

The Discovery of Longitude

More than 300 years ago, explorers traveled the seas in great sailing ships. They often got lost. Maps were not very good and stormy weather could blow ships out to sea or hurl them into rocks. Wind could rip their sails or steer them in the wrong direction. Lost sailors died if they ran out of food and fresh water.

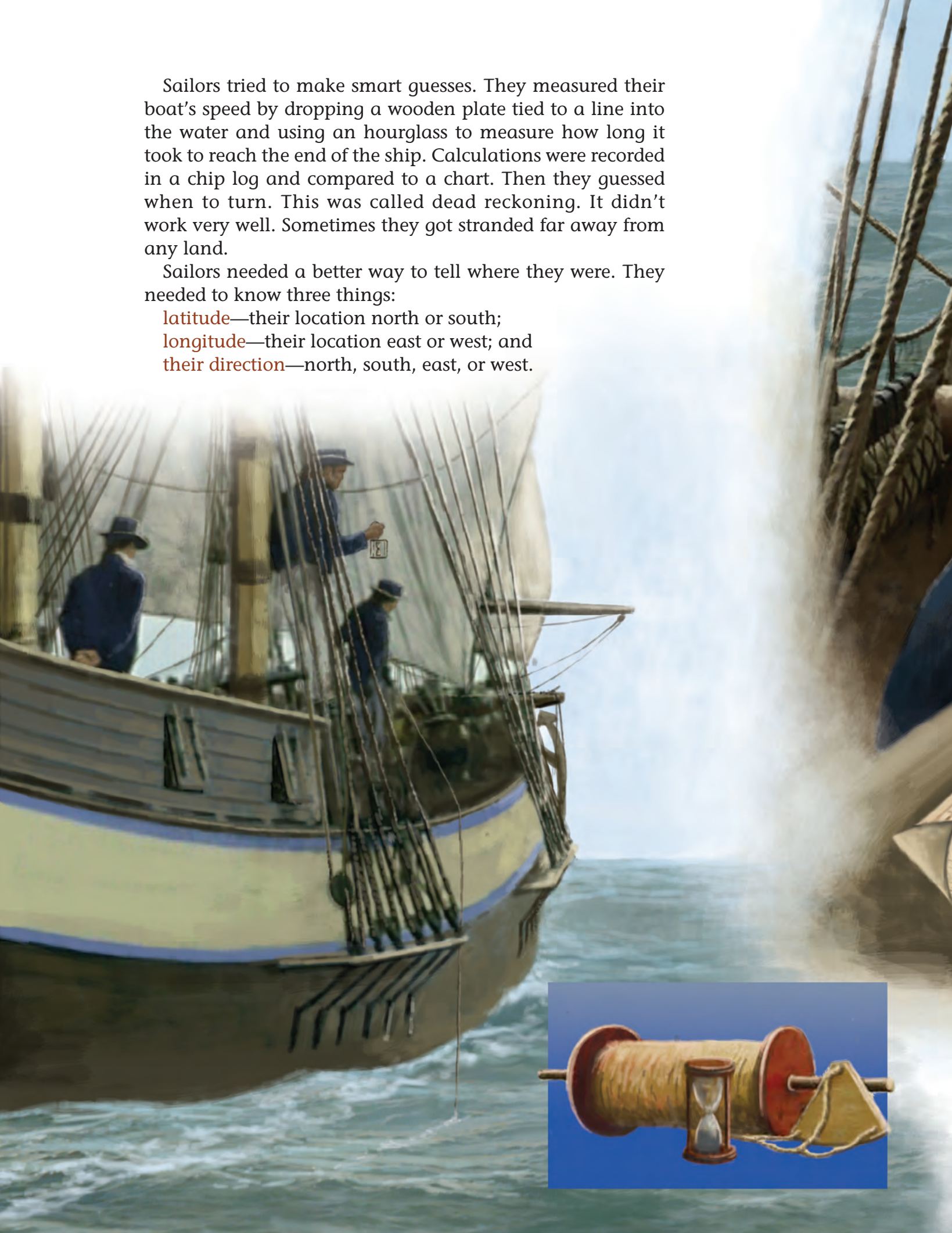
Sailors found their way more easily when they could see land. Captains tried to sail close to shore, looking for landmarks like mountains and rivers. They had to guess which way to go when they couldn't see land.



Sailors tried to make smart guesses. They measured their boat's speed by dropping a wooden plate tied to a line into the water and using an hourglass to measure how long it took to reach the end of the ship. Calculations were recorded in a chip log and compared to a chart. Then they guessed when to turn. This was called dead reckoning. It didn't work very well. Sometimes they got stranded far away from any land.

Sailors needed a better way to tell where they were. They needed to know three things:

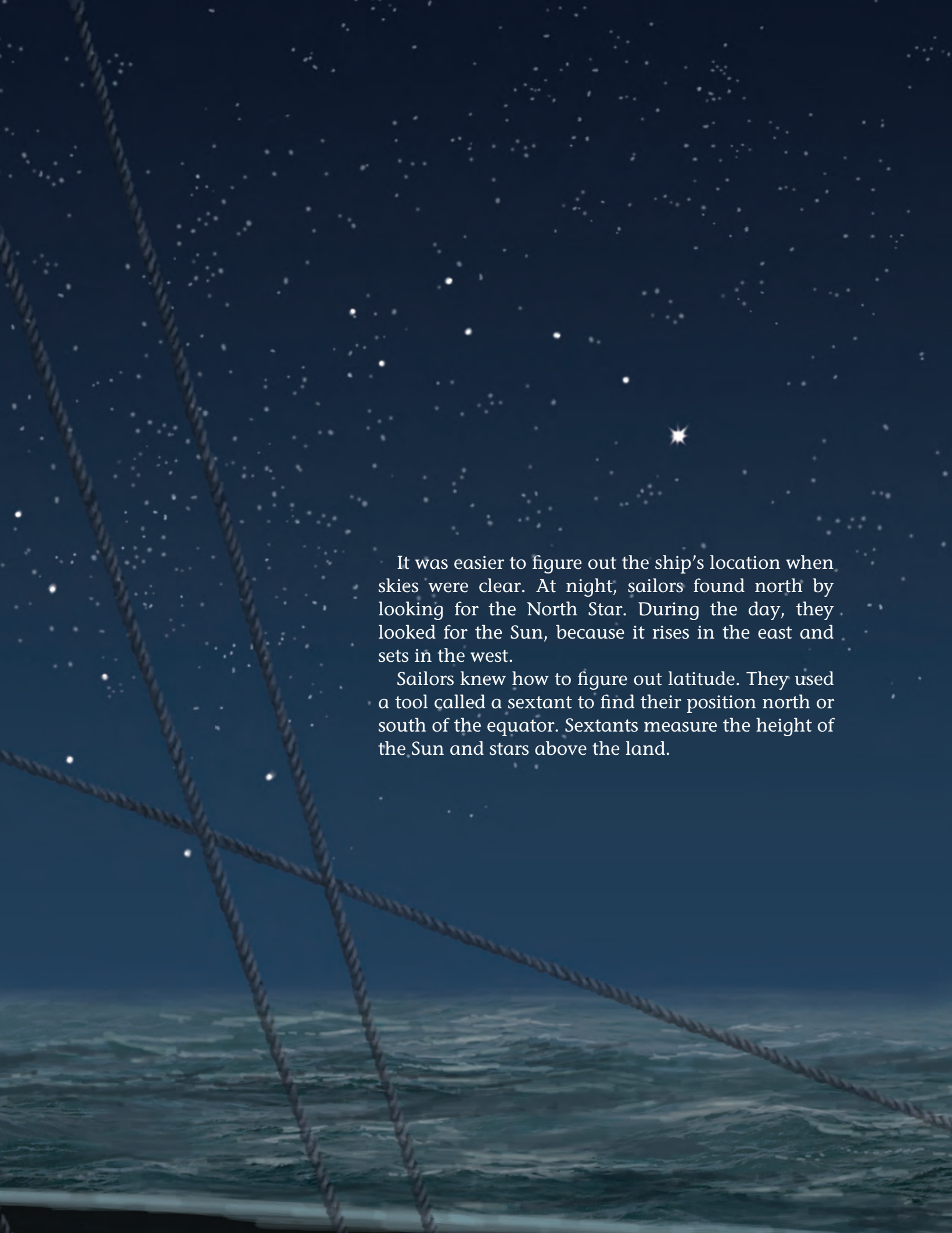
latitude—their location north or south;
longitude—their location east or west; and
their direction—north, south, east, or west.





Captains used a compass to find direction. The needle in a compass always shows north. But there were still problems with this method. Salt water made compasses rusty. Compass needles also jiggled when ships rocked on ocean waves. The needle jiggled too much to read.





It was easier to figure out the ship's location when skies were clear. At night, sailors found north by looking for the North Star. During the day, they looked for the Sun, because it rises in the east and sets in the west.

Sailors knew how to figure out latitude. They used a tool called a sextant to find their position north or south of the equator. Sextants measure the height of the Sun and stars above the land.

The captain compared numbers from the sextant to latitude lines and numbers on a map. This showed how far north or south the ship was from the Earth's equator—the imaginary line that divides the Earth's top and bottom halves.



