Part 6

You are going to read an article about a new world map. Six sentences have been removed from the article. Choose from the sentences **A–G** the one which fits each gap (**37–42**). There is one extra sentence which you do not need to use.

Mark your answers on the separate answer sheet.

A new map of the world

The decision to present the 2016 Good Design Award, one of Japan's most famous design honours, to Hajime Narukawa, the maker of the AuthaGraph World Map, came as a surprise to many. Given that previous winners have tended to be inventors of exciting new gadgets, people wondered what had impressed the judges about the design of a map.

The world map with which most of us are familiar uses what is known as the Mercator projection, a mapping technique developed in 1569 by map maker Gerardus Mercator. Though it is excellent for navigation, it significantly changes the size and proportion of areas of land and oceans. So while North America and Africa appear to be equal in size, in reality North America could fit inside Africa with plenty of room to spare. Similarly, though Brazil is more than five times larger than Alaska, it appears considerably smaller than it really is. **37** It is a task that is surprisingly hard to do accurately.

Over the years, there have been numerous attempts to deal with the issue. The Gall-Peters projection, for example, reduces the size of the regions near the poles. **38** This is because certain places appear oddly stretched. A similar change to the shapes of the continents occurs in the Mollweide projection, which attempts to show them more accurately by bending the lines of longitude. The Boggs eumorphic projection shows the correct shapes and sizes of everything on the map by cutting the globe into sections, but doing this means that vital information such as the distance between continents is not so clear, making the map impractical for navigation.

The AuthaGraph World Map appears to have solved these issues through the use of geometrical shapes. **39** These are then transferred onto the surface of what's called a tetrahedron, which is really just a four-sided pyramid. The tetrahedron can then be unfolded to form a flat rectangle. Doing this creates a two-dimensional map, which closely resembles the surface of the original globe.

The result is a world map unlike any other in its accuracy. **40** This makes Africa appear to be tilted on its side. Also the longitude and latitude lines are similarly distorted. Although these differences make the map look strangely unfamiliar, this is the closest anyone has ever come to capturing clearly and accurately the size and proportions of the Earth's surface.

In their announcement declaring the AuthaGraph World Map the overall winner, the officials at Good Design Award said it was selected because it 'faithfully represents all oceans and continents, including the neglected Antarctica,' and provides 'an advanced, precise perspective of our planet.' **41** This would involve some tricky mathematical calculations, but might well be something for map designers to consider.

While the AuthaGraph World Map is not ideal for navigation, it does have some practical applications, like helping us better understand how aeroplane flight paths are affected by the way the Earth's surface is curved. The map is also well suited to classroom use and has already been incorporated into Japanese textbooks. **42** Meanwhile, those eager to observe the world more accurately can purchase the map directly from the creator's website.

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A Narukawa's concept first divides the globe into ninety-six equal triangles.

B This explains why such a strange-looking map is actually the most proportionate depiction of our planet ever seen.

C While this makes it easier to appreciate the relative size of continents and oceans, it doesn't completely solve the problem.

D Whether it will be adopted more widely than this remains to be seen.

E The continents curve upwards towards the edges of the map instead of going straight across it.

F The reason for differences like this has to do with the challenge of transforming a three-dimensional globe into a two-dimensional flat map.

G There was, however, a suggestion that the accuracy could be increased further in the future by cutting the world into even smaller chunks.

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