

READING TEST 116

READING PASSAGE 1

You should spend about 20 minutes on Question 1-13, which are based on Reading Passage 1 below.

Otters

A Otters are semiaquatic (or in the case of the sea otter, aquatic) mammals. They are members of the Mustelid family which includes badgers, polecats, martens, weasels, stoats and minks, and have inhabited the earth for the last 30 million years and over the years have undergone subtle changes to the carnivore bodies to exploit the rich aquatic environment. Otters have long thin body and short legs—ideal for pushing dense undergrowth or hunting in tunnels. An adult male may be up to 4 feet long and 30 pounds. Females are smaller, around 16 pounds typically. The Eurasian otter’s nose is about the smallest among the otter species and has a characteristic shape described as a shallow “W”. An otter’s tail (or rudder, or stern) is stout at the base and tapers towards the tip where it flattens. This forms part of the propulsion unit when swimming fast under water. Otter fur consists of two types of hair: stout guard hairs which form a waterproof outer covering, and under-fur which is dense and fine, equivalent to an otter’s thermal underwear. The fur must be kept in good condition by grooming. Sea water reduces the waterproofing and insulating qualities of otter fur when salt water gets in the fur. This is why freshwater pools are important to otters living on the coast. After swimming, they wash the salts off in the pools and then squirm on the ground to rub dry against vegetation.

B Scent is used for hunting on land, for communication and for detecting danger. Otterine sense of smell is likely to be similar in sensitivity to dogs. Otters have small eyes and are probably short-sighted on land. But they do have the ability to modify the shape of the lens in the eye to make it more spherical, and hence overcome the refraction of water. In clear water and good light, otters can hunt fish by sight. The otter’s eyes and nostrils are placed high on its head so that it can see and breathe even when the rest of the body is submerged. The long whiskers growing around the muzzle are used to detect the presence of fish. They detect regular vibrations caused by the beat of the fish’s tail as it swims away. This allows otters to hunt even in very murky water. Underwater, the otter holds its legs against the body, except for steering, and the hind end of the body is flexed in a series of vertical undulations. River otters have webbing which extends for much of the length of each digit, though not to the very end. Giant otters and sea otters have even more prominent webs, while the Asian short-clawed otter has no webbing—they hunt for shrimps



in ditches and paddy fields, so they don't need the swimming speed. Otter ears are protected by valves which close them against water pressure.

C A number of constraints and preferences limit suitable habitats for otters. Water is a must and the rivers must be large enough to support a healthy population of fish. Being such shy and wary creatures, they will prefer territories where man's activities do not impinge greatly. Of course, there must also be no other otter already in residence—this has only become significant again recently as populations start to recover. A typical range for a male river otter might be 25km of river, a female's range less than half this. However, the productivity of the river affects this hugely and one study found male ranges between 12 and 80km. Coastal otters have a much more abundant food supply and ranges for males and females may be just a few kilometers of coastline. Because male ranges are usually larger, a male otter may find his range overlaps with two or three females. Otters will eat anything that they can get hold of—there are records of sparrows and snakes and slugs being gobbled. Apart from fish the most common prey are crayfish, crabs and water birds. Small mammals are occasionally taken, most commonly rabbits but sometimes even moles.

D Eurasian otters will breed any time where food is readily available. In places where condition is more severe, Sweden for example where the lakes are frozen for much of winter, cubs are born in Spring. This ensures that they are well grown before severe weather returns. In the Shetlands, cubs are born in summer when fish is more abundant. Though otters can breed every year, some do not. Again, this depends on food availability. Other factors such as food range and quality of the female may have an effect. Gestation for Eurasian otter is 63 days, with the exception of North American river otter whose embryos may undergo delayed implantation.

E Otters normally give birth in more secure dens to avoid disturbances. Nests are lined with bedding (reeds, waterside plants, grass) to keep the cubs warm while mummy is away feeding. Litter Size varies between 1 and 5 (2 or 3 being the most common). For some unknown reason, coastal otters tend to produce smaller litters. At five weeks they open their eyes—a tiny cub of 700g. At seven weeks they're weaned onto solid food. At ten weeks they leave the nest, blinking into daylight for the first time. After three months they finally meet the water and learn to swim. After eight months they are hunting, though the mother still provides a lot of food herself. Finally, after nine months she can chase them all away with a clear conscience, and relax—until the next fella shows up.



F The plight of the British otter was recognised in the early 60s, but it wasn't until the late 70s that the chief cause was discovered. Pesticides, such as dieldrin and aldrin, were first used in '1955 in agriculture and other industries—these chemicals are very persistent and had already been recognised as the cause of huge declines in the population of peregrine falcons, sparrowhawks and other predators. The pesticides entered the river systems and the food chain—micro-organisms, fish and finally otters, with every step increasing the concentration of the chemicals. From 1962 the chemicals were phased out, but while some species recovered quickly, otter numbers did not—and continued to fall into the 80s. This was probably due mainly to habitat destruction and road deaths. Acting on populations fragmented by the sudden decimation in the 50s and 60s, the loss of just a handful of otters in one area can make an entire population enviable and spell the end.

G Otter numbers are recovering all around Britain—populations are growing again in the few areas where they had remained and have expanded from those areas into the rest of the country. This is almost entirely due to law and conservation efforts, slowing down and reversing the destruction of suitable otter habitat and reintroductions from captive breeding programs. Releasing captive-bred otters is seen by many as a last resort. The argument runs that where there is no suitable habitat for them they will not survive after release and when there is suitable habitat, natural populations should be able to expand into the area. However, reintroducing animals into a fragmented and fragile population may add just enough impetus for it to stabilise and expand, rather than die out. This is what the Otter Trust accomplished in Norfolk, where the otter population may have been as low as twenty animals at the beginning of the 1980s. The Otter Trust has now finished its captive breeding program entirely. Great news because it means it is no longer' needed.



Questions 1 - 9

Reading Passage 1 has seven paragraphs, **A-G**. Which paragraph contains the following information? Write the correct letter, **A-G**, in boxes **1-9** on your answer sheet.

NB. You may use any letter **more than once**.

1. a description of how otters regulate vision underwater
2. the fit-for-purpose characteristics of otter's body shape
3. a reference to an underdeveloped sense
4. an explanation of why agriculture failed in otter conservation efforts
5. a description of some of the otter's social characteristics
6. a description of how baby otters grow
7. the conflicted opinions on how to preserve
8. a reference to a legislative act
9. an explanation of how otters compensate for heat loss

Questions 10 - 13

Answer the questions below.

Choose **NO MORE THAN TWO WORDS** from the passage for each answer.

Write your answers in boxes **10-13** on your answer sheet.

10. What affects the outer fur of otters?
11. What skill is not necessary for Asian short-clawed otters?
12. Which type of otters has the shortest range?
13. Which type of animals do otters hunt occasionally?



READING PASSAGE 2

You should spend about 20 minutes on Questions 14-26, which are based on Reading Passage 2 on the following pages.

Wealth in A Cold Climate

Latitude is crucial to a nation's economic strength.

A Dr. William Masters was reading a book about mosquitoes when inspiration struck. "There was this anecdote about the great yellow fever epidemic that hit Philadelphia in 1793," Masters recalls. "This epidemic decimated the city until the first frost came." The inclement weather froze out the insects, allowing Philadelphia to recover.

B If weather could be the key to a city's fortunes, Masters thought, then why not to the historical fortunes of nations? And could frost lie at the heart of one of the most enduring economic mysteries of all - why are almost all the wealthy, industrialised nations to be found at latitudes above 40 degrees? After two years of research, he thinks that he has found a piece of the puzzle. Masters, an agricultural economist from Purdue University in Indiana, and Margaret McMillan at Tufts University, Boston, show that annual frosts are among the factors that distinguish rich nations from poor ones. Their study is published this month in the Journal of Economic Growth. The pair speculate that cold snaps have two main benefits — they freeze pests that would otherwise destroy crops, and also freeze organisms, such as mosquitoes, that carry disease. The result is agricultural abundance and a big workforce.

C The academics took two sets of information. The first was average income for countries, the second climate data from the University of East Anglia. They found a curious tally between the sets. Countries having five or more frosty days a month are uniformly rich, those with fewer than five are impoverished. The authors speculate that the five-day figure is important; it could be the minimum time needed to kill pests in the soil. Masters says: "For example, Finland is a small country that is growing quickly, but Bolivia is a small country that isn't growing at all. Perhaps climate has something to do with that." In fact, limited frosts bring huge benefits to farmers. The chills kill insects or render them inactive; cold weather slows the break-up of plant and animal material in the soil, allowing it to become richer; and frosts ensure a build-up of moisture in the ground for spring, reducing dependence on seasonal rains. There are exceptions to the "cold equals rich" argument. There are well-heeled tropical places such as Hong Kong and Singapore, a result of their superior trading positions. Like-wise, not all European countries are moneyed—in the former communist colonies, economic potential was crushed by politics.



D Masters stresses that climate will never be the overriding factor - the wealth of nations is too complicated to be attributable to just one factor. Climate, he feels, somehow combines with other factors such as the presence of institutions, including governments, and access to trading routes to determine whether a country will do well. Traditionally, Masters says, economists thought that institutions had the biggest effect on the economy, because they brought order to a country in the form of, for example, laws and property rights. With order, so the thinking went, came affluence. “But there are some problems that even countries with institutions have not been able to get around,” he says. “My feeling is that, as countries get richer, they get better institutions. And the accumulation of wealth and improvement in governing institutions are both helped by a favourable environment, including climate.”

E This does not mean, he insists, that tropical countries are beyond economic help and destined to remain penniless. Instead, richer countries should change the way in which foreign aid is given. Instead of aid being geared towards improving governance, it should be spent on technology to improve agriculture and to combat disease. Masters cites one example: “There are regions in India that have been provided with irrigation, agricultural productivity has gone up and there has been an improvement in health.” Supplying vaccines against tropical diseases and developing crop varieties that can grow in the tropics would break the poverty cycle.

F Other minds have applied themselves to the split between poor and rich nations, citing anthropological, climatic and zoological reasons for why temperate nations are the most affluent. In 350 BC, Aristotle observed that “those who live in a cold climate...are full of spirit”. Jared Diamond, from the University of California at Los Angeles, pointed out in his book *Guns, Germs and Steel* that Eurasia is broadly aligned east-west, while Africa and the Americas are aligned north-south. So, in Europe, crops can spread quickly across latitudes because climates are similar. One of the first domesticated crops, einkorn wheat, spread quickly from the Middle East into Europe; it took twice as long for corn to spread from Mexico to what is now the eastern United States. This easy movement along similar latitudes in Eurasia would also have meant a faster dissemination of other technologies such as the wheel and writing, Diamond speculates. The region also boasted domesticated livestock, which could provide meat, wool and motive power in the fields. Blessed with such natural advantages, Eurasia was bound to take off economically.

G John Gallup and Jeffrey Sachs, two US economists, have also pointed out striking correlations between the geographical location of countries and their wealth. They note that tropical countries between 23.45 degrees north and south of the equator are nearly all poor. In



an article for the Harvard International Review, they concluded that “development surely seems to favour the temperate-zone economies, especially those in the northern hemisphere, and those that have managed to avoid both socialism and the ravages of war”. But Masters cautions against geographical determinism, the idea that tropical countries are beyond hope: “Human health and agriculture can be made better through scientific and technological research,” he says, “so we shouldn’t be writing off these countries. Take Singapore: without air conditioning, it wouldn’t be rich.”

Questions 14 - 20

Reading Passage 2 has seven paragraphs, A-G.

Choose the most suitable heading for paragraphs A-G from the list of headings below.

Write the appropriate number, i-x, in boxes 14-20 on your answer sheet.

List of Headings

- i.** The positive correlation between climate and wealth
- ii.** Other factors besides climate that influence wealth
- iii.** Inspiration from reading a book
- iv.** Other researchers’ results do not rule out exceptional cases
- v.** Different attributes between Eurasia and Africa
- vi.** Low temperature benefits people and crops
- vii.** The importance of institution in traditional views
- viii.** The spread of crops in Europe, Asia and other places
- ix.** The best way to use aid
- x.** Confusions and exceptions

- 14.** PARAGRAPH A
- 15.** PARAGRAPH B
- 16.** PARAGRAPH C
- 17.** PARAGRAPH D
- 18.** PARAGRAPH E
- 19.** PARAGRAPH F
- 20.** PARAGRAPH G

Questions 21 - 26

Complete the summary below,

Choose **NO MORE THAN TWO WORDS** from the passage for each answer.

Write your answers in boxes **21-26** on your answer sheet.

Dr. William Masters read a book saying that a(an) **21.** epidemic which struck an American city hundreds of years ago was terminated by a cold frost. And academics found that there is a connection between climate and country's wealth as in the rich but small country of **22.** Yet besides excellent surroundings and climate, one country still needs to improve their **23.** to achieve long prosperity.

Thanks to resembling weather conditions across latitude in the continent of **24.**, crops such as **25.** is bound to spread faster than from South America to the North. Other researchers also noted that even though geographical factors are important, tropical country such as **26.** still became rich due to scientific advancement.

READING PASSAGE 3

You should spend about 20 minutes on **Questions 27-40**, which are based on Reading Passage 3 below.

Musical Maladies

Norman M. Weinberger reviews the latest work of Oliver Sacks on music.

Music and the brain are both endlessly fascinating subjects, and as a neuroscientist specialising in auditory learning and memory, I find them especially intriguing. So I had high expectations of *Musicophilia*, the latest offering from neurologist and prolific author Oliver Sacks. And I confess to feeling a little guilty reporting that my reactions to the book are mixed.

Sacks himself is the best part of *Musicophilia*. He richly documents his own life in the book and reveals highly personal experiences. The photograph of him on the cover of the book—which shows him wearing headphones, eyes closed, clearly enchanted as he listens to Alfred Brendel perform Beethoven's *Pathétique Sonata*—makes a positive impression that is

borne out by the contents of the book. Sacks's voice throughout is steady and erudite but never pontifical. He is neither self-conscious nor self-promoting.

The preface gives a good idea of what the book will deliver. In it Sacks explains that he wants to convey the insights gleaned from the “enormous and rapidly growing body of work on the neural underpinnings of musical perception and imagery, and the complex and often bizarre disorders to which these are prone.” He also stresses the importance of “the simple art of observation” and “the richness of the human context.” He wants to combine “observation and description with the latest in technology,” he says, and to imaginatively enter into the experience of his patients and subjects. The reader can see that Sacks, who has been practicing neurology for 40 years, is torn between the “old-fashioned” path of observation and the new-fangled, high-tech approach: He knows that he needs to take heed of the latter, but his heart lies with the former.

The book consists mainly of detailed descriptions of cases, most of them involving patients whom Sacks has seen in his practice. Brief discussions of contemporary neuroscientific reports are sprinkled liberally throughout the text. Part I, “Haunted by Music,” begins with the strange case of Tony Cicoria, a nonmusical, middle-aged surgeon who was consumed by a love of music after being hit by lightning. He suddenly began to crave listening to piano music, which he had never cared for in the past. He started to play the piano and then to compose music, which arose spontaneously in his mind in a “torrent” of notes. How could this happen? Was the cause psychological? (He had had a near-death experience when the lightning struck him.) Or was it the direct result of a change in the auditory regions of his cerebral cortex? Electro-encephalography (EEG) showed his brain waves to be normal in the mid-1990s, just after his trauma and subsequent “conversion” to music. There are now more sensitive tests, but Cicoria has declined to undergo them; he does not want to delve into the causes of his musicality. What a shame!

Part II, “A Range of Musicality,” covers a wider variety of topics, but unfortunately, some of the chapters offer little or nothing that is new. For example, chapter 13, which is five pages long, merely notes that the blind often have better hearing than the sighted. The most interesting chapters are those that present the strangest cases. Chapter 8 is about “amusia,” an inability to hear sounds as music, and “dysharmonia,” a highly specific impairment of the ability to hear harmony, with the ability to understand melody left intact. Such specific “dissociations” are found throughout the cases Sacks recounts.

To Sacks's credit, part III, “Memory, Movement and Music,” brings us into the under-appreciated realm of music therapy. Chapter 16 explains how “melodic intonation therapy” is

being used to help expressive aphasia patients (those unable to express their thoughts verbally following a stroke or other cerebral incident) once again become capable of fluent speech. In chapter 20, Sacks demonstrates the near-miraculous power of music to animate Parkinson's patients and other people with severe movement disorders, even those who are frozen into odd postures. Scientists cannot yet explain how music achieves this effect.

To readers who are unfamiliar with neuroscience and music behavior, Musicophilia may be something of a revelation. But the book will not satisfy those seeking the causes and implications of the phenomena Sacks describes. For one thing, Sacks appears to be more at ease discussing patients than discussing experiments. And he tends to be rather uncritical in accepting scientific findings and theories.

It's true that the causes of music-brain oddities remain poorly understood. However, Sacks could have done more to draw out some of the implications of the careful observations that he and other neurologists have made and of the treatments that have been successful. For example, he might have noted that the many specific dissociations among components of music comprehension, such as loss of the ability to perceive harmony but not melody, indicate that there is no music center in the brain. Because many people who read the book are likely to believe in the brain localisation of all mental functions, this was a missed educational opportunity.

Another conclusion one could draw is that there seem to be no "cures" for neurological problems involving music. A drug can alleviate a symptom in one patient and aggravate it in another, or can have both positive and negative effects in the same patient. Treatments mentioned seem to be almost exclusively antiepileptic medications, which "damp down" the excitability of the brain in general; their effectiveness varies widely.

Finally, in many of the cases described here the patient with music-brain symptoms is reported to have "normal" EEG results. Although Sacks recognises the existence of new technologies, among them far more sensitive ways to analyze brain waves than the standard neurological EEG test, he does not call for their use. In fact, although he exhibits the greatest compassion for patients, he conveys no sense of urgency about the pursuit of new avenues in the diagnosis and treatment of music-brain disorders. This absence echoes the book's preface, in which Sacks expresses fear that "the simple art of observation may be lost" if we rely too much on new technologies. He does call for both approaches, though, and we can only hope that the neurological community will respond.



Questions 27 - 30

Choose the correct letter, **A, B, C** or **D**.

Write the correct letter in boxes **27-30** on your answer sheet.

27. Why does the writer have a mixed feeling about the book?

- A.** The guilty feeling made him so.
- B.** The writer expected it to be better than it was.
- C.** Sacks failed to include his personal stories in the book.
- D.** Sacks failed to include his personal stories in the book.

28. What is the best part of the book?

- A.** the photo of Sacks listening to music
- B.** the tone of voice of the book
- C.** the autobiographical description in the book
- D.** the description of Sacks's wealth

29. In the preface, what did Sacks try to achieve?

- A.** make terms with the new technologies
- B.** give detailed description of various musical disorders
- C.** explain how people understand music
- D.** explain why he needs to do away with simple observation

30. What is disappointing about Tony Cicoria's case?

- A.** He refuses to have further tests.
- B.** He can't determine the cause of his sudden musicality.
- C.** He nearly died because of the lightning.
- D.** His brain waves were too normal to show anything.

Questions 31 - 36

Do the following statements agree with the views of the writer in Reading Passage 3?

In boxes **31-36** on your answer sheet, write

- | | |
|------------------|---|
| YES | <i>if the statement agrees with the views of the writer</i> |
| NO | <i>if the statement contradicts the views of the writer</i> |
| NOT GIVEN | <i>if it is impossible to say what the writer thinks about this there is no information on this</i> |

31. It is difficult to give a well-reputable writer a less than favorable review.
32. Beethoven's Pathétique Sonata is a good treatment for musical disorders.
33. Sacks believes technological methods is not important compared with observation when studying his patients.
34. It is difficult to understand why music therapy is undervalued.
35. Sacks should have more skepticism about other theories and findings.
36. Sacks is impatient to use new testing methods.

Questions 37 - 40

Complete each sentence with the correct ending, **A-F**, below.

Write the correct letter, **A-F**, in boxes **37-40** on your answer sheet.

37. The dissociations between harmony and melody
38. The study of treating musical disorders
39. The EEG scans of Sacks's patients
40. Sacks believes testing based on new technologies.

- | | |
|---|---|
| A | show no music-brain disorders. |
| B | indicates that medication can have varied results. |
| C | is key for the neurological community to unravel the mysteries. |
| D | should not be used in isolation. |
| E | indicate that not everyone can receive good education. |
| F | show that music is not localised in the brain. |

