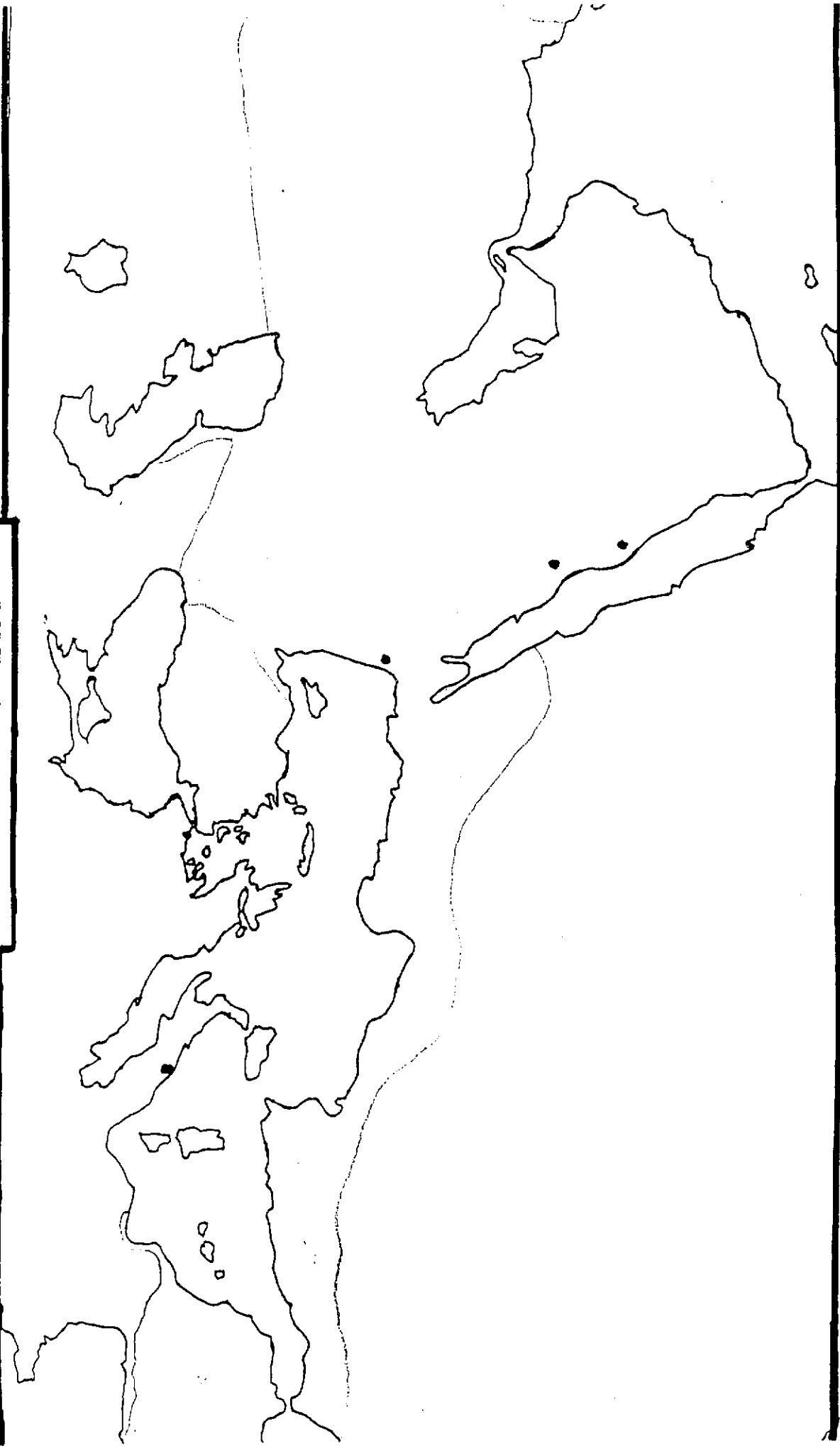
Cities in Islamic History



Teacher Key

APPENDIX A-2 (Student Map)

THE SPREAD OF ISLAM



APPENDIX B

MAJOR CITIES

1. Mecca or Makkah was the birthplace of Muhammad. The Ka'ba is located there and this makes this city the holiest city in the Muslim world. It is considered the center of the Muslim world because all prayers are done facing Makkah no matter where you are in the world. Its location made it a trade center but it is now a place where Muslims go on pilgrimage to perform the rites of the hajj. You must be Muslim to visit Makkah.
2. Medina- Muhammad fled to this city to avoid persecution. Medina became the first Islamic state. It is known as the "city of the prophet". Muhammad died and is buried there.
3. Jerusalem- the third most important city in the Islam faith. Muslims believe Noah's Ark landed in Jerusalem. Muhammad ascended to heaven on a magic horse from this city, and that the arrival of the Day of Judgement will be declared by the angel Izrafil in Jerusalem. The Dome of the Rock built in 691 over a meteorite is another important monument for followers of Islam.
4. Damascus- was the first Imperial capital of the Muslims under the Umayyad dynasty. This dynasty was in power for 100 years but fell in 750. In 707 there was a hospital, considered the first in the world. Damascus stayed an important center of learning, trade and industry. Armor and weapons from Damascus were particularly sought after.
5. Baghdad- this city was built from scratch in 762 by Mansur, the second Caliph of the Abbasid dynasty. Baghdad was the center of the Islamic world both as a trade center and as a destination for learning for five centuries. In 1258 the city was attacked by Mongols and was destroyed. Nothing of its original splendor exists today. The doctor Al-Razi (865-925) chose the site for his hospital by hanging lumps of raw meat in different locations around the city to see where it rotted the slowest.

APPENDIX B, con't.

6. Cairo- grew from smaller Islamic communities before the Fatimid dynasty built it in the 10th century. After the destruction of Baghdad in 1258 it became the richest and most populated city of Islam. Around the mosque of Al-Azhar a university was built which still exists and is considered to be one of the oldest learning centers in the world. The library, which existed around 1000 CE, was free and offered pen, ink, and paper to its patrons.

7. Cordoba- was the capital of region of Spain under the Umayyad dynasty. In the 10th century it was the largest city in Europe with a half a million inhabitants. At this time most European cities held no more than ten thousand inhabitants. Cordoba had paved streets and streetlights a thousand years before the existed in London. There were dozens of libraries and hundreds of mosques. Cordoba was recaptured by the Christians in 1236. Cordoba became a conduit for Muslim knowledge to be transferred into European culture.

8. Timbuktu was a great city in Mali, West Africa. It was established as a center of trade in the middle Ages. Because Mali had gold as a natural resource, merchants traveled across the Sahara Desert to trade. As a result Islam spread to West Africa. Mansa Musa a devout Islamic ruler in the 1300s made a pilgrimage across the continent of Africa to Mecca. Upon his return he built the mosque of Timbuktu.

Note: Timbuktu is a saying used to represent somewhere far away.

APPENDIX C

Jigsaw Learning Procedure

Step 1:

Materials Preparation (for a class of 24 students)

1. Make a transparency of APPENDIX A-1, 24 copies of APPENDIX A-2, and 3 copies of both pages of APPENDIX B.
2. Color-code the copies of APPENDIX B.
 - a. Use red to circle the numbers on the first set.
 - b. Use green to circle the numbers on the second set.
 - c. Use yellow to circle the numbers on third set.
3. Cut apart the paragraphs on all three sets.
4. Distribute one paragraph to each student.

Step 2:

Students Experts (15 minutes)

1. Group the students by numbers. (All of the ones are in one group, etc.)
2. Students will study their assigned cities by carefully reading their paragraphs.
3. Students will fill in the information on APPENDIX D:
 - a. Location statement (Ex. Cairo is located at the mouth of the Nile River in Egypt.)
 - b. Three – Four interesting facts.

Step 3:

Student Teachers (20 minutes)

1. Re-group all students by color. (Reds in one group, greens in the second, yellows in the third.)
2. Beginning with student “1” students teach peers about their city. (Student 1 talks about Mecca.)
3. Listening students will fill in their information on APPENDIX D.

Step 4:

Optional

1. The students teach THE TEACHER the important facts about each city. (The students are only allowed to teach the seven cities they didn’t initially teach.)

APPENDIX D
City Information Organizer

Page 1

Mecca

Location: _____

Interesting facts:

1. _____

2. _____

3. _____

4. _____

Medina

Location: _____

Interesting facts:

1. _____

2. _____

3. _____

4. _____

Jerusalem

Location: _____

Interesting facts:

1. _____

2. _____

3. _____

4. _____

Baghdad

Location: _____

Interesting facts:

1. _____

2. _____

3. _____

4. _____

City Information Organizer

Cairo

Location: _____

Interesting facts:

1. _____

2. _____

3. _____

4. _____

Damascus

Location: _____

Interesting facts:

1. _____

2. _____

3. _____

4. _____

Cordoba

Location: _____

Interesting facts:

1. _____

2. _____

3. _____

4. _____

Timbuktu

Location: _____

Interesting facts:

1. _____

2. _____

3. _____

4. _____

APPENDIX E

ABC Book of Islamic Civilization Instructions

Day 1 (Lesson 1):

1. Give each student a blank copy of the ABC Book page (APPENDIX F).
2. Using APPENDIX G, assign each student a letter of the alphabet and the word that corresponds with it. (For example, A-Astronomy)
3. Have the students write the letter they were assigned in the box and the words they were assigned in the correct place.
4. These pages will be assembled into a class book on Day 5.

Day 2 (Lesson 2):

1. The students will find eight to ten facts about their topic. The students will write these facts down and keep them with their copy of the ABC Book page.

Day 3 (Lesson 3):

1. Using the information the students collected on Day 2, the students will write a paragraph that includes:
 - a. a topic sentence
 - b. supporting details
 - c. a conclusion

Day 4 (Lesson 4):

1. Revise the paragraph that was written on Day 3.
2. Word-process the final product.

Day 5 (Lesson 5):

1. The students will glue their finished paragraphs onto the space provided on their pages of the ABC Book.
2. The students will draw a picture of their topic in the space provided.

APPENDIX F
ABC Book of Islamic Civilization

is for



Illustration

Paragraph

APPENDIX G

ABC BOOK

WORD LIST

A	Astronomy (discoveries)	O	Optics
B	Baghdad	P	Pilgrimage
C	Calligraphy	Q	Quran
D	Damascus	R	Ramadan
E	Egypt, Cairo	S	Science
F	Five Pillars of Islam	T	Taj Mahal
G	Geography (discoveries)	U	* University of Cordoba
H	Holy Book	V	Vision (Mohammad's)
I	Ibn-Sina	W	Writings
J	Judgment Day	X	* Xenophobia
K	Knowledge, Search for	Y	* Yathrib, City of
L	Libraries	Z	Zero
M	Mosques		
N	Numbers		

*These topics may require adult help or be appropriate for gifted students.

APPENDIX H

“Zip Around” A Review Activity

Materials:

APPENDIX D (with completed information)

24 3x5 cards

Step 1:

Using the information pulled from APPENDIX D, create 24 “Zip Around” cards.

1. Using a 3x5 card, write a question in red. (For example, Cairo is located in which African country?)
2. On the next 3x5 card, write the answer in blue. (For example, Egypt)
3. On the reverse of the “Egypt” card, write another question in red. (For example, Cairo is located near the mouth of which river?)
4. On the third card write the answer in blue. (For example, Nile)
5. Continue for 24 cards, recording the final answer on the back of the first card.

**Caution-be sure every answer is different from the others.

Step 2

Playing the game (3-5 minutes)

1. Students are all handed cards, with the blue side (answer side) facing up.
2. Any one student flips their card to read the red question. (“Cairo is located in which African city?”)
3. The student with the card with the correct answer calls out the answer on his card. (“Egypt”)
4. That student then turns his card over and asks the question on the back.
5. The class continues “zipping around” the room with questions and answers until arriving back at the first question.

APPENDIX I

Making An Astrolabe

Materials:

(One per student)

- Six-inch square piece of cardboard
- Protractor
- Straw
- Tape
- Needle
- String
- Washer

Directions:

1. Use the protractor to draw lines at 10-degree intervals. The 0 degrees and 90 degrees should be parallel to the edges of the cardboard.
2. Tape the straw on the top edge of the cardboard. It should be parallel the 90-degree line.
3. Make a very small hole at the point where all of the lines meet with the needle.
4. Thread the string through the hole. Knot the string so it does not slip through the hole.
5. Tie the washer to the string. It should lie along the 0 degree line when the astrolabe is held up.
6. Look at a star through the straw. The string will tell the altitude of the star.