PARAGRAPH 4

The ice shelf cores, with a total length of 215 meters (705 feet), were long enough to penetrate through glacial ice—which is formed from the compaction of snow and contains air bubbles—and to continue into the clear, bubble-free ice formed from seawater that freezes onto the bottom of the glacial ice. The properties of this clear sea ice were very similar to the ice from the green iceberg. The scientists concluded that green icebergs form when a two-layer block of shelf ice breaks away and capsizes (turns upside down), exposing the bubble-free shelf ice that was formed from seawater.

4. The word "penetrate" in the passage is closest in meaning to

- ⬭ collect
- ⬭ pierce
- ⬭ melt
- ⬭ endure

5. According to paragraph 4, how is glacial ice formed?

- ⬭ By the compaction of snow
- ⬭ By the freezing of seawater on the bottom of ice shelves
- ⬭ By breaking away from the ice shelf
- ⬭ By the capsizing of a two-layer block of shelf ice

6. According to paragraph 4, ice shelf cores helped scientists explain the formation of green icebergs by showing that

- ⬭ the ice at the bottom of green icebergs is bubble-free ice formed from frozen seawater
- ⬭ bubble-free ice is found at the top of the ice shelf
- ⬭ glacial ice is lighter and floats better than sea ice
- ⬭ the clear sea ice at the bottom of the ice shelf is similar to ice from a green iceberg

PARAGRAPH 5

A green iceberg that stranded just west of the Amery Ice Shelf showed two distinct layers: bubbly blue-white ice and bubble-free green ice separated by a one-meter-long ice layer containing sediments. The green ice portion was textured by seawater erosion. Where cracks were present, the color was light green because of light scattering; where no cracks were present, the color was dark green. No air bubbles were present in the green ice, suggesting that the ice was not formed from the compression of snow but instead from the freezing of seawater. Large concentrations of single-celled organisms with green pigments (coloring substances) occur along the edges of the ice shelves in this region, and the seawater is rich in their decomposing organic material. The green iceberg did not contain large amounts of particles from these organisms, but the ice had accumulated dissolved organic matter from the seawater. It appears that unlike salt, dissolved organic substances are not excluded from the ice in the freezing process. Analysis shows that the dissolved organic material absorbs enough blue wavelengths from solar light to make the ice appear green.

7. Why does the author mention that "The green ice portion was textured by seawater erosion"?

- ⬭ To explain why cracks in the iceberg appeared light green instead of dark green
- ⬭ To suggest that green ice is more easily eroded by seawater than white ice is
- ⬭ To support the idea that the green ice had been the bottom layer before capsizing
- ⬭ To explain how the air bubbles had been removed from the green ice

8. The word "accumulated" in the passage is closest in meaning to

- ⬭ collected
- ⬭ frozen
- ⬭ released
- ⬭ covered

9. The word "excluded" in the passage is closest in meaning to

- ⬭ kept out
- ⬭ compressed
- ⬭ damaged
- ⬭ gathered together

LIVEWORKSHEETS