

# True or False

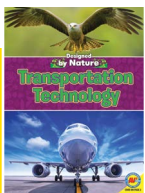
Follow the instructions to complete the activity.

NAME

DATE

Using the information in *Transportation Technology*, verify whether the following information is true or false. Check your answers in the book. List the page number where you found your information beside your answer.

- |             |  |                                |             |                      |
|-------------|--|--------------------------------|-------------|----------------------|
| Statement 1 | <input type="text" value="Without denticles, the shark would cause whirling masses of water."/>  | <input type="checkbox"/> True  | Page Number | <input type="text"/> |
|             |  | <input type="checkbox"/> False |             |                      |
| Statement 2 | <input type="text" value="Schools of fish self-organize."/>                                      | <input type="checkbox"/> True  | Page Number | <input type="text"/> |
|             |  | <input type="checkbox"/> False |             |                      |
| Statement 3 | <input type="text" value="A shape-changing wing is more rigid than other wings."/>               | <input type="checkbox"/> True  | Page Number | <input type="text"/> |
|             |  | <input type="checkbox"/> False |             |                      |
| Statement 4 | <input type="text" value="Atlantic herring can form groups with hundreds of millions of fish."/> | <input type="checkbox"/> True  | Page Number | <input type="text"/> |
|             |  | <input type="checkbox"/> False |             |                      |
| Statement 5 | <input type="text" value="A longer wing helps reduce drag."/>                                    | <input type="checkbox"/> True  | Page Number | <input type="text"/> |
|             |  | <input type="checkbox"/> False |             |                      |



## Fill in the Blanks

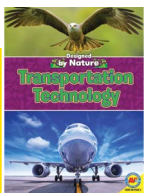
Follow the instructions to complete the activity.

NAME

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Use the information found in *Transportation Technology* to help you complete the following activity.

1. The long, stiff wing feathers that birds use to fly are known as flight feathers or .
2. The McLaren P1 is a  car.
3. Car sensors may use cameras, radar, or  waves.
4. Killer whales are some of the  animals in the ocean.
5. Thanks to their  sharks have few to no parasites.
6. The  edge of an owl feather has a comb-like pattern.



Complete the statements by entering the correct number in the box.

Each Shinkansen train can carry more than this many people.

**25**

An octopus can briefly move at speeds of up to this many miles per hour when swimming.

**199**

Shinkansen trains carry this many million passengers each year.

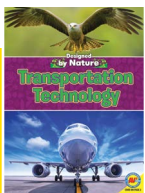
**1,000**

In Japan, bullet trains carry travelers as fast as this many miles per hour.

**80**

This percentage of fish live in schools at some point during their lives.

**151**



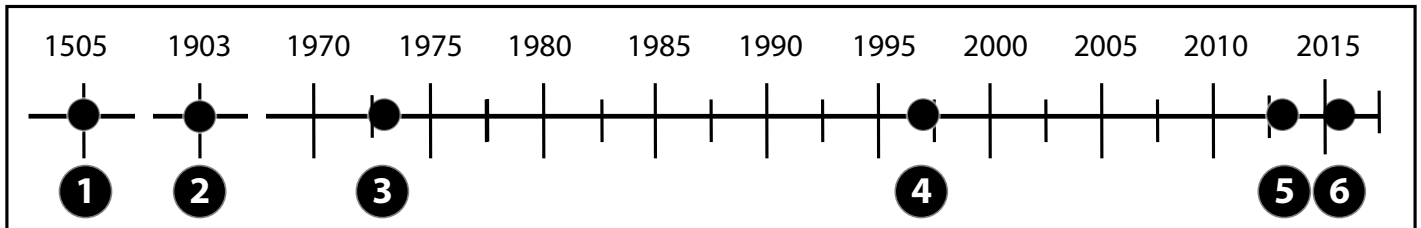
# Timeline

Follow the instructions to complete the activity.

NAME

DATE

Number the events below in the order they should appear on the timeline. Write the number in the box beside each event. Check your answers with page 27 of the book.



Scientists at Brown University use 3D printers to create artificial bat wings. By examining these artificial wings, they hope to use them in small aircraft.

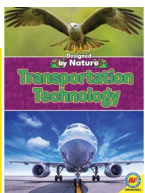
Engineers from the West Japan Railway company create new bullet trains based on kingfisher beaks. These new trains are up to 10 percent faster

Italian inventor Leonardo da Vinci writes his *Codex on the Flight of Birds*. This document proposes ideas for bird-based flying machines.

The Wright brothers make the first flight using a powered aircraft. Its wings, like those of a bird, change shape to allow it to turn.

At a motor show in Geneva, Switzerland, one automobile company reveals a concept for a sphere-shaped tire with tread patterns based on brain coral.

After an embargo causes aircraft fuel prices to increase, engineer Richard T. Whitcomb designs winglets based on eagle wings to improve the efficiency of airplanes.



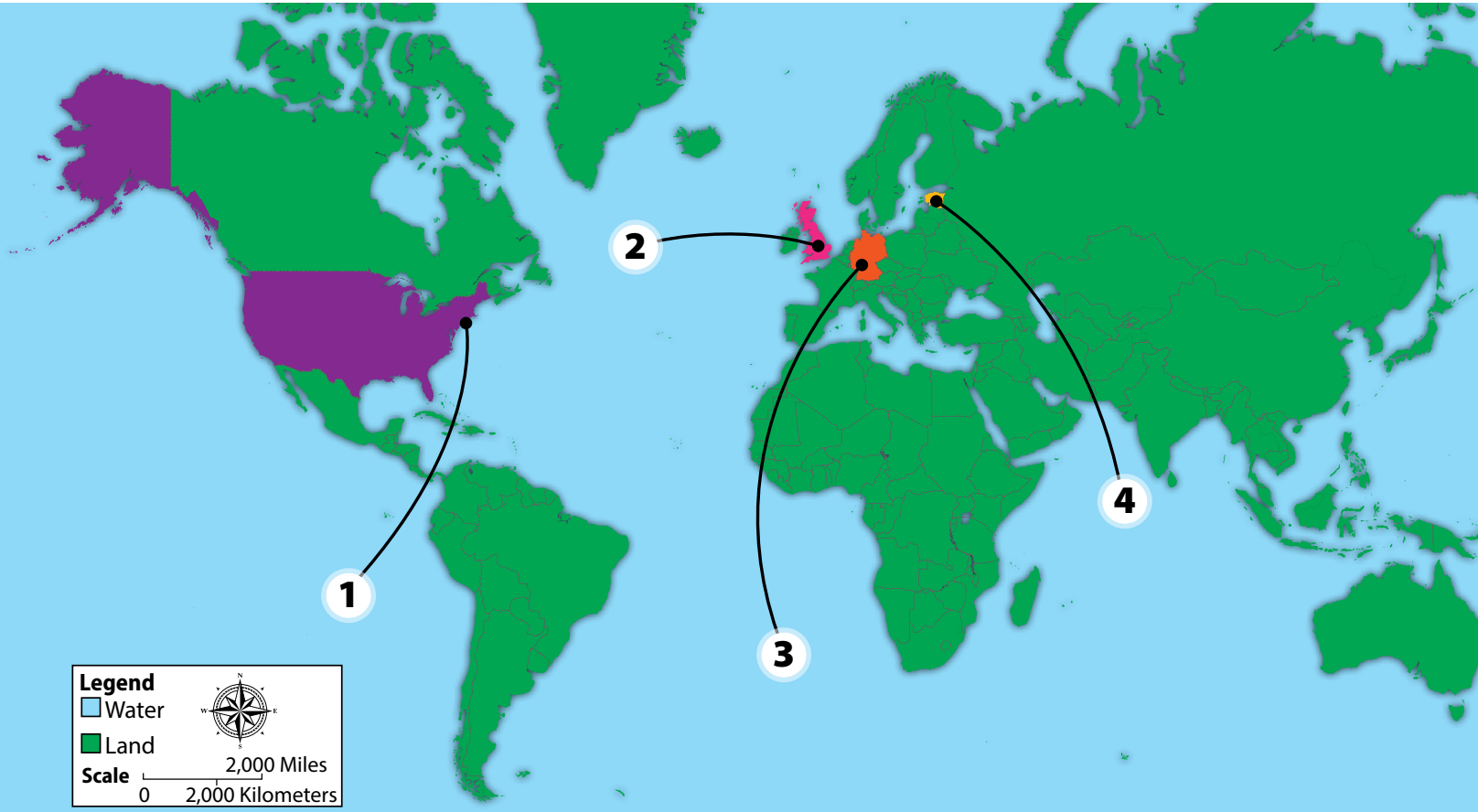
# Map Activity

Follow the instructions to complete the activity.

NAME

DATE

Using the information on pages 28–29 of the book, fill in the blanks with the development relating to Transportation Technology in each location. Using information found in the book and research online, briefly explain why each location is important to the field of biomimetics.

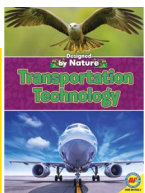


①

②

③

④



## Quiz

Test your knowledge by answering these quiz questions.

NAME

DATE

**1** Do schools of fish have leaders?

**2** When was the first human flight that used a powered aircraft?

**3** What is a denticle?

**4** What is the vertical wing tip used on airplanes called?

**5** What animal inspired the noses of Japan's bullet trains?

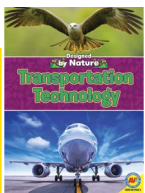
**6** Where is an octopus's funnel?

**7** Which university had researchers develop a method of underwater propulsion based on sea turtle flippers?

**8** What are bird bones filled with?

**9** Which birds are known for their quiet flights?

**10** What animal inspired the McLaren P1?



## Key Words Match-Up

Write the words from the list below in the box above the correct definition for each word.

NAME

DATE

### KEY WORDS

fringe  
exoskeleton  
drag  
parasites  
efficient

artificial  
fertilizer  
ducts  
lift  
bacteria



1.   
a skeleton outside the body.

2.   
accomplishing as much as possible with as little effort or resources as possible

3.   
the force of air pushing back against a moving object

4.   
a substance that helps plants grow

5.   
single-celled living things. They can be useful or harmful.

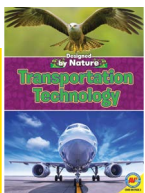
6.   
made by humans instead of occurring naturally

7.   
tubes used to carry air

8.   
animals or plants that live on or in other living things

9.   
upward movement

10.   
a border of loose or hanging material in the shape of strips or strings



## Quiz Answer Key

Compare your quiz answers with the answer key below.

NAME

DATE

- 1 No
- 2 1903
- 3 A tooth-like scale on a shark's body
- 4 A winglet
- 5 A kingfisher
- 6 Slightly below its eye
- 7 Tallinn University of Technology, in Estonia
- 8 Hollow pockets of air
- 9 Owls
- 10 The sailfish

