

注意：解答用紙は2枚あります。それぞれに学籍番号と氏名を記入してください。

### 問題1

次の文章は竜巻に関する記事で、5つのパラグラフから構成されている。この英文に関する以下の問に、原文に則して答えなさい（直訳でなくてよいが、原文の内容を不足なく書くこと）。

A tornado is a violently turning tube of air suspended from a thick cloud. It extends from a thunderstorm in the sky down to the ground. The shape is like a funnel: wide at the top, narrower at the bottom. Tornadoes form when winds blowing in different directions meet in the clouds and begin to turn in circles. Warm air rising from below causes the wind tube to reach toward the ground.

The most severe tornadoes can reach wind speeds of 320 kilometers an hour or more. In some cases, the resulting paths of damage can stretch more than a kilometer wide and 80 kilometers long. With a tornado, bigger does not necessarily mean stronger. Large tornadoes can be weak. And some of the smallest tornadoes can be the most damaging. Tornadoes can carry trees, cars and homes from one place to another. They can also destroy anything in their path.

Tornadoes can be measured using wind speed information from Doppler radar systems. Tornadoes usually travel in a northeasterly direction, but they have been known to move in any direction. The average forward speed is about 50 kilometers an hour. But they can have a forward speed of up to 115 kilometers an hour. Or they may not move in any direction.

Some people make a sport out of watching and following tornadoes. They are called tornado chasers or storm chasers. Their work can be seen in the extreme weather videos that are popular on television and the Internet. Some chasers do it just because it is their idea of fun. Others do it to help document storms and warn the public. Still others are part of weather research teams.

A few years ago, an international team of scientists completed a tornado research project called VORTEX2. More than 100 researchers traveled throughout America's Great Plains in 2009 and 2010. They used weather measurement instruments to collect scientific information about the life of a tornado. The goal of the project was to examine in detail how tornadoes are formed and the kinds of damage they cause.

(Science in the News, Voice of America Special English 2013年5月28日の放送原稿より抜粋)

(1) 竜巻とはどのようなもので、どのような形をしているか、答えなさい。

(2) 竜巻はどのようなしくみで発生するか、答えなさい。

(3) 竜巻の大きさと強さの関係について説明しなさい。

(4) 竜巻の移動速度について説明しなさい。

(5) tornado chasers の活動の理由（目的）は何か、答えなさい。

(6) VORTEX2 の目的（目標）は何か、答えなさい。

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**問題2**

Answer the following questions in English using more than 50 but less than 100 words for each question.

(1) Describe your research activities.

(2) What kind of practical use is expected when your research is completed ?

(3) How is your research related with the important challenges in this century (global warming, food crisis, population explosion, energy depletion, digital divide, etc.) ? If you cannot answer the question, you may describe one of these challenges.