

Table of Contents

How to Use This Product 3

Introduction to Primary Sources 5

Activities Using Primary Sources . . . 15

Photographs

Outside of the Colosseum 15–16

Ancient Architecture 15

Inside of the Colosseum 17–18

A Fight to the Finish 17

Pont du Gard Aqueduct 19–20

Water Runs Uphill 19

Arch of Constantine 21–22

Can You Truss that Arch? 21

The Roman Forum 23–24

Speak or Shop Until You Drop 23

Amphitheater in Pompeii 25–26

It's Off to Entertainment We Go! 25

Streets of Pompeii 27–28

What a Day in Pompeii 27

Thermal Baths of Antonine 29–30

Which Way to the Baths? 29

Mausoleum of Augustus 31–32

In the Depths 31

Primary Sources

Pantheon Sketch 33–36

It's in the Name 33

A Trip Across the River Styx 35

Pantheon Sketch 36

Roman Military Mosaic 37–40

The Army Needs Good Men! 37

Hannibal's Attack 39

Military Mosaic 40

Trajan's Column 41–44

Remembering Trajan 41

Just Picture It 43

Closeup of Trajan's Column 44

Ancient Coins 45–48

Spend in the Romans 45

Roman Numerals 47

Ancient Roman Coins 48

Via Sacra 49–52

Follow the Stone Road 49

Roman Roads 51

The Via Sacra 52

Roman Emperor Statue 53–56

Romans Rule! 53

Biography of a Roman Emperor 55

Statue of a Roman Emperor 56

Roman Art 57–60

Which Way to Roman Art? 57

Roman Art and Architecture 59

Roman Art Mosaic 60

Document Based Assessments 61

Ancient Roman Architecture 61

Colosseum Madness 62

Aqueducts 63

The Arch 64

Ancient Malls 65

Let's Vote 66

Pompeii 67

Roman Baths 68

Roman Roads 69

The Pantheon 70

Roman Art 71

Trajan 72

Roman Money 73

Tombstones 74

Appendix 75

About Your CD-ROM 75

Suggested Young-Adult Literature

and Websites 77

Document-Based Assessment

Rubric Example 78

Answer Key 79

Can You Truss that Arch?

Standard/Objective

- Examine and describe the influence of culture on scientific and technological choices and advancement, such as in transportation, medicine, and warfare. (NCSS)
- Students will examine the construction of an arch, test factors that contribute to its strength, and share their learning in reflective paragraphs.

Materials

copies of both sides of the *Arch of Constantine* photo card; copies of the historical background information (page 22); several 4 inch by 11 inch (10.2 cm x 28 cm) strips of poster board; pencils; paper; art supplies; pennies; two medium-sized textbooks

Discussion Questions

- Who was Constantine?
- Where is this arch located?
- What is depicted across the top of the arch?

Using the Primary Source

Place the students in small groups to examine the picture and discuss the historical relevance of the arch. Give students the task of building arch bridges and testing the strength of them. Have them take the strips of poster board and bend them so that the ends rest between two books, forming an arch bridge between them.

After building the first arch, have the students test the strength of the bridge by seeing how many pennies it will hold before it buckles under the weight. They need to record the distances between the books and the height of the arch, as well as how many pennies the bridge supports.

Students can then place two straws (cutting them to the correct height) under the arch to provide support. Then, students should test how much weight the arch will now support. They should record the height of the arch, the distance between the books, the length and numbers of straws used, and the number of pennies that the bridge supports.

Next, students should slide the books closer to form a higher arch and move the books farther apart to considerably decrease the arch. They can test the strength of each new bridge and record the height of the arch, the distance between the books, and the number of pennies that the bridge supports.

Have students draw and record conclusions about the architectural strategies behind the arch. Have them share their conclusions with the class and discuss them, which should enable the class to form one basic conclusion drawn from this experiment with an arch.

Extension Ideas

- Have the students research and write about the Arch of Constantine. Who was Constantine? Why and when did the Romans build the arch to honor him?
- Students can find and describe other architectural uses for arches in ancient Rome and the modern world.

Can You Truss that Arch? *(cont.)*

Historical Background Information

The Romans built triumphal arches, like the Arch of Constantine, to celebrate victories in battle. The artwork on the arches tells historical perspectives and stories of Roman heroes. Before the Romans, most buildings were constructed with walls and columns topped by beams of wood or stone. Many times hillsides were used as buttresses. This helped protect the structure while providing an attractive setting.

The Arch of Constantine was built between A.D. 312 and 315 outside the west side of the Colosseum. As an ancient Roman architectural example, it utilizes the arch design. This monument has three large arch passageways—one large middle arch with smaller archways located on each side. The two columns are used for decoration and have been carved and engraved to create its pleasing appearance.

The Arch of Constantine was dedicated to Constantine by the senate and people of Rome to celebrate a victory. Some historians think the victory that appears on the arch may have been representative of Constantine's defeat of the Emperor Maxentius. Different decorations and pictorial representations can be seen on the northern and southern sides. This adds to the beauty of the structure. The sculptured decorations represent the artistic talent of the Romans, but they also reveal information about the events and people of ancient Rome, giving us insight into Rome's history.

Engineers today still use principles in construction work that began in ancient Rome. Romans were responsible for developing concrete as a building material and determining that a line of arches built side by side would result in a tunnel vault. However, the Romans decided that the tunnel vault was not good to use too often because it allowed very little light into the building. Therefore, architects sought ways to eliminate this problem. They developed crossed vaulting by overlapping two tunnel vaults at right angles to each other. This helped when illumination was needed. When more arches crossed over each other to enclose a circular area, they made a dome. The Pantheon is a good example of a Roman dome.

The Romans built the Colosseum in Rome with arches to support the structure. The columns along the outside walls were solely for decoration. It was the arches that gave the building its strength. Arches carry weight and can be used for doors, windows, and passageways. The curved lines of the strong arch make an interesting decoration while providing endurance and durability for the structure.

The Romans built architecture to be practical and attractive. They demonstrated great skill by constructing huge buildings such as the amphitheaters, baths, basilicas, bridges, and aqueducts. As with their water system, they practiced and experimented so that their skills improved with time. The architectural principles behind the arch aided the ancient Roman engineers in building structures that have lasted for thousands of years.





Arch of Constantine

Historical Background Information

The Arch of Constantine was built between A.D. 312 and 315. It stands near the west side of the Colosseum. The arch has three large arch passageways. There are four artistic columns on the front and the back. It is easy to see the ornate decoration that has been carved and engraved on the arch. This arch was built to celebrate the military power of Rome and its leader. Triumphal arches may have been decorative and celebratory in nature, but the arch was also very important to Roman architecture. The Romans used arches to support many of their structures or aqueducts, and the arches have proved sturdy and long lasting. Arches carry weight and could be used for doors, windows, and passageways. Additionally, the curved lines made interesting decorations. Look around for arches on the buildings and structures in your home town.



Analyzing History

Knowledge

Why was the arch used so often in Roman architecture?

Comprehension

Describe some Roman buildings that utilized arches.

Application

What are some other architectural styles, like the arch, used in ancient times?

Analysis

Analyze the principles behind why the arch was a structurally strong architectural style to use with the elaborate Roman buildings.

Synthesis

If you were going to design a monument in honor of someone, who would you honor and why?

Evaluation

Which great architectural design, the bridge, the aqueduct, or a specific building was Rome's greatest accomplishment? Defend your choice.

Historical Writing

Fiction

Triumphal arches, like the Arch of Constantine, were built to celebrate battle victories. Imagine that you helped build this monument. Write a story describing how you helped. Describe the excitement, the attitude of the people, and the feelings of all Romans.

Nonfiction

Write a comparison between ancient Roman architecture and modern Roman architecture.

History Challenge

Write an acrostic poem using the letters from *arch*, *vault*, *temple*, *forum*, or *column* to describe the type of architecture. For an extra challenge, use the full name of one of these structures to describe it (e.g., Trajan's Column or the Temple of Apollo). Be sure to include as many details in your poem as you can.

Spend in the Romans

Standard/Objective

- Give and explain examples of ways that economic systems structure choices about how goods and services are to be produced and distributed. (NCSS)
- Students will learn about Roman money and determine the value of various items using the five Roman coins.

Materials

copy of the facsimile *Coins*; copies of the historical background information (page 46); copies of the student activity sheet (page 47); apples; candy bars; pencils; cards with prices; blackboard or presentation device; writing tools (chalk, pencil, etc.)

Discussion Questions

- Why and when would Romans have used math?
- Compare shopping in ancient Rome with shopping today.
- Compare the ancient Roman monetary system to a modern monetary system.
- Discuss the advantages and disadvantages of using Roman numerals.
- Explain how an abacus worked and why Romans might have needed this tool.

Using the Primary Source

Students will look at the pictures of the various coins from different time periods during the Roman Empire. Discuss how people might have used and learned math then. Discuss shopping and the monetary system in Rome. Compare the advantages and disadvantages of bartering versus using coins.

Have students play “The Price is Right” using Roman coinage. Begin by having the students determine what they believe are the values of the various coins. List the following five items in random order on the board. (Note: They are listed here from most expensive to least expensive.)

1—one donkey—four *aureus*
 2—new toga—one *denarius*
 3—one pottery pitcher—one *sestertius*

4—a sack of wheat—one *dupondius*
 5—a bottle of olive oil—one *as*

Have the class work together to determine the order of the items from the most expensive to the least expensive. They should use their knowledge of the values of the five items to order these. After putting them in order, compare the five types of Roman money to determine how they relate to each other. Then you are ready to play the game.

Choose three players randomly from the class. Have them observe three items placed on a table (e.g., an apple, a candy bar, and a pencil). Each student will record the estimated prices in Roman money. The rest of the class can vote to determine who they think is the closest.

Extension Idea

- Have students write some word problems using the Roman coin amounts.

Spend in the Romans *(cont.)*

Historical Background Information

The Roman economic system changed as the empire and its needs expanded. In early Rome, money was not used because people bartered one kind of good for another. Romans later used blocks of bronze weighing one Roman pound (32 grams or 11.44 ounces) to exchange for goods. The Roman Empire grew richer with time and the Roman economy increased in complexity. Eventually, coins were introduced. To pay soldiers' wages and collect taxes, the emperor minted the first coins.

The Romans borrowed aspects from the Greek economic system with their coin use. The first round coins appeared around 200 B.C. Romans opened mints and produced their own coins by 290 B.C. The first Roman coin, the *as*, was bronze and had the heads of gods or goddesses on one side and pictures of ships on the other. The first silver coin was called a *didrachm*. The first gold coin, the *aureus*, was introduced during the second Punic war. Coins and their styles, materials, and values changed as the economy changed.

When Augustus became emperor, he took control of the mints and standardized the monetary system giving coins a fixed value. This was needed as the uncertainty of coins and values were causing problems in the economy. Every coin produced had the emperor's head on it and sometimes the emperor's deeds depicted on the other side. This was an excellent way to get the word out to all of the people in the land and to publicize the good deeds of the emperor. The smallest coin of Rome (similar to the United States penny) was the *as*, followed by the *dupondius* worth two of the smallest coins, the *sestertius* worth two *dupondius*, and the *denarius* worth four *sestertius*. The *aurea* was the largest coin and could be exchanged for 100 of the smallest coin.

Bankers and moneychangers began appearing all over the empire. Some were government operated, while others were independent operations. The government imposed taxes (such as property taxes) to raise money to run the state. Up until this time, there had been no real need for raising taxes. Now that money was taking on an important place in finances, taxes were becoming important to finance the needed services. Traveling tax representatives, or assessors, determined how much tax people had to pay. Some services like buying and selling property (including slaves) automatically meant the assessor imposed a tax.

Prices rose constantly now that money was of value. New coins were minted thus increasing the value of money. Towards the end of the Roman Empire, people began to not trust the use of coins, and many people returned to the bartering system for a short time.

Many different Roman coins were minted over the years and are sometimes uncovered throughout Europe. Finding these coins with their informative pictures on both sides tell us about the emperors and deeds of ancient Rome.

Aside from their production of money, the Roman's knowledge of math certainly helped the Roman economic system. The ancient Romans invented Roman numerals. The Romans created this system of number symbols that made it possible to write all of the numbers from 1 to 1,000,000 using only seven symbols. Roman numerals are written from left to right. If you've ever used Roman numerals in addition or subtraction problems, you may find a problem with this number system.

Name _____

Roman Numerals

Background Information

Aside from their production of money, the Romans' knowledge of math helped the Roman economic system. The ancient Romans invented Roman numerals, a system of number symbols that made it possible to write all of the numbers from 1 to 1,000,000 with only seven symbols. Roman numerals are written from left to right using the principle of addition in most cases.

Activity

1. Research Roman numerals. Make a list of Roman numerals 1 to 10. Now add the numerals for 100 and 1,000 to the list.

2. Use this information to participate in a short Roman numerals writing lesson. You have to write questions and have your classmates provide the answers using only Roman numerals. The following are some sample questions: How many letters are in my name? How many boys or girls are in the class? How many computers are in the class? What is the date?

3. For fun, try some addition using Roman numerals. After trying to add with Roman numerals, draw some conclusions about what you find difficult about this number system.

4. Go on a scavenger hunt in the modern world for Roman numerals. Provide the numeral you find, read the entire numeral, and identify where you found it. Find as many Roman numerals as you can in the time provided by your teacher. (**Hint:** Don't forget to look in books, movies, outlines, clocks, etc.)

Challenge

Taxes go with services. Research and write an essay on what services were provided in Rome and how taxes were collected. Did they have a police force? Did they need garbage collection? Who or what did the collected taxes benefit?

Ancient Roman Coins



aureus (*gold*)



denarius (*silver*)



dupondius (*bronze*)



sestertius (*silver*)

Name _____

Tombstones



Tombstones located at the Museo Nazionale delle Terme (Kalervo Koskimies)

1. Compare and contrast these Roman tombstones.

2. How do these compare with today's tombstones?
