

Unit 5.1: The science of surfaces

LISTEN

E  **2.4**  **1.19** **LISTEN FOR MAIN IDEAS** Read the statements below. Then listen to the documentary. Use three of the vocabulary items from exercise C to complete the statements about the main ideas of the documentary.

1. Many organisms have _____ surface structures.
2. Each surface has a special _____ that is important for the organism.
3. Scientists and engineers can _____ the structures found in nature for other applications.

G  **2.5** **LISTEN FOR KEY TERMS** Work with a partner. One of the key terms the presenter talks about is *surfaces*. Read the excerpts below. Then listen to segment 1. Complete each excerpt with words that repeat or refer to this key term.

1. "Right, so what do I mean by surfaces₁? Well, your skin is a natural surface—a ₂ that ₃ your whole body."
2. "The shark's ₄ has a unique structure. It is covered with a ₅ of tiny scales in the shape of a diamond."
3. "Engineers adapted the structure of shark skin and created a thin ₆ that can be used on walls, floors, and other ₇."

H  **2.6 LISTEN FOR DETAILS** Listen to segments 1 and 2 of the documentary. Complete the notes with details based on the key terms.

Segment 1

SURFACE	FUNCTION	APPLICATION
shark has tiny _____; 1 _____ 2 shape	prevents growth of _____ 3	film on _____, 4 floors, and other surfaces.

Segment 2

SURFACE	FUNCTION	APPLICATION
pitcher plant rough when _____ 5 slippery when _____ 6	catches food; causes _____ to 7 fall into pitcher and die	slippery film that prevents anything from _____ to it 8

AFTER YOU LISTEN

I THINK CRITICALLY Reflect. Work with a partner. Each of the biomimicry projects in the documentary began with an observation by a scientist. What were the scientists' observations for the shark and the pitcher plant? Complete each statement.

1. For sharks, the scientists observed that _____

2. For pitcher plants, the scientists observed that _____

K COLLABORATE Work with a partner. Read the excerpts below from the documentary. Underline the signal words in each. Then choose the reason why the speaker made each transition.

1. *"This week, we are going to look at how scientists and engineers are adapting the surfaces of plants and animals for new purposes. Right, so what do I mean by surfaces? Well, your skin is a natural surface—a layer that covers your whole body."*
 - a. introduce a new topic
 - b. expand or explain current topic
 - c. sum up
2. *"So, let's start with the shark. The shark's skin has a unique structure."*
 - a. introduce a new topic
 - b. expand or explain current topic
 - c. sum up
3. *"The film helps prevent the growth of bacteria. Now, let's move to the world of plants. Most plants use air, water, and sunlight to make their own food."*
 - a. introduce a new topic
 - b. explain or expand current topic
 - c. sum up
4. *"Just think of all the uses this could have! So, these are just two examples of biomimicry and how scientists and engineers can adapt designs from nature to improve our lives."*
 - a. introduce a new topic
 - b. explain or expand current topic
 - c. sum up