

# Core Lesson 2

# New Ideas in Europe

## VOCABULARY

technology  
navigation  
astrolabe  
profit  
slavery

## Vocabulary Strategy

navigation

To remember **navigation**, think of the word "navy." A navy uses navigation to know where to sail.



## READING SKILL

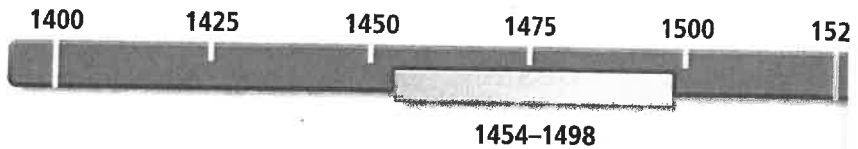
### Problem and Solution

Portuguese explorers faced a problem in trying to get to Asia. Find their solution.

PROBLEM	SOLUTION

## STANDARDS

SS.A.1.2.1.5.1 People, ideas, decisions, New Ideas in Europe



**Build on What You Know** Are there any recent inventions that are important in your life? How do you use them? Europeans in the 1400s used new inventions to find sea routes to Asia.

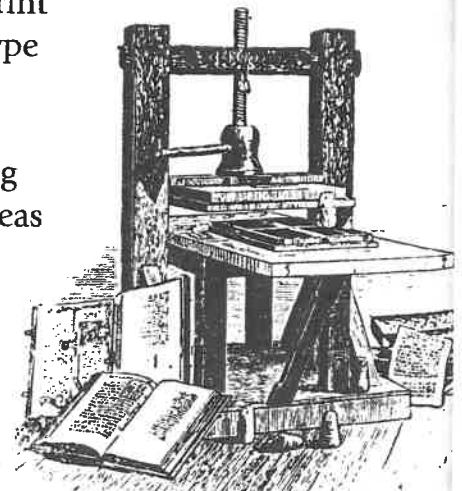
## The Renaissance

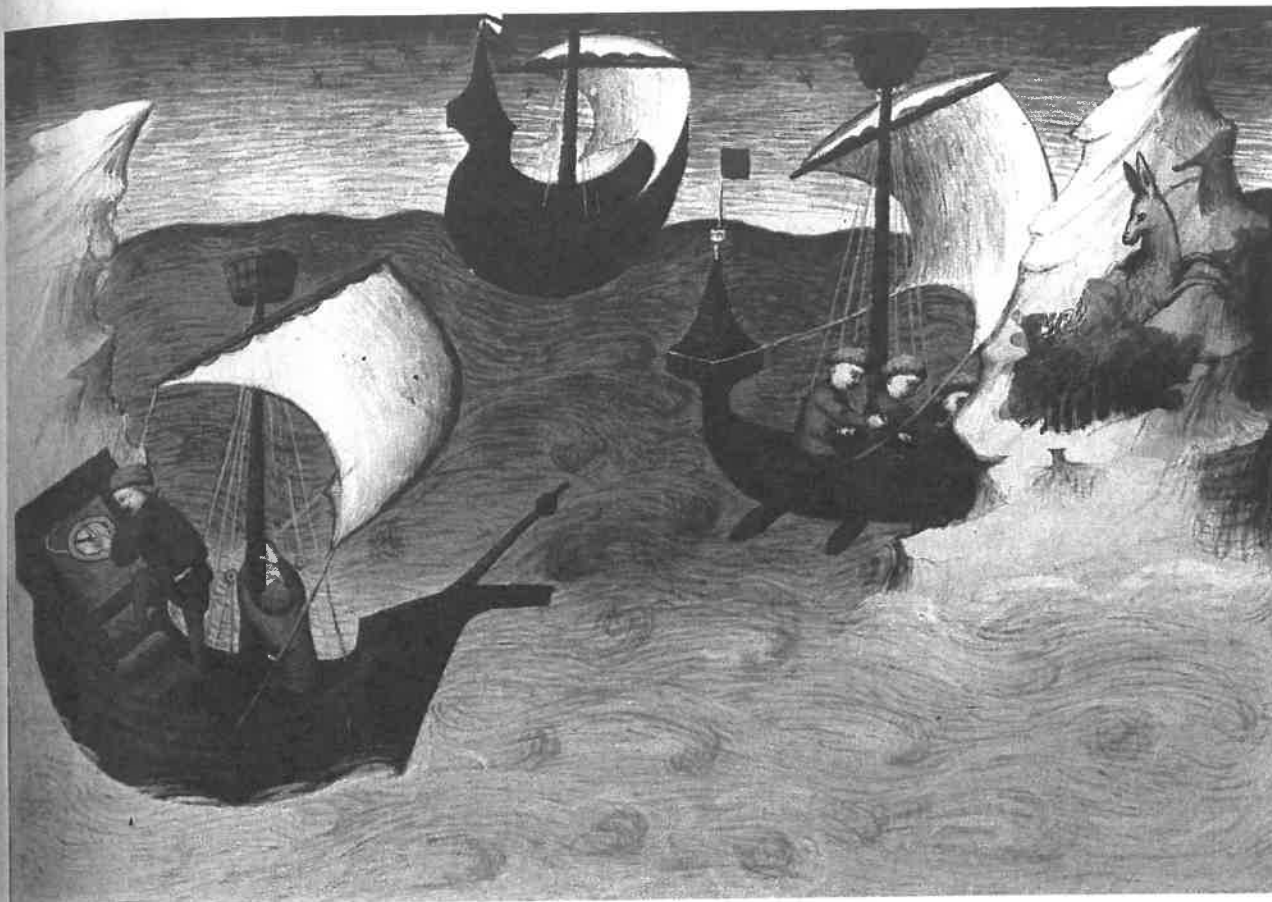
**Main Idea** New learning spread through Europe, leading to better tools for sailors and explorers.

Important changes took place in Europe during the 1300s and 1400s. This period of time was called the Renaissance (REN nuh sahnce), which means rebirth. The Renaissance was a rebirth in learning and knowledge. Europeans took new interest in the writing, art, science, and ideas of the ancient Greeks and Romans. They also learned from people in Africa and Asia.

During the Renaissance, technology in Europe changed. **Technology** is the use of scientific knowledge and tools to do things better and more rapidly. The printing press was an example of new technology. Developed in 1454 by **Johannes Gutenberg**, the printing press made it possible to print many copies of a page of type quickly. Before the printing press, people had to copy books by hand. The printing press allowed books and ideas to spread across Europe.

**Printing Press** Books were printed by pressing one page at a time.





**Sea Exploration** New technologies helped European explorers travel farther than ever before. Find the sailor who is using an astrolabe.

### New Knowledge for Sailors

New technology also helped European exploration by making navigation easier and more accurate. **Navigation** is the science of planning and controlling the direction of a ship.

Europeans learned about a navigation tool called the astrolabe from North Africans. An **astrolabe** is a tool that measures the height of the sun or a star above the horizon. Using an astrolabe, sailors could tell how far north or south of home they were.

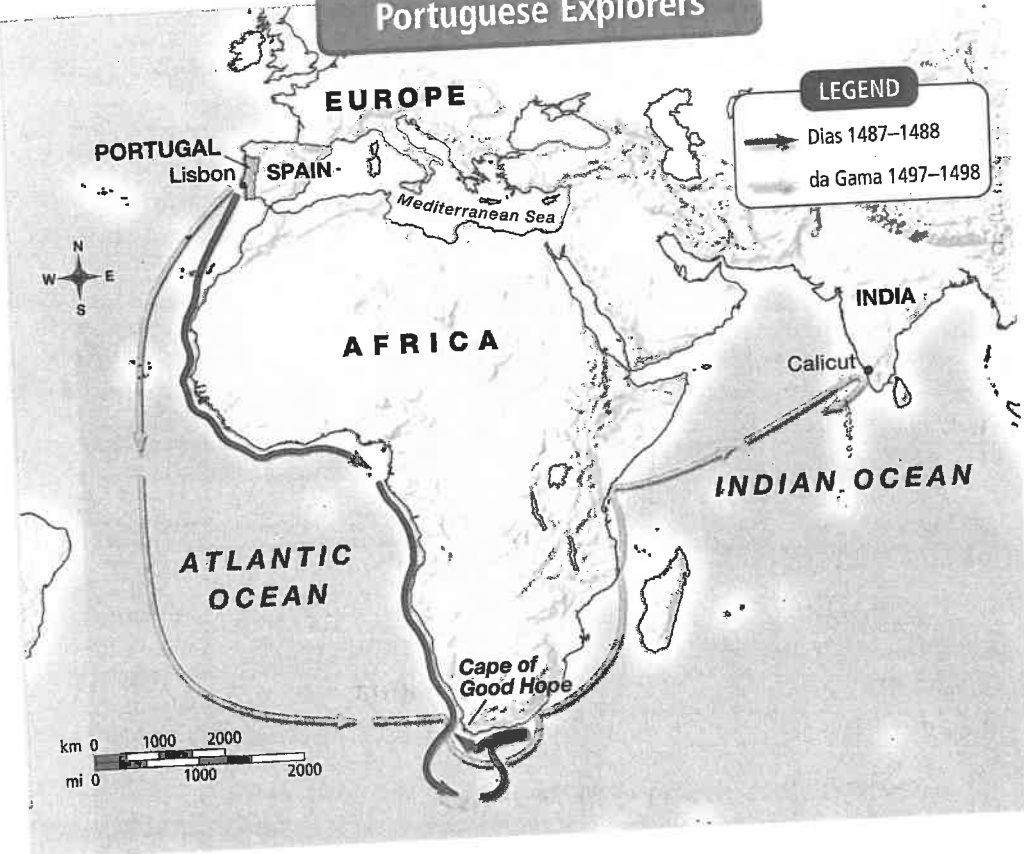
European sailors also learned about the compass from North Africans. A compass is an instrument with a magnetic needle that always points to the north.

Sailors did not have to depend on the sun or the stars to tell them which direction they were traveling. They could use a compass to check whether they were heading north, south, east, or west.

A Chinese invention that helped European sailors was gunpowder. Sailors used gunpowder in weapons such as guns and cannons. Cannons defended their ships. Guns gave sailors confidence that they could protect themselves if they were attacked or in danger on land.

**REVIEW** What did new technology do to make exploration easier?

## Portuguese Explorers



**A New Route to Asia**  
Vasco da Gama (above) used the knowledge gained by Bartolomeu Dias.

**SKILL Reading Maps**  
Which explorer sailed the farthest?

## A Sea Route to Asia

**Main Idea** Portuguese explorers were the first Europeans to find a sea route to Asia.

Merchants believed that they would make more money if they found a sea route to Asia. In Asia, merchants bought spices such as pepper, and earned a profit by selling them for a higher price in Europe. A **profit** is the money a business has left over after all of its expenses have been paid.

A sea route to Asia was thousands of miles longer than the Silk Road, but the sea trip would be faster. The country that found a sea route to Asia could trade more goods than countries that used the slow-moving caravans of the Silk Road.

Portugal was the first European country to find a sea route to Asia. Portugal is a small European country.

Portugal's location and coastline made it a good starting place for sailors. The Portuguese thought they could reach Asia by sailing around the southern tip of Africa. From there, they hoped to sail up Africa's east coast and find a route to India and China.

Prince Henry of Portugal created a school for navigation. He brought shipbuilders, mapmakers, and sea captains to Sagres (SAH grehsh), Portugal. They shared their knowledge of navigation and sailing. People at Sagres improved sailing technology by creating the caravel. This small, light ship had triangular sails. Caravels were good for exploring. They could sail into the wind, unlike other European ships. Because he encouraged exploration, Prince Henry became known as "the Navigator," even though he didn't go on any voyages.

## Dias and da Gama

Portuguese sailors' early voyages went south. In 1448, Portugal set up a trading post off the coast of West Africa.

Portuguese traders forced Africans there into slavery and sold them in Europe.

**Slavery** is a cruel system in which people are bought and sold and made to work without pay. Slavery had existed before the Portuguese arrived, but the Portuguese increased the number of enslaved people brought to Europe.

In 1487, **Bartolomeu Dias** (bart OH lo MEH oo DEE ahs) was exploring the coast of West Africa when a fierce storm blew his ships off course. When the storm ended, Dias realized he had actually sailed around the southern tip of Africa. The Portuguese named the tip of Africa the Cape of Good Hope. Dias proved that it was possible to sail around Africa and reach its east coast. From Africa's east coast, ships could then sail east to India.

**Vasco da Gama** led the first Portuguese voyage to reach India. In 1498, his fleet reached the Indian port of Calicut. Other Portuguese sailors soon followed da Gama's route to India and used it for spice trading.

**REVIEW** Why was sailing around the Cape of Good Hope important?

## Lesson Summary

During the Renaissance, Europeans used new navigation tools. This technology helped them find faster ways to trade goods with Asia. Portuguese sailors, such as Vasco da Gama, sailed around Africa to reach Asia.

## Why It Matters . . .

The search for a sea route to Asia led to important discoveries in navigation and geography.

## Lesson Review



- VOCABULARY** Use the words **technology**, **navigation**, and **astrolabe** in a paragraph. Explain how new technology affected navigation.
- READING SKILL** Who solved the problem of finding a sea route to Asia from Europe?
- MAIN IDEA: Technology** What was the importance of the printing press?
- MAIN IDEA: Geography** Why did Portuguese sailors begin exploring along the coast of Africa?

- PEOPLE TO KNOW** Why is Prince Henry of Portugal known as "Henry the Navigator"?
- TIMELINE SKILL** How long after Dias's voyage did Vasco da Gama sail?
- CRITICAL THINKING: Analyze** In what ways was the sea route to Asia different from the land route?



**RESEARCH ACTIVITY** With a partner, use library resources to research the compass, astrolabe, or caravel. Find out how sailors used them to explore. Make an illustrated report about what you learn.