

Tools for the Sea

Read how new technology helped Europeans explore farther.

SS.5.A.3.1 "Describe technological developments that shaped European exploration."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline each technology named in the passage. Circle the words that explain how each technology helped sailors explore.

Voyages Beyond Shore

- ① In the 1400s, European sailors wanted routes to Asia for spices, silk, and other goods. Long ocean voyages were risky because sailors could lose sight of land. The magnetic compass helped crews keep a steady direction, even on cloudy days or far from shore. By using the compass with knowledge of winds, captains could travel with more confidence.
- ② Sailors also used improved charts, called portolan charts, that showed coastlines, ports, and compass directions. These charts were most useful near known shores. For open-water travel, navigators used an astrolabe to measure the height of the sun or a star above the horizon. That measurement helped them estimate how far north or south they were, called latitude.
- ③ New ship designs made exploration more practical. The caravel was a small, sturdy ship that could carry supplies across the Atlantic Ocean. Its triangular lateen sails helped it use winds from different directions, and its sternpost rudder helped steer the ship. Together, these developments gave crews better control and made longer voyages possible, though travel remained dangerous.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 What problem did the magnetic compass help sailors solve during an ocean voyage?

2 How was a portolan chart useful in a different way from an astrolabe?

3 Name two features of the caravel and explain how each feature helped a crew.

4 Which technology helped navigators estimate how far north or south they were? How did it do this?

3 YOUR TURN _____ Your own words

Write a four-sentence recommendation to a captain planning an ocean voyage. Choose three technologies from the passage and explain how each one would help with a different challenge of the trip.

PART 1 • READ AND MARK

Underline each technology named in the passage. Circle the words that explain how each technology helped sailors explore. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What problem did the magnetic compass help sailors solve during an ocean voyage?	It helped sailors keep a steady direction when they could not see land, including on cloudy days or far from shore.
2	How was a portolan chart useful in a different way from an astrolabe?	A portolan chart showed coastlines, ports, and compass directions near known shores. An astrolabe helped navigators estimate latitude in open water.
3	Name two features of the caravel and explain how each feature helped a crew.	Its lateen sails helped the ship use winds from different directions, and its sternpost rudder helped steer the ship.
4	Which technology helped navigators estimate how far north or south they were? How did it do this?	The astrolabe. It measured the height of the sun or a star above the horizon.

PART 3 • YOUR TURN (SAMPLE ANSWER)

Captain, take a magnetic compass, an astrolabe, and a caravel with lateen sails. The compass will help your crew hold a direction when land is out of sight. The astrolabe will help the navigator estimate the ship's latitude. The lateen sails will help the ship use winds from different directions, making the ocean crossing easier to manage.

Accept equivalent explanations that accurately connect each technology to its effect on navigation, steering, using wind, or traveling farther. For the open response, accept any three passage technologies if each is linked to a different voyage challenge.