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Refer to the Focus Question on page 2 of this title to guide discussion and support additional learning connected to the text.

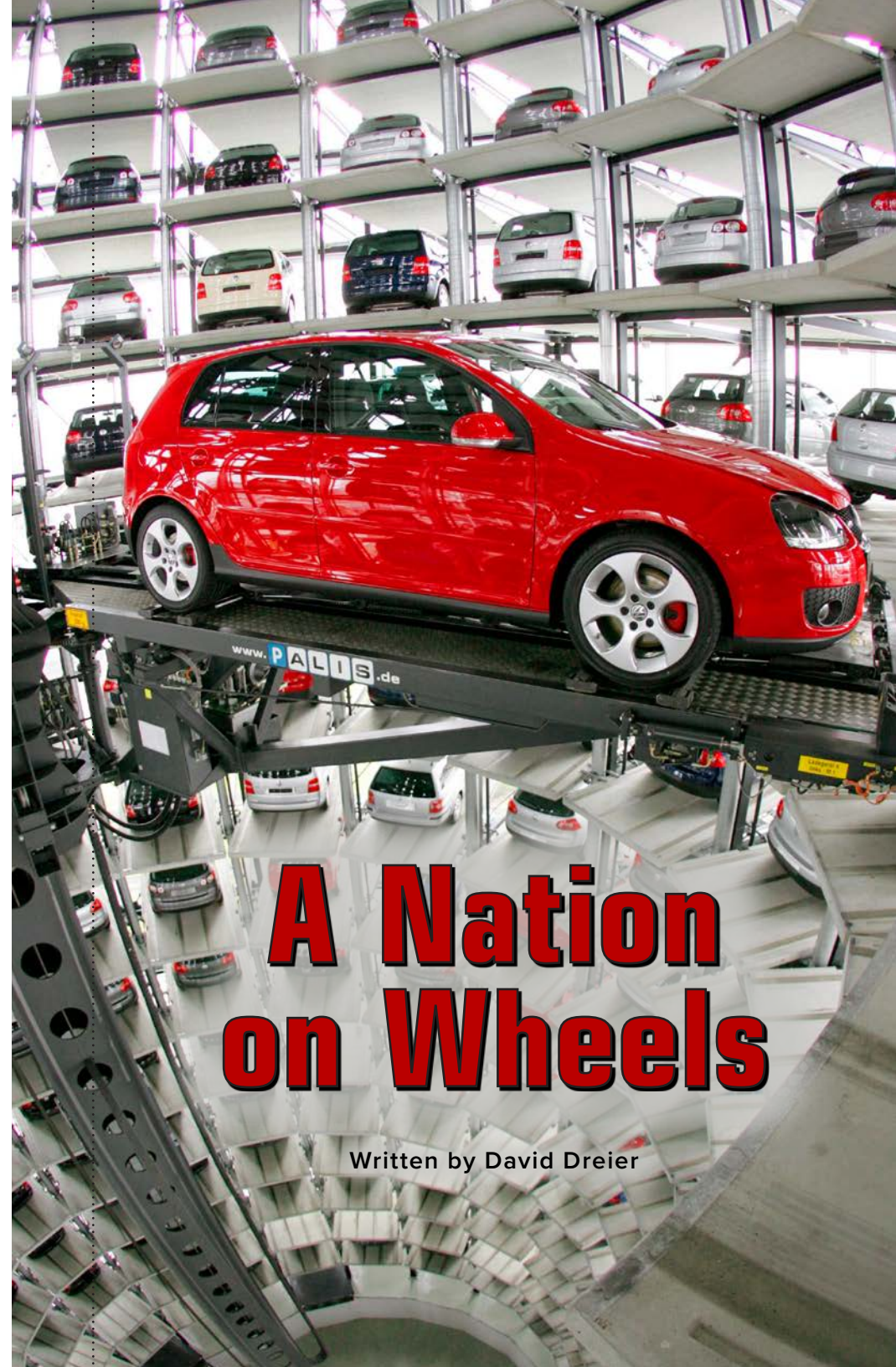
There are over 200 million cars and trucks just in the United States. From Henry Ford's invention of the Model T. in 1903, the popularity of the automobile has skyrocketed. Ford's invention of the assembly line allowed him to manufacture more cars faster, which made cars more affordable to the general public. How has the car industry changed and what does the future hold for automobile companies around the world? Photographs and charts support the text.

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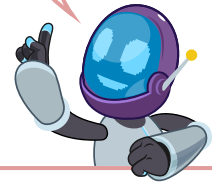


A Nation on Wheels



Focus Question

How have cars and the car industry changed over time?



Words to Know

automobiles	foreign
chemicals	imported
distances	inventors
engine	manufacture
expensive	production



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New York City traffic

Introduction

The world is full of cars and trucks. There are over 600 million of them! They are in even the smallest town in the smallest country. There are over 200 million cars and trucks just in the United States. Most of these vehicles are **automobiles**. We are a nation moving on wheels!

The Early Days

People have always needed to travel. At first, people walked everywhere—even long **distances**. Then they tamed animals to ride and taught some to pull wagons. Horses, camels, and even elephants helped people make trips and carry things. Imagine riding to school on an elephant! Using animals was better than walking—but it was still slow.

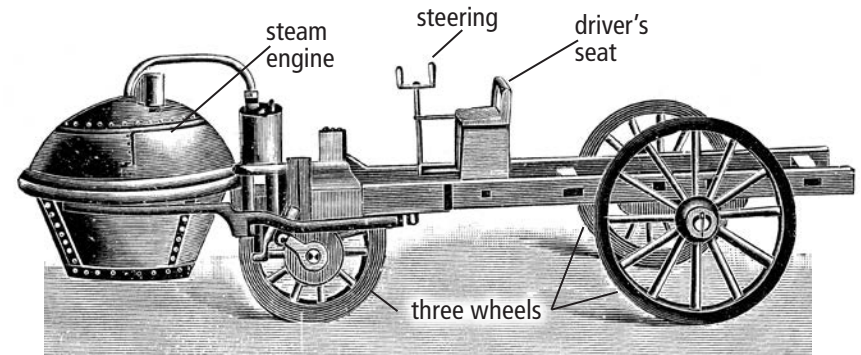


Elephants in India help carry people and goods still today.



A Camel taxi takes people where they want to go in India, too.

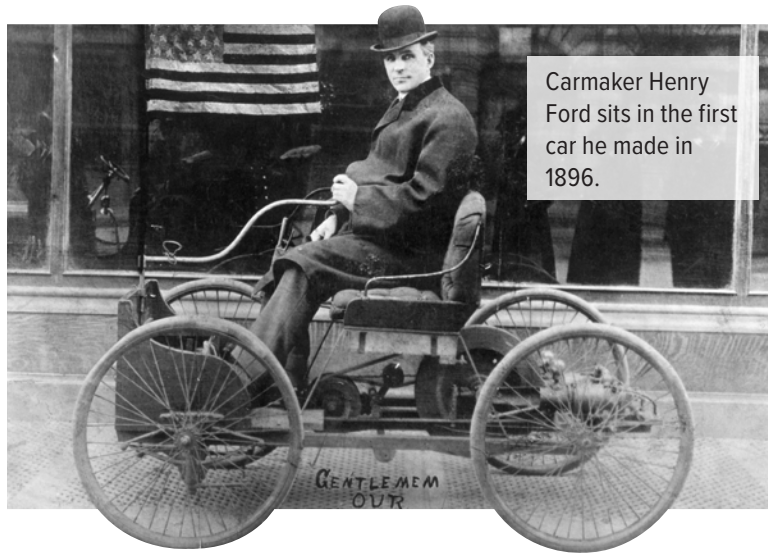
Inventors tried to build a machine with wheels to carry people faster. They thought of building an **engine** to run it. They tried running engines with steam or with electricity. But neither engine worked well enough. In the late 1880s, people made engines that could run on gasoline, or gas. These engines were small but powerful. They could travel faster and go farther. Today, most cars use gas engines.



One of the first steam vehicles, built in 1770

Do You Know?

Which word came first—*car* or *automobile*? *Car* was first used in 1301 to describe a Celtic war chariot. *Automobile* was first used by a Frenchman in 1883 to describe electric cars. How are they used now?



How Cars Are Made

The first cars did not look like the ones you see today. They looked like carriages without horses. People even called them horseless carriages!

At first, cars were made one at a time by hand. It took a long time. They were **expensive**. Not everyone could afford a handmade car. People tried ways to **manufacture** cars faster and at a lower cost. In 1896, one early company could make only 13 cars in a year. But by 1899, a company could make over 2,000!



Henry Ford's company made more than 15 million Model Ts over almost twenty years.

In 1903, Henry Ford started the Ford Motor Company in Detroit, Michigan. Detroit would soon become the center of car making. Ford's company sold a car called the Model T. Ford wanted to make cars that cost less—so more people could buy them. This meant he had to manufacture more cars and do it faster.

Ford thought about all the ways he could do this. In 1913, he invented the assembly line. It was a faster and cheaper way to make a car. Soon, other companies made their cars this way. Now almost everyone could buy a car. By 1929, over 3.5 million cars were on the road. There were so many cars that people had to build more roads!



1940 Chrysler
Royal Sedan

1957
Chevrolet
Bel Air

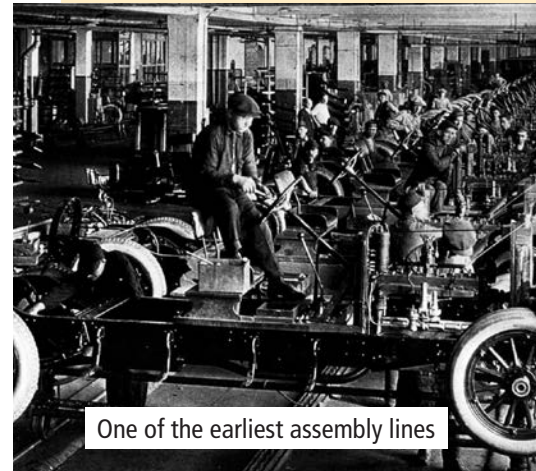


1965 Ford
Thunderbird

What Is an Assembly Line?

On an assembly line, a car is assembled—put together—one piece at a time. Machines pull unfinished cars through the factory in a long line. As each car moves along the line, parts are added to it. At the end of the line, the car is complete.

For years, people did all the work on an assembly line. But today, machines called *robots* often do this work.



One of the earliest assembly lines

These robots are not like the ones in movies. These are special machines that work the same way that an arm and hand work. Robots can work without getting tired.



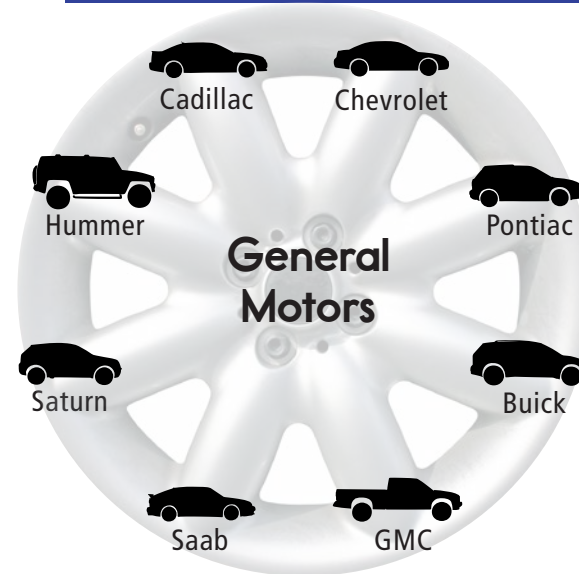
A modern assembly line

Companies That Make Cars

Three big companies have been making cars in the United States for a long time: General Motors, Chrysler, and Ford. Since cars first hit the streets, American companies have led the world in car **production**. In the 1960s and '70s, a Japanese company named Toyota began offering cars that were built to last longer and break down less often than most American-made cars. But the American car manufacturers still sold the most cars. Then in 2007, the pattern changed. Toyota, the first **foreign** company to do so, sold more cars and trucks than any other company in the world.

Toyotas are not the only cars made outside the United States. Volkswagen and BMW are **imported** from Germany. But the countries of Japan and South Korea have brought the highest numbers of cars into the United States.

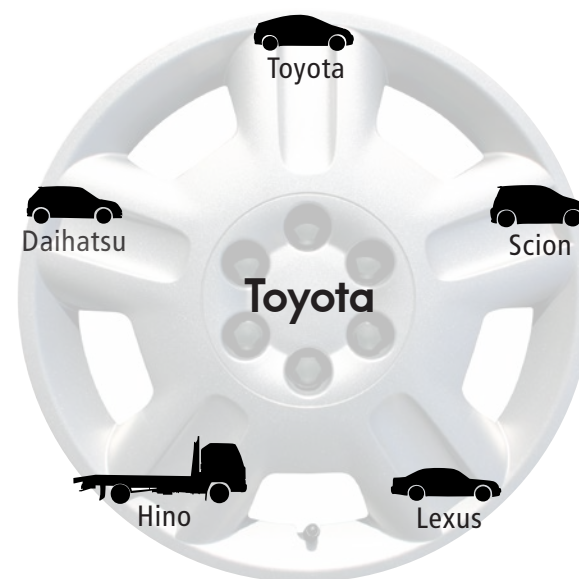
U.S. Carmakers and Brands in 2007



Chrysler makes the Chrysler, Dodge, and Jeep.

Ford makes the Ford, Lincoln, Mercury, Mazda and Volvo.

Some Foreign Carmakers and Brands in 2007



BMW makes the BMW, MINI, and Rolls-Royce.

Volkswagen makes the Audi, Bentley, Bugatti, Lamborghini, Skoda, and SEAT.

Honda makes the Honda and Acura.

Nissan makes the Nissan and Infiniti.

Hyundai
Kia

Problems Caused by the Automobile

Automobiles are helpful, but they can also cause serious problems for people. Exhaust (burning gases from a car's tailpipe) gets in the air. That means unhealthy **chemicals** get in the air that we breathe. These chemicals can make people sick. Every year, car companies try to reduce the amount of chemicals their cars make.



Have you ever been in a traffic jam? All the cars on the road just sat still, and you couldn't go anywhere. So many cars are on the road today that it causes problems. Remember—there are about 200 million cars in the United States. That's almost as many cars as people. In fact, the number of cars has grown faster than the number of people.

The Future of the Automobile

Years ago, most cars were unsafe in accidents. Today, special car parts help to protect people. Cars have seat belts. Babies and small children ride in safety seats. Newer cars have big airbags that



Carmakers see how well airbags work by using crash test dummies that look like humans.

inflate—fill with air—in accidents. What do you think would make cars even safer? Car companies are also working on new kinds of engines. One type of car, called a hybrid, uses both a gas engine and an electric motor. Hybrids use less gas. This might cut down on the unhealthy chemicals in the air.



A company called ZAP made these electric cars to help cut down on bad chemicals in the air.

We will always be a nation that travels from one place to another. But will it always be on wheels? How will cars look in the future? How will they work? Perhaps your ideas will shape the future.

Glossary

automobiles (*n.*) page 4

vehicles with four *wheels* that have an engine and travel on roads

chemicals (*n.*) page 13

substances that are produced by or used in a chemical process

distances (*n.*) page 5

the amounts of space between things or places

engine (*n.*) page 6

a machine with moving parts that uses power to create motion

expensive (*adj.*) page 7

costly; having a high price

foreign (*adj.*) page 11

of or from a different country or language

imported (*v.*) page 11

brought in and bought goods from another country or state

inventors (*n.*) page 6

people who create, design, or build something that did not exist before

manufacture (*v.*) page 7

to make *finished* goods, especially using industry

production (*n.*) page 11

the process of combining resources to make a product for sale