# IELTSFever Academic IELTS Reading Test 148

## Reading Passage 1

*You should spend about 20 minutes on Questions 1-13, which are based on the IELTSFever Academic IELTS Reading Test 148 Reading Passage LAND OF THE RISING SUN below.*

### LAND OF THE RISING SUN

**{A}** Japan has a significantly better record in terms of average mathematical attainment than England and Wales. Large sample international comparisons of pupils' attainments since the 1960s have established that not only did Japanese pupils at age 13 have better scores of average attainment, but there was also a larger proportion of 'low' attainers in England, where, incidentally, the variation in attainment scores was much greater. The percentage of Gross National Product spent on education is reasonably similar in the two countries, so how is this higher and more consistent attainment in maths achieved?

**{B}** Lower secondary schools in Japan cover three school years, from the seventh grade (age 13) to the ninth grade (age 15). Virtually all pupils at this stage attend state schools: only 3 percent are in the private sector. Schools are usually modem in design, set well back from the road and spacious inside. Classrooms are large and pupils sit at single desks in rows. Lessons last for a standardised 50 minutes and are always followed by a 10-minute break, which gives the pupils a chance to let off steam. Teachers begin with a formal address and mutual bowing, and then concentrate on whole-class teaching. Classes are large - usually about 40 - and are unstreamed. Pupils stay in the same class for all lessons throughout the school and develop considerable class identity and loyalty. Pupils attend the school in their own neighbourhood, which in theory removes ranking by school. In practice in Tokyo, because of the relative concentration of schools, there is some competition to get into the 'better' school in a particular area.

**{C}** Traditional ways of teaching form the basis of the lesson and the remarkably quiet classes take their own notes of the points made and the examples demonstrated. Everyone has their own copy of the textbook supplied by the central education authority, Monbusho, as part of the concept of free compulsory education up to the age of 15. These textbooks are, on the whole, small, presumably inexpensive to produce, but well set out and logically developed. (One teacher was particularly keen to introduce colour and pictures into maths textbooks: he felt this would make them more accessible to pupils brought up in a cartoon culture.) Besides approving textbooks, Monbusho also decides the highly centralised national curriculum and how it is to be delivered.

**{D}** Lessons all follow the same pattern. At the beginning, the pupils put solutions to the homework on the board, then the teachers comment, correct or elaborate as necessary. Pupils

mark their own homework: this is an important principle in Japanese schooling as it enables pupils to see where and why they made a mistake, so that these can be avoided in future. No 'One minds mistakes or ignorance as long as you are prepared to learn from them. After the homework has been discussed, the teacher explains the topic of the lesson, slowly and with a lot of repetition and elaboration. Examples are demonstrated on the board; questions from the textbook are worked through first with the class, and then the class is set questions from the textbook to do individually. Only rarely are supplementary worksheets distributed in a maths class. The impression is that the logical nature of the textbooks and their comprehensive coverage of different types of examples, combined with the relative homogeneity of the class, renders worksheets unnecessary. At this point, the teacher would circulate and make sure that all the pupils were coping well.

**{E}** It is remarkable that large, mixed-ability classes could be kept together for maths throughout all their compulsory schooling from 6 to 15. Teachers say that they give individual help at the end of a lesson or after school, setting extra work if necessary. In observed lessons, any strugglers would be assisted by the teacher or quietly seek help from their neighbour. Carefully fostered class identity makes pupils keen to help each other - anyway, it is in their interests since the class progresses together. This scarcely seems adequate help to enable slow learners to keep up. However, the Japanese attitude towards education runs along the lines of 'if you work hard enough, you can do almost anything'. Parents are kept closely informed of their children's progress and will play a part in helping their children to keep up with class, sending them to 'Juku' (private evening tuition) if extra help is needed and encouraging them to work harder. It seems to work, at least for 95 percent of the school population.

**{F}** So what are the major contributing factors in the success of maths teaching? Clearly, attitudes are important. Education is valued greatly in Japanese culture; maths is recognised as an important compulsory subject throughout schooling; and the emphasis is on hard work coupled with a focus on accuracy. Other relevant points relate to the supportive attitude of a class towards slower pupils, the lack of competition within a class, and the positive emphasis on learning for oneself and improving one's own standard. And the view of repetitively boring lessons and learning the facts by heart, which is sometimes quoted in relation to Japanese classes, may be unfair and unjustified. No poor maths lessons were observed. They were mainly good and one or two were inspirational.

## Questions 1-5:

*Reading Passage 1 has six sections, A-F.*

*Choose the correct heading for sections B-F from the list of headings below.*

*Write the correct number, i-ix, in boxes 1-5 on your answer sheet.*

**List of Headings**

**(i)**The influence of Monbusho

**(ii)** Helping less successful students

**(iii)** The success of compulsory education

**(iv)** Research findings concerning achievements in maths

**(v)** The typical format of a maths lesson

**(vi)** Comparative expenditure on maths education

**(vii)** Background to middle-years education in Japan

**(viii)** The key to Japanese successes in maths education

**(ix)** The role of homework correction

Example Answer

Section A iv

**(1)** Section B

**(2)** Section c

**(3)** Section D

**(4)** Section E

**(5)** Section F

## Questions 6-9:

*Do the following statements agree with the claims of the writer in Reading Passage 17*

*In boxes 6-9 on your answer sheet, write*

| | |
|---|---|
| YES | if the statement agrees with the writer |
| NO | if the statement does not agree with the writer |
| NOT GIVEN | if there is no information about this in the passage |

**(6)** There is a wider range of achievement amongst English pupils studying maths than amongst their Japanese counterparts.

**(7)** The percentage of Gross National Product spent on education generally reflects the level of attainment in mathematics.

**(8)** Private schools in Japan are more modern and spacious than state-run lower secondary schools.

**(9)** Teachers mark homework in Japanese schools.

## Questions 10-13:

*Choose the correct letter, A, B, C or D. Write the correct letter in boxes 10-13*

**Question 10** Maths textbooks in Japanese schools are

**(A)** cheap for pupils to buy.

**(B)** well organised and adapted to the needs of the pupils.

**(C)** written to be used in conjunction with TV programmes.

**(D)** not very popular with many Japanese teachers.

**Question 11** When a new maths topic is introduced,

**(A)** students answer questions on the board.

**(B)** students rely entirely on the textbook.

**(C)** it is carefully and patiently explained to the students.

**(D)** it is usual for students to use extra worksheets.

**Question 12** How do schools deal with students who experience difficulties?

**(A)** They are given appropriate supplementary tuition.

**(B)** They are encouraged to copy from other pupils.

**(C)** They are forced to explain their slow progress.

**(D)** They are placed in a mixed-ability class.

**Question 13** Why do Japanese students tend to achieve relatively high rates of success in maths?

**(A)** It is a compulsory subject in Japan.

**(B)** They are used to working without help from others.

**(C)** Much effort is made and correct answers are emphasised.

**(D)** There is a strong emphasis on repetitive learning.

## Reading Passage 2

*You should spend about 20 minutes on Questions 14-26, which are based on the IELTSFever Academic IELTS Reading Test 148 Reading Passage The robots are coming below.*

# The robots are coming

*What is the current state of play in Artificial Intelligence?*

**{A}.** Can robots advance so far that they become the ultimate threat to our existence? Some scientists say no, and dismiss the very idea of Artificial Intelligence. The human brain, they argue, is the most complicated system ever created, and any machine designed to reproduce human thought is bound to fail. Physicist Roger Penrose of Oxford University and others believe that machines are physically incapable of human thought. Colin McGinn of Rutgers University backs this up when he says that Artificial Intelligence 'is like sheep trying to do complicated psychoanalysis. They just don't have the conceptual equipment they need in their limited brains'.

**{B}.** Artificial Intelligence, or AI, is different from most technologies in that scientists still understand very little about how intelligence works. Physicists have a good understanding of Newtonian mechanics and the quantum theory of atoms and molecules, whereas the basic laws of intelligence remain a mystery. But a sizable number of mathematicians and computer scientists, who are specialists in the area, are optimistic about the possibilities. To them, it is only a matter of time before a thinking machine walks out of the laboratory. Over the years, various problems have impeded all efforts to create robots. To attack these difficulties, researchers tried to use the 'top-down approach', using a computer in an attempt to program all the essential rules onto a single disc. By inserting this into a machine, it would then become self-aware and attain human-like intelligence.

**{C}.** In the 1950s and 1960s, great progress was made, but the shortcomings of these prototype robots soon became clear. They were huge and took hours to navigate across a room. Meanwhile, a fruit fly, with a brain containing only a fraction of the computing power, can effortlessly navigate in three dimensions. Our brains, like the fruit fly's, unconsciously recognize what we see by performing countless calculations. This unconscious awareness of patterns is exactly what computers are missing. The second problem is the robots' lack of common sense.

Humans know that water is wet and that mothers are older than their daughters. But there is no mathematics that can express these truths. Children learn the intuitive laws of biology and physics by interacting with the real world. Robots know only what has been programmed into them.

**{D}.** Because of the limitations of the top-down approach to Artificial Intelligence, attempts have been made to use a 'bottom-up' approach instead – that is, to try to imitate evolution and the way a baby learns. Rodney Brooks was the director of MIT's Artificial Intelligence Laboratory, famous for its lumbering 'top-down' walking robots. He changed the course of research when he explored the unorthodox idea of tiny 'insectoid' robots that learned to walk by bumping into things instead of computing mathematically the precise position of their feet. Today many of the descendants of Brooks' insectoid robots are on Mars gathering data for NASA (The National Aeronautics and Space Administration), running across the dusty landscape of the planet. For all their successes in mimicking the behaviour of insects, however, robots using neural networks have performed miserably when their programmers have tried to duplicate in them the behaviour of higher organisms such as mammals. MIT's Marvin Minsky summarises the problems of AI: 'The history of AI is sort of funny because the first real accomplishments were beautiful things, like a machine that could do well in a maths course. But then we started to try to make machines that could answer questions about simple children's stories. There's no machine today that can do that.'

**{E}.** There are people who believe that eventually there will be a combination between the top down and bottom-up, which may provide the key to Artificial Intelligence. As adults, we blend the two approaches. It has been suggested that our emotions represent the quality that most distinguishes us as human, that it is impossible for machines ever to have emotions. Computer expert Hans Moravec thinks that in the future robots will be programmed with emotions such as fear to protect themselves so that they can signal to humans when their batteries are running low, for example. Emotions are vital in decision-making. People who have suffered a certain kind of brain injury lose the ability to experience emotions and become unable to make decisions. Without emotions to guide them, they debate endlessly over their options. Moravec points out that as robots become more intelligent and are able to make choices, they could likewise become paralysed with indecision. To aid them, robots of the future might need to have emotions hardwired into their brains.

**{F}.** There is no universal consensus as to whether machines can be conscious, or even, in human terms, what consciousness means. Minsky suggests the thinking process in our brain is not localised but spread out, with different centres competing with one another at any given time. Consciousness may then be viewed as a sequence of thoughts and images issuing from these different, smaller 'minds', each one competing for our attention. Robots might eventually attain a 'silicon consciousness'. Robots, in fact, might one day embody an architecture for thinking and processing information that is different from ours-but also indistinguishable. If that happens, the question of whether they really 'understand' becomes largely irrelevant. A robot that has perfect mastery of syntax, for all practical purposes, understands what is being said.

## Questions 14-20

*Reading Passage 2 has six paragraphs A-F.*

*Write the correct letter A-F in boxes 14-20 on your answer sheet.*

***NB You may use any letter more than once. Which paragraph contains the following information?***

**(14).** An insect that proves the superiority of natural intelligence over Artificial Intelligence

**(15).** Robots being able to benefit from their mistakes

**(16).** Many researchers not being put off believing that Artificial Intelligence will eventually be developed

**(17).** An innovative approach that is having limited success

**(18).**The possibility of creating Artificial Intelligence being doubted by some academics

**(19).** No generally accepted agreement of what our brains do

**(20).** Robots not being able to extend the* intelligence in the same way as humans

## Questions 21-23

*Look at the following people (Questions 21-23) and the list of statements below.*

*Match each person with the correct statement A-E*

*Write the correct letter A-E in boxes 21-23 on your answer sheet.*

**(21).** Colin McGinn

**(22).** Marvin Minsky

**(23).** Hans Moravec

**(A).** Artificial Intelligence may require something equivalent to feelings in order to succeed.

**(B).** Different kinds of people use different parts of the brain.

**(C).** Tests involving fiction have defeated Artificial Intelligence so far.

**(D).** People have intellectual capacities which do not exist in computers.

**(E).** People have no reason to be frightened of robots.

## Questions 24-26

*Complete the summary below. Choose **ONE WORD ONLY** from the passage for each answer. Write your answers in boxes 24-26 on your answer sheet.*

| When will we have a thinking machine? |
| --- |
| Despite some advances, early robots had certain weaknesses. They were given the information they needed on a **24** .....This was known as the 'top-down' approach and enabled them to do certain tasks but they were unable to recognise **25** ..... Nor did they have any intuition or ability to make decisions based on experience. Rodney Brooks tried a different approach. Robots similar to those invented by Brooks are to be found on **26** ……. where they are collecting information. |

## Reading Passage 3

*You should spend about 20 minutes on Questions 27-40, which are based on the IELTSFever Academic IELTS Reading Test 148 Reading Passage Quiet roads ahead below.*

# Quiet roads ahead

*The roar of passing vehicles could soon be a thing of the past*

**{A}** The noise produced by busy roads is a growing problem. While vehicle designers have worked hard to quieten engines, they have been less successful elsewhere. The sound created by the tyres on the surface of the road now accounts for more than half the noise that vehicles create, and as road building and car sales continue to boom - particularly in Asia and the US - this is turning into a global issue.

**{B}** According to the World Health Organization, exposure to noise from road traffic over long periods can lead to stress-related health problems. And where traffic noise exceeds a certain threshold, road builders have to spend money erecting sound barriers and installing double glazing in blighted homes. Houses become harder to sell where environmental noise is high, and people are not as efficient or productive at work.

**{C}** Already, researchers in the Netherlands - one of the most densely populated countries in the world - are working to develop techniques for silencing the roads. In the next five years the Dutch government aims to have reduced noise levels from the country's road surfaces by six decibels overall. Dutch mechanical engineer Ard Kuijpers has come up with one of the most promising, and radical, ideas. He set out to tackle the three most important factors: surface texture, hardness and ability to absorb sound.

**{D}** The rougher the surface, the more likely it is that a tyre will vibrate and create noise. Road builders usually eliminate bumps on freshly laid asphalt with heavy rollers, but Kuijpers has developed a method of road building that he thinks can create the ultimate quiet road. His secret is a special mould 3 metres wide and 50 metres long. Hot asphalt, mixed with small stones, is spread into the mould by a rail mounted machine which flattens the asphalt mix with a roller. When it sets, the 10-millimetre-thick sheet has a surface smoother than anything that can be achieved by conventional methods.

**{E}** To optimise the performance of his road surface - to make it hard wearing yet soft enough to snuff out vibrations - he then adds another layer below the asphalt. This consists of a 30-millimetre-thick layer of rubber, mixed with stones which are larger than those in the layer above. 'It's like a giant mouse mat, making the road softer,' says Kuijpers.

**{F}** The size of the stones used in the two layers is important, since they create pores of a specific size in the road surface. Those used in the top layer are just 4 or 5 millimetres across, while the ones below are approximately twice that size - about 9 millimetres. Kuijpers says the surface can absorb any air that is passing through a tyre's tread (the indentations or ridges on the surface of a tyre), damping oscillations that would otherwise create noise. And in addition they make it easier for the water to drain away, which can make the road safer in wet weather.

**{G}** Compared with the complex manufacturing process, laying the surface is quite simple. It emerges from the factory rolled, like a carpet, onto a drum 1.5 metres in diameter. On site, it is unrolled and stuck onto its foundation with bitumen. Even the white lines are applied in the factory.

**{H}** The foundation itself uses an even more sophisticated technique to reduce noise further. It consists of a sound-absorbing concrete base containing flask-shaped slots up to 10 millimetres wide and 30 millimetres deep that are open at the top and sealed at the lower end. These cavities act like Helmholtz resonators - when sound waves of specific frequencies enter the top of a flask, they set up resonances inside and the energy of the sound dissipates into the concrete as heat. The cavities play another important role: they help to drain water that seeps through from the upper surface. This flow will help flush out waste material and keep the pores in the outer layers clear.

**{I}** Kuijpers can even control the sounds that his resonators absorb, simply by altering their dimensions. This could prove especially useful since different vehicles produce noise at different frequencies. Car tyres peak at around 1000 hertz, for example, but trucks generate lower-frequency noise at around 600 hertz. By varying the size of the Kuijpers resonators, it is possible to control which frequencies the concrete absorbs. On large highways, trucks tend to use the inside lane, so resonators here could be tuned to absorb sounds at around 600 hertz while those in other lanes could deal with higher frequency noise from cars.

**{J}** Kuijpers believes he can cut noise by five decibels compared to the quietest of today's roads. He has already tested a 100-metre-long section of his road on a motorway near Apeldoorn, and Dutch construction company Heijmans is discussing the location of the next roll-out road with the country's government. The success of Kuijpers' design will depend on how

much it eventually costs. But for those affected by traffic noise there is hope of quieter times ahead.

## Questions 27-32

*Reading Passage 3 has ten paragraphs labelled A-J*

*Which paragraph contains the following information?*

*Write the correct letter A-Jin boxes 27-32 on your answer sheet.*

**(27)** a description of the form in which Kuijpers' road surface is taken to its destination

**(28)** an explanation of how Kuijpers makes a smooth road surface

**(29)** something that has to be considered when evaluating Kuijpers' proposal

**(30)** various economic reasons for reducing road noise

**(31)** a generalisation about the patterns of use of vehicles on major roads

**(32)** a summary of the different things affecting levels of noise on roads

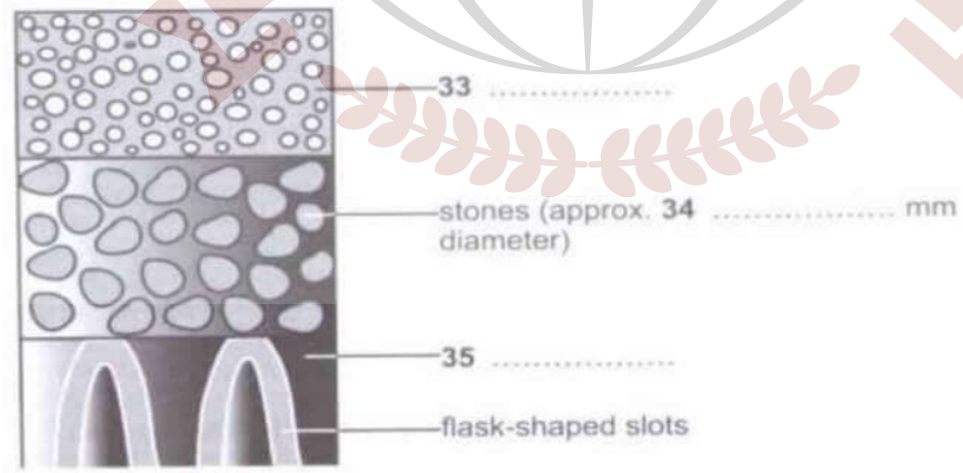
## Questions 33-35

*Label the diagram below.*

*Choose **NO MORE THAN ONE WORD AND/OR A NUMBER** from the passage for each answer.*

*Write your answers in boxes 33-35 on your answer sheet.*

**Cross section of Kuijpers' proposed noise-reducing road**



## Questions 36-40

*Complete the table below using the list of words (A-K) from the box below.*

*Write the correct letters in boxes 36-40 on your answer sheet.*

**Kuijpers' noise-reducing road: components and function**

| Layer | Component | Function |
|---|---|---|
| upper and lower | stones | • reduce oscillations caused by **36** .....<br>• create pores which help **37** ..... |
| foundation | slots | • convert **38** ..... to heat<br>• help to remove **39** .....<br>• can be adapted to absorb different **40** ..... |

| | | | |
|---|---|---|---|
| **(A)** frequencies | **(D)** resonators | **(G)** sound energy | **(J)** drainage |
| **(B)** the engine | **(E)** air flow | **(H)** pores | **(K)** sources |
| **(C)** rubbish | **(F)** dissipation | **(I)** lanes | |