

**For Teachers:** Please have the students read the sentences one at a time and correct their pronunciation of each sentence then have them repeat after you. Wait until after they read the sentence (use the number in place of the missing word) to have the students choose the correct answer to fill in the blank. When the students finish the article, move on to the further questions.

日本語訳なしタイプ B もございます。スクロールダウンするとございますので好きな方をご利用下さい。

## 2[B] – Earth's Unexplored Frontier



Version3 G1 11-2

- Our planet consists of a solid core surrounded by several layers.
- The relatively thin outermost layer, called the crust, is composed of different types of rock with varying compositions.
- The layer beneath the crust—nearly 3,000 kilometers thick—is called the mantle.
- Geoscientists ( **29** ) to obtain samples directly from this layer.
- The rock in Earth's crust originate in the mantle, so learning more about the mantle would help them understand how the planet's surface formed.
- It would also increase understanding of plate tectonics—the way pieces of the crust move.
- In the past, isolated chunks of the mantle have surfaced through volcanic eruptions, and small parts of the mantle have been found on the ocean floor.
- However, these provide little more than vague hints about the actual mantle because their chemical and physical structure is substantially altered as they make their way to the surface.

\*Choose the correct answer to fill in the blank from these choices.

- (**29**) 1 have long wanted 2 may suspend their plan
- 3 cannot get permission 4 could miss the chance

### Further Questions&A

\*Ask student to answer the question on their own at first. If the student can't answer correctly, have him look at the last page and read the "example answer" for the question. Have the student try to memorize the answer, if it's too long or difficult, you should divide the sentence into 2 or 3 parts to make it easier to remember. Once they have memorized the answer, the teacher should ask the question one last time so that the student can practice answering. Also if you find any mistakes, please mark the page and let me know ASAP.

- 1) What is the mantle?** マントルとは何ですか。  
*It is the layer beneath the crust.*
- 2) What could scientists learn by studying the mantle?**
- 科学者たちはマンツルの研究から何を学ぶことができましたか。  
*It would help them understand how the planet's surface formed and increase understanding of plate tectonics.*
- 3) Have scientists obtained pieces of the mantle before?**
- 科学者たちは以前にマンツルのかげらを入手したことがありますか。  
*Yes, isolated pieces of the mantle have surfaced through volcanic eruptions and small parts of the mantle have been found on the ocean floor.*

16. Geoscientists generally agree that drilling into the seabed ( 30 ).

17. The first such drilling projects actually began in the 1950s.

海洋地殻 (かいよういかく)

18. The oceanic crust—the part of the Earth’s crust located beneath the

陸塊 (りくかい)

oceans—is thinner than the crust beneath land masses, and scientists have

穴 (あな) をあける

managed to pierce about a third of the way through it.

～を考慮 (こうりよ) して

19. In light of recent technological improvements, drilling beyond the crust now

うまくいきそうな

seems feasible.

20. Researchers led by U.K. geologist Damon Teagle have announced plans to drill

下 (した) にある

of the coast of Costa Rica to finally reach the underlying mantle.

\*Choose the correct answer to fill in the blank from these choices.

実際 (じっさい) にうまくいく

21. (30) 1 will not work in practice

2 carries a number of risks

22. 3 has damaged the mantle

4 is the way to achieve success

### Further Questions&A

23. 4) Why is drilling into the seabed the best way to reach the mantle?

24. 海底に穴をあけることがマントルに到達するための最善の方法だといえるのはなぜですか。

*The oceanic crust is thinner than the crust beneath land masses.*

25. 5) Where does Damon Teagle plan to drill?

26. デーモン・ティーグルの計画では、どこに穴をあけることになっていますか。

*He plans to drill off the coast of Costa Rica.*

27. Teagle’s project is not without critics.

組成不均一性 (そせいふきんいつせい)

29. Some scientists say the heterogeneous composition of the mantle means samples taken from a single location would reveal little of the mantle’s overall nature. Geoscientist Erik Klemetti, however, argues that ( 31 ).

30. The earth sciences have traditionally sparked little interest among the general public and received less government funding than other scientific fields, and Klemetti says this is the result of geoscientists’ failure to “think big when it comes to projects.”

刺激 (しげき) する

31. He believes a major effort to drill all the way to the Earth’s mantle could be the earth-science equivalent of the first moon landing, as the mere fact we could reach such a distant frontier “would be the real success.”

ほんの

遠 (とお) くの

\*Choose the correct answer to fill in the blank from these choices.

32. (31) 1 this cannot be proven

2 this is beside the point

33. 3 Teagle should exercise caution

4 Teagle’s project is too complex.

### Further Questions&A

34. 6) Why would a sample of the mantle taken from a single location reveal little of the mantle’s overall nature?

35. 一か所から採取されたマントルのサンプルではマントル全体の本質をほとんど明らかにできないのはなぜですか。

*The mantle is heterogeneous—it is different under different parts of the world.*

36. 7) Why does Klemetti argue that geoscientists haven't received the same funding as other sciences?

37. なぜクレメッティは、地球科学者は他の科学者ほど資金提供を受けていないと主張しているのですか。

*They have failed to "think big when it comes to projects".*

38. 8) What does Klemetti mean when he says reaching the mantle would be the earth-science equivalent of the first moon landing?

39. クレメッティの言う、マントルに到達することは地球科学では最初に月に着陸したことと同等だ、とはどういう意味ですか。

40. *He means that it would prove we could reach such a distant frontier and increase public interest in the science.*

### Review Questions

41. 1) What is the mantle?

*It is the layer beneath the crust.*

42. 2) What could scientists learn by studying the mantle?

*It would help them understand how the planet's surface formed and increase understanding of plate tectonics.*

43. 3) Have scientists obtained pieces of the mantle before?

*Yes, isolated pieces of the mantle have surfaced through volcanic eruptions and small parts of the mantle have been found on the ocean floor.*

44. 4) Why is drilling into the seabed the best way to reach the mantle?

*The oceanic crust is thinner than the crust beneath land masses.*

45. 5) Where does Damon Teagle plan to drill?

*He plans to drill off the coast of Costa Rica.*

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解答: (29) 1 (30) 4 (31) 2

日本語訳なし

2[B] – Earth's Unexplored Frontier

未踏 (みとう) の辺境 (へんきょう)

eTOC  
English Teachers On Call

Version3 G1 11-2

49. Our planet consists of a solid core surrounded by several layers.

50. The relatively thin outermost layer, called the crust, is composed of different types of rock with varying compositions.

51. The layer beneath the crust—nearly 3,000 kilometers thick—is called the mantle.

固 (かた) い核 (かく)





74. He believes a major effort to drill all the way to the Earth's mantle could be the earth-science equivalent of the first moon landing, as the mere fact we could reach such a distant frontier "would be the real success."

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75. (31) 1 this cannot be proven 2 this is beside the point  
76. 3 Teagle should exercise caution 4 Teagle's project is too complex.

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*It would help them understand how the planet's surface formed and increase understanding of plate tectonics.*
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*Yes, isolated pieces of the mantle have surfaced through volcanic eruptions and small parts of the mantle have been found on the ocean floor.*
83. 4) Why is drilling into the seabed the best way to reach the mantle?  
*The oceanic crust is thinner than the crust beneath land masses.*
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*He plans to drill off the coast of Costa Rica.*
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*The mantle is heterogeneous—it is different under different parts of the world.*
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*They have failed to "think big when it comes to projects".*
87. 8) What does Klemetti mean when he says reaching the mantle would be the earth-science equivalent of the first moon landing?  
*He means that it would prove we could reach such a distant frontier and increase public interest in the science.*

解答: (29) 1 (30) 4 (31) 2



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