

## READING COMPREHENSION

### 1. Gecko-grip material aims to be the end of glue

#### Task 1

Parts of gecko toes creating adhesion	1. setae
	2. spatulae
Adhesive force used by geckos	3. van der Waals force
Materials used to maximize adhesion in the new technology	4. carbon (nanotubes)
	5. silicon (wafer)
Shape of the end of nanotubes	6. curly,/ tangled
Physical disadvantage of the new material	7. it takes bigger force to stick
Possible industrial uses of the new material	8. to replace glue
	9. to replace solder (in welding, in electronics)
	10. to create lasting adhesion in space
Method of unsticking the new material	11. pulling it perpendicular to the surface

#### Task 2

12. A 4mm x 4mm piece needs 1600 g force to hold the weight properly.	F
13. The decreasing price of the nanotubes has already made it economical enough to produce.	F
14. The current level of adhesion is 10 times as strong as that off gecko feet.	T
15. The adhesion of the gecko's feet is due less to its chemical composition than to its geometrical features.	T

## 2. Arctic ice thickness 'plummets'

### Task 1

The (0).... *research*..... on Arctic ice coverage has got a new momentum by using (1) **radar altimeter / electromagnetic** equipment from satellites. It is more effective than previous technologies, since it can provide (2) **overall/full coverage** and (3) **continuous** data from the Arctic, without (4) **logistic** problems in the wintertime. The data gained shows an (5) **uneven / increasing** rate of ice shrinkage, which can be caused either by (6) **ice redistribution / ice piling up on the coast** or by (7) **melting** .

### Task 2

8. The project aims at finding out about the ice's	A. temperature and size B. thickness and depth <b>C. extension and thickness</b>
9. Projections about the disappearance of the ice	<b>A. are still much debated</b> B. are easily available C. are impossible to give
10. To establish facts considering Arctic ice coverage, the radar altimeter uses	A. straightforward measurements <b>B. data and calculations</b> C. data and estimations

## LISTENING COMPREHENSION

### Task 1:

1st news item: 1T 2T 3F 4F

2nd news item: 1T, 2T, 3F, 4F

### Task 2

1. braking, 2. restrictions, 3. force/temperature/ temperature, sound / visual, 4. design

5. laser, 6. ultrasonic, 7. infrared, 8. machine vision, 9. damaged wheels, 10. slow down/stop

11. cleanup operations/efforts, 12. oil spills

### Sample table description

**This is a table showing manufacturer adjusted fuel economy and adjusted CO<sub>2</sub> emissions in 2012-2014.**

The table is divided into three sections. The first one presents the final data in market year 2012, the second one shows final figures for 2013, while in the third section we can find preliminary data for 2014.

The first column lists the major car manufacturers, such as Mazda, Honda or VW. In each section we can see the adjusted fuel economy given in miles per gallon, and CO<sub>2</sub> emissions expressed in g/mi.

It can be clearly seen that Mazda has the highest adjusted fuel economy with 27.1 MPG. This figure even increased slightly by 1% by 2013. The cars made by this manufacturer have the lowest CO<sub>2</sub> emissions, too.

The next four manufacturers have approximately the same fuel economy data, around 25 MPG. The CO<sub>2</sub> emission produced by these cars are higher than that of Mazda.

To sum up, we can see, that not all manufacturers could improve their fuel economy or CO<sub>2</sub> emissions by 2014. However, it would be necessary from an environmental point of view. That is why the manufacturers were planning significant advances by 2014 both in their fuel economy and CO<sub>2</sub> emissions.

### Sample reader's letter

Dear Editor,

I have recently read your article on American inventions, which arouse my interest. I come from Hungary, which can also boast of world-famous inventions. In order to contribute to your series, let me present some examples both from the past and recent times.

First of all, I would like to mention János Neumann, who worked as a mathematician and computer scientist. He was a key figure in the development of the digital computer.

In addition, Donát Bánki and János Csonka invented the carborettor for a stationary engine. Kálmán Kandó was known as "the father of the electric train". Last but not least, the famous Ford T Model was designed by a Hungarian-American inventor, József Galamb.

Hungarians continue to contribute to technical progress. A team of young engineers created Prezi, a cloud based presentation software in 2009. In 2014 a Hungarian engineer patented Litracon, a light transmitting concrete, which is a mix of concrete and optical fibre.

I believe, these developments can be largely attributed to the high standard of technical education in Hungary. The co-operation between companies and universities enables students to participate in projects and competitions, which can result in new inventions.

I hope, you find my comments a useful contribution to your article.

Endre Horváth  
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