

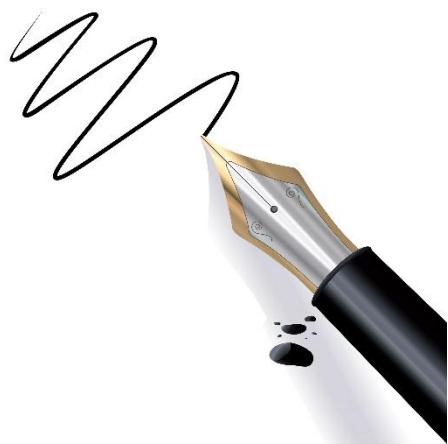


BOOST YOUR VOCABULARY

• Second Edition •

Help you learn the most common academic words from

CAMBRIDGE IELTS 11



Cuốn sách này là của

Điểm mục tiêu cho phần thi IELTS Reading trước 31/12/2019 là:

Để làm được điều này, mình sẽ đọc cuốn sách này ít nhất ... lần/tuần.

LỜI GIỚI THIỆU

Chào các bạn,

Các bạn đang cầm trên tay cuốn “Boost your vocabulary” được biên soạn bởi mình và các bạn trong team IELTS Family. Cuốn sách được viết nhằm mục đích giúp các bạn đang muốn cải thiện vốn từ vựng cho phần thi Reading trong IELTS. Sách được viết dựa trên nền tảng bộ Cambridge IELTS của Nhà xuất bản Đại học Cambridge – Anh Quốc.

Trong quá trình thực hiện, mình và các bạn trong nhóm đã dành tương đối nhiều thời gian để nghiên cứu cách thức đưa nội dung sao cho khoa học và dễ dùng nhất với các bạn đọc. Tuy vậy, cuốn sách không khỏi có những hạn chế nhất định. Mọi góp ý để cải thiện nội dung cuốn sách mọi người xin gửi về email thangwrm@gmail.com

Trân trọng cảm ơn,

Đinh Thắng

TÁC GIẢ & NHÓM THỰC HIỆN

Đinh Thắng



Giáo viên dạy IELTS tại Hà Nội từ năm 2012. Chứng chỉ ngành ngôn ngữ Anh, đại học Brighton, Anh Quốc, 2016. Từng làm việc tại tổ chức giáo dục quốc tế Language Link Việt Nam (2011-2012). Đạt học bổng bán phần (75%) của khóa học thạc sĩ năm trong chương trình Erasmus Mundus.

Facebook: [dinhthangielts](#) | Website: www.ielts-dinhthang.com

... cùng các bạn **Dương Nguyễn, Luyện Linh, Thu Anh, Đức Duy, Thu Hằng, Xuân Anh, Thuỳ An**.

03 LÝ DO TẠI SAO NÊN HỌC TỪ VỰNG THEO CUỐN SÁCH NÀY

1. Không còn mất nhiều thời gian cho việc tra từ

Các từ học thuật (academic words) trong sách đều có kèm giải thích hoặc từ đồng nghĩa. Bạn tiết kiệm được đáng kể thời gian gõ từng từ vào từ điển và tra. Chắc chắn những bạn thuộc dạng “không được chăm chỉ lắm trong việc tra từ vựng” sẽ thích điều này.

2. Tập trung bộ nhớ vào các từ quan trọng

Mặc dù cuốn sách không tra hết các từ giúp bạn nhưng sách đã chọn ra các từ quan trọng và phổ biến nhất giúp bạn. Như vậy, bạn có thể tập trung bộ nhớ vào các từ này, thay vì phải mất công nhớ các từ không quan trọng. Bạn nào đạt Reading từ 7.0 trở lên đều sẽ thấy rất nhiều trong số các từ này thuộc loại hết sức quen thuộc

3. Học một từ nhớ nhiều từ

Rất nhiều từ được trình bày theo synonym (từ đồng nghĩa), giúp các bạn có thể xem lại và học thêm các từ có nghĩa tương đương hoặc giống như từ gốc. Có thể nói, đây là phương pháp học hết sức hiệu quả vì khi học một từ như impact, bạn có thể nhớ lại hoặc học thêm một loạt các từ nghĩa tương đương như significant, vital, imperative, chief, key. Nói theo cách khác thì nếu khả năng ghi nhớ của bạn tốt thì cuốn sách này giúp bạn đầy số lượng từ vựng lên một cách đáng kể.

**TÍNH ĐẾN NGÀY 19/03/2019, ĐÃ CÓ ÍT NHẤT 02 BẠN ĐẠT 9.0 READING
VÀ 08 BẠN ĐẠT 8.5 READING NHỜ SỬ DỤNG BỘ SÁCH BOOST YOUR
VOCABULARY. VÀ CON SỐ NÀY CHẮC CHẮN SẼ CÒN TĂNG LÊN. BẠN
CŨNG QUYẾT TÂM ĐẠT ĐƯỢC KẾT QUẢ CAO NHƯ VẬY CHỨ?**

05 ĐIỂM MỚI TRONG PHIÊN BẢN 02 (Second edition)

1. Dễ dàng ôn tập các từ đã học

Các từ đã xuất hiện trong các cuốn Boost Your Vocabulary 9 sẽ được **highlight màu đỏ**, còn các từ đã xuất hiện trong cuốn Boost Your Vocabulary 10 sẽ được **highlight màu xanh**. Bằng cách này, các bạn đã học cuốn 9 và cuốn 10 sẽ liên tục gặp lại các từ đã học và như vậy, từ vựng sẽ ngấm một cách tự nhiên.

2. Gặp lại các từ đã học một cách tự nhiên qua các bài báo được gợi ý

Cuối cuốn sách, nhóm biên soạn đã bổ sung thêm một số các bài báo có nội dung liên quan tới các bài đọc trong cuốn Cambridge IELTS 11. Ví dụ passage 1 test 1 Cambridge 11 có bài crop-growing skyscrapers thì cũng sẽ có bài báo với chủ đề tương tự. Đọc các bài báo này giúp bạn tăng tốc độ đọc hiểu các chủ đề đã từng đọc trước đó. Thêm nữa, **một lượng 15-30 từ vựng học thuật đã từng xuất hiện trong các cuốn Cambridge IELTS trước cũng được in đậm** và chú thích bằng từ đồng nghĩa. Đây là một cơ hội nữa để bạn ôn lại những từ đã gặp một cách hết sức tự nhiên.

3. List các từ highlight được mở rộng thành 3.000 từ

Các từ được in đậm và gạch chân ở cột bên trái là các từ thuộc **list 3.000 academic words** (thay vì là list 570 từ, khá cơ bản, đã được giới thiệu trong phiên bản trước)– Đây là **list tập hợp 3000 từ phổ biến nhất dùng trong các tài liệu sách báo học thuật** tiếng Anh. Trong lúc học, các bạn hãy dành thêm sự tập trung vào các từ này vì tần suất lặp lại của chúng thuộc loại từ trung bình đến rất cao.

4. Học từ qua gốc từ (Word Roots)

Việc biết và hiểu về một số các gốc từ sẽ giúp ích rất nhiều cho các bạn trọng việc nhớ nghĩa cũng như đoán nghĩa của từ. Nhóm đã giải thích các từ có gốc từ đi kèm xuyên suốt các bài đọc và tổng hợp các gốc từ này ở cuối sách.

Ví dụ: Từ replenish có thể nhiều bạn không biết. Tuy nhiên, khi biết gốc từ của nó là - plen = full (đầy) thì có thể kết hợp với ngữ cảnh của câu đã cho và đoán nghĩa.

Câu tiếng Anh gốc trong một đoạn văn nói về biến đổi khí hậu (Test 1 – passage 3): The reasoning is that if you replenish the ice sheets...

Câu dịch: Lý lẽ cho việc này đó là nếu bạn các vùng băng.

Ở đây có thể đoán replenish là động từ và nghĩa thích hợp với gốc từ -plen là **lấp đầy**. Như vậy, có thể thấy học gốc từ chắc chắn là một trong những cách rất tuyệt vời để học từ vựng.

5. Bổ sung hình ảnh minh họa cho mỗi bài

Mỗi bài đọc đều được bổ sung hình ảnh minh họa. Nhóm biên soạn sách hy vọng điều này sẽ giúp cho các bạn có ít nhiều cảm hứng để đọc cuốn sách này.

HƯỚNG DẪN SỬ DỤNG SÁCH

ĐỐI TƯỢNG SỬ DỤNG SÁCH

Nhìn chung các bạn cần có mức độ từ vựng tương đương 5.5 trở lên (theo thang điểm 9 của IELTS), nếu không có thể sẽ gặp nhiều khó khăn trong việc sử dụng sách này.

CÁC BƯỚC SỬ DỤNG

CÁCH 1: LÀM TEST TRƯỚC, HỌC TỪ VỰNG SAU

Bước 1: Bạn in cuốn sách này ra. Nên in bìa màu để có thêm động lực học. Cuốn sách được thiết kế cho việc đọc trực tiếp, không phải cho việc đọc online nên bạn nào đọc online sẽ có thể thấy khá bất tiện khi tra cứu, đối chiếu từ vựng

Bước 2: Tìm mua cuốn Cambridge IELTS (6 cuốn mới nhất từ 6-13) của Nhà xuất bản Cambridge để làm. Hãy cẩn thận đừng mua nhầm sách lậu. Sách của nhà xuất bản Cambridge được tái bản tại Việt Nam thường có bìa và giấy dày, chữ rất rõ nét.

Bước 3: Làm một bài test hoặc passage bất kỳ trong bộ sách trên. Ví dụ passage 1, test 1 của Cambridge IELTS 11.

Bước 4: Đối chiếu với cuốn sách này, bạn sẽ lọc ra các từ vựng quan trọng cần học.

Ví dụ passage 1, test 1 của Cambridge IELTS 11, bài về Crop- growing skyscrapers: Bạn sẽ thấy

4.1 Cột bên trái là bản text gốc, trong đó bôi đậm các từ học thuật - **academic word**

4.2 **Cột bên phải chứa các từ vựng này theo kèm định nghĩa (definition) hoặc từ đồng nghĩa (synonym)**

Các từ đã xuất hiện trong các cuốn Boost Your Vocabulary 9 được **highlight màu đỏ**, còn các từ đã xuất hiện trong cuốn Boost Your Vocabulary 10 được **highlight màu xanh**.



A unique engineering achievement

The Falkirk Wheel in Scotland is the world's first and only **rotating** boat lift. Opened in 2002, it is **central** to the ambitious £84.5m Millennium Link project to **restore navigability across** Scotland by reconnecting the historic waterways of the Forth & Clyde and Union Canals.

từ nằm trong list 4000 từ

The major challenge of the project lies in the fact that the Forth & Clyde Canal is situated 35 metres below the level of the Union Canal. Historically, the two canals had been joined near the town of Falkirk by a sequence of 11 locks, enclosed sections of canal in

Từ đã giới thiệu trong cuốn Cam9

Rotating= turning in a circle, especially around a fixed point

Central= vital, essential, chief, most important, crucial, significant

Restore= Repair, rebuild

Navigability= the degree to which an area of water is deep, wide, or safe enough for a boat to go through Từ được giải thích kèm gốc từ (word root)

Sequence=chain, series (sequ=follow .i.e consequence, subsequent)

Enclosed=surrounded by walls, objects, or structures Từ đã giới thiệu trong cuốn Cam10

Dismantle= take to pieces, take apart

CÁCH 2: HỌC TỪ VỰNG TRƯỚC, ĐỌC TEST SAU

Bước 1: Bạn in cuốn sách này ra. Nên in bìa màu để có thêm động lực học. Cuốn sách được thiết kế cho việc đọc trực tiếp, không phải cho việc đọc online nên bạn nào đọc online sẽ có thể thấy khá bất tiện khi tra cứu, đổi chiểu từ vựng

Bước 2: Đọc cột bên trái như đọc báo. Duy trì hàng ngày. Khi nào không hiểu từ nào thì xem nghĩa hoặc synonym của từ đó ở cột bên phải. Giai đoạn này giúp bạn phát triển việc đọc tự nhiên, thay vì đọc theo kiểu làm test. Bạn càng hiểu nhiều càng tốt. Cố gắng nhớ từ theo ngữ cảnh.

Bước 3: Làm một bài test hoặc passage bất kỳ trong bộ sách Cambridge IELTS. Ví dụ bạn đọc xong cuốn Boost your vocabulary 11 này thì có thể quay lại làm các test trong cuốn 9 hoặc 10 chẳng hạn. **Làm test xong thì cố gắng phát hiện các từ mà bạn đã học trong cuốn 11.** Bạn nào có khả năng ghi nhớ tốt chắc chắn sẽ gặp lại rất nhiều từ đã học. Bạn nào có khả năng ghi nhớ vừa phải cũng sẽ gặp lại không ít từ.

Ngoài ra, hãy đọc các bài báo cuối cuốn sách này. Như đã giới thiệu ở trên, một lượng 15-30 từ vựng học thuật đã từng xuất hiện trong các bộ Cambridge IELTS 8-13 cũng được in đậm và chú thích bằng từ đồng nghĩa.

TEST 1

READING PASSAGE 1



By the year 2050, nearly 80% of the Earth's population will live in **urban** centres. Applying the most **conservative** estimates to **current demographic** trends, the human population will increase by about three billion people by then. An estimated 109 hectares of new land (about 20% larger than Brazil) will be needed to grow enough food to feed them, if traditional farming methods continue as they are practised today. At present, throughout the world, over 80% of the land that is suitable for **raising crops** is in use. Historically, some 15% of that has been laid waste by poor management **practices**. What can be done to **ensure** enough food for the world's population to live on? The concept of indoor farming is not new, since **hothouse** production of tomatoes and other produce

Urban= city, inner-city, metropolitan, town # rural, suburban (*urb=city*. i.e. **suburb**, **urbanity**) 'ɜ:bən

Conservative=be likely to be less than the real amount. kən'sɜ:vətɪv

Current= present, existing, recent. 'kʌrənt

Demographic= relating to the population and groups of people in it (*dem=people*, i.e: **democracy**) demə'græfɪk

raise crops = grow plants such as wheat, rice, or fruits... reɪz krɔps

Practice= habit, tradition, or custom 'prækts

Ensure= make sure, confirm, make certain. ɪn'ʃʊə

Hothouse = a heated glass building in which plants are grown. 'hoθhaʊs

has been in **vogue** for some time. What is new is the **urgent** need to **scale up** this technology to **accommodate** another three billion people. Many believe an entirely new approach to indoor farming is required, **employing cutting-edge** technologies. One such **proposal** is for the '**Vertical Farm**'. The concept is of **multi-storey** buildings in which food crops are grown in environmentally controlled conditions. Situated in the heart of urban centres, they would **drastically** reduce the amount of transportation required to bring food to consumers. Vertical farms would need to be efficient, cheap to construct and safe to operate. If successfully **implemented**, **proponents** claim, vertical farms offer the promise of **urban renewal**, **sustainable** production of a safe and varied food supply (through **year-round** production of all crops), and the eventual repair of ecosystems that have been **sacrificed** for **horizontal farming**.

It took humans 10,000 years to learn how to grow most of the crops we now **take for granted**. Along the way, we **despoiled** most of the land we worked, often turning **verdant**, natural ecozones into **semi-arid** deserts. Within that same time frame, we **evolved into** an urban species, in which 60% of the human population now lives vertically in cities. This means that, for the majority, we humans have **shelter** from the elements, yet we **subject our food-bearing plants to the rigours of** the great outdoors and can do no more than hope for a good weather year. However, more often than not now, due to a rapidly changing climate, that is not what

Vogue= fashion, trend, raze/fad. *vəʊg*
Urgent= very important and needing to be dealt with immediately. *'ɜ:gnt*
Scale up= increase, expand, develop. *skel ʌp*
Accommodate= to give someone what is needed. *ə'kɒmədeɪt*
Employ = use, utilize, exploit, apply. *ɪm'plɔɪ*
Cutting-edge= modern, newest, most advanced. *'kʌtɪŋ edʒ*
Proposal= suggestion, application, plan. *prə'pəʊzəl*
Vertical farming= an idea for a way of farming in which plants are grown or animals are kept in tall structures with many levels. *'vɜ:tɪkl 'fa:mɪŋ*
Multi-storey= many floors. *mʌlti - 'sto:rɪ*
Drastically=radically, extremely, significantly. *'dra:stɪkli*
Implement= fulfill, put into practice, take action. *'ɪmplɪment*
Proponent= advocate, supporter >< opponent. *prə'pənənt*
Urban renewal= the improvement and sometimes replacement of buildings in a city, (*re-*= do again, i.e: *rebuild*, *resuable..*) *'ɜ:bən rə'nju:əl*
Sustainable= environmentally friendly, eco-friendly, green. *sə'steɪnəbl*
year-round= happening or continuing through the whole year. *'jeə - 'raʊnd*
Sacrifice= decide not to have something in order to get something that is more important. *'sækrfəs*
Horizontal farming = traditional farming, crops are planted at only one level >< vertical farmig. *hɔ:r'zontl 'fa:mɪŋ*

Take sb/st for granted= do not realize or show that sb/st is greatful. *teɪk 'sʌmbədi 'sʌmθɪŋ fə'gra:ntrɪ*
Despoil=damage, spoil, ruin (*de-*= reduce, i.e *decline*) *dɪ'spoɪl*
Verdant= lush, green, grassy. *'vɜ:dənt*
Semi-arid= having little rain but not completely dry (*Semi-*= half, i.e: *semi-natural*) *'semi - 'ærɪd*
Evolve= develop gradually, change, grow (*vol-* = turn i.e: *revolt*, *evolution*) *ɪ'velv*
Shelter= cover, protection from danger. *'ʃeltə*
Subject smt to smt= cause smt to experience smt, especially smt unpleasant *sʌb'dʒekt 'sʌmθɪŋ tu 'sʌmθɪŋ*
Food-bearing plants= plants provide food such as tomato, vegetable. *fu:d - 'beərɪŋ pla:nts*
The rigours of something= the unpleasant or severe conditions of smth. *ðə 'rɪgəz əv 'sʌmθɪŋ*

happens. Massive floods, long **droughts**, **hurricanes** and severe **monsoons take their toll** each year, destroying millions of tons of valuable crops.

The supporters of vertical farming claim many potential advantages for the system. For instance, crops would be produced all year round, as they would be kept in artificially controlled, **optimum** growing conditions.

There would be no weather-related crop **failures** due to droughts, floods or **pests**. All the food could be grown organically, **eliminating** the need for **herbicides**, **pesticides** and **fertilisers**. The system would greatly reduce the **incidence** of many **infectious** diseases that are acquired at the agricultural **interface**. Although the system would consume energy, it would return energy to the grid via methane generation from **composting** non **edible** parts of plants. It would also dramatically reduce fossil fuel use, by cutting out the need for **tractors**, **ploughs** and shipping.

A major **drawback** of vertical farming, however, is that the plants would require **artificial** light. Without it, those plants nearest the windows would be **exposed** to more sunlight and grow more quickly, reducing the efficiency of the system. Single-storey greenhouses have the benefit of natural overhead light; even so, many still need artificial lighting.

A multi-storey facility with no natural overhead light would require far more. Generating enough light could be **prohibitively** expensive, unless cheap, renewable energy is available, and this appears to be rather a future **aspiration** than a **likelihood** for the near future.

Drought= a long period of dry weather when there is not enough water *draʊt*

Hurricane= cyclone, typhoon, tornado, storm *'hʌrɪkən*

Monsoon= heavy rain, rains. *mən'su:n*
Take their toll= to have a very bad effect on smt or smb over a long period of time *'teɪk ðəə təʊl*

Optimum= most favorable, best, greatest (*optim*= best, i.e: **optimal**) *ɒptəməm*

Failure = not successful. *'feɪljur*

Pest= an insect or small animal that is harmful or damages crops *pest*

Eliminate = remove, eradicate, put an end to, get rid of. *ɪ'lɪməneɪt*

Herbicide=a substance used to kill unwanted plants (*herb*=grass, i.e **herbal**, **herbivore** # *cid*=kill .i.e **pesticide**) *'hɜ:bɪsaɪd*

Pesticide= a chemical substance used to kill insects and small animals that destroy crops(*cid*=kill) *'pestsاید*

Fertilizer= a substance that is put on the soil to make plants grow *'fɜ:təlaɪzə*

Incidence= occurrence, frequency, rate. *'ɪnsɪdəns*

Infectious=, able to pass a disease from one person, animal, or plant to another *ɪn'fekʃəs*

Interface=edge, border, line (*inter* = among, between, i.e: **intersection**) *'ɪntəfeɪs*

Compost= to collect and store plant material so it can decay and be added to soil to improve its quality. *'kɒmpɒst*

Edible=suitable to be eaten, not poisonous (*ed*= eat) *'eðəbəl*

Tractor= a strong vehicle with large wheels, used for pulling farm machinery (*tract*=pull, draw. i.e: **traction**) *'trækter*

Plough= a piece of farm equipment used to turn over the earth so that seeds can be planted *plow*

Drawback= disadvantage, downside, negative. *'drə:bæk*

Artificial= synthetic, non-natural, man-made *ɑ:tɪ'fɪʃəl*

Expose= show, reveal, display (*ex*= out, i.e: **exterior**, **exclude**) *ɪk'speʊz*

Prohibitively= at a very high price that does not seem reasonable. *prə'hɪbɪtɪvɪ*

Aspiration= ambition, goal, aim, target *æspə'reɪʃən*

Likelihood= probability, possibility *'laɪklɪhod*

One **variation** on vertical farming that has been developed is to grow plants in **stacked trays** that move on rails. Moving the trays allows the plants to get enough sunlight. This system is already in operation, and works well within a single-storey greenhouse with light reaching it from above: it is not certain, however, that it can be made to work without that **overhead** natural light.

Vertical farming is an attempt to **address** the undoubtedly problems that we face in producing enough food for a growing population. At the moment, though, more needs to be done to reduce the **detrimental** impact it would have on the environment, particularly as regards the use of energy. While it is possible that much of our food will be grown in **skyscrapers** in future, most experts currently believe it is far more likely that we will simply use the space available on urban rooftops.

Variation = difference (**vari**= vary, i.e: **variety**) *veəri' eɪʃən*

Stacked trays = Having sections that are arranged vertically. *stækɪd treɪz*

Overhead = above, upstairs >< below
əʊvə' hed

Address= tackle, deal with *ə'dres*

Detrimental= harmful, damaging, negative
detrə'mentl

Skyscraper= a very tall modern city building *'skaɪskreɪpə*

READING PASSAGE 2



The Falkirk Wheel

A unique engineering achievement

The Falkirk Wheel in Scotland is the world's first and only **rotating** boat lift. Opened in 2002, it is **central** to the ambitious £84.5m Millennium Link project to **restore** navigability across Scotland by reconnecting the historic waterways of the Forth & Clyde and Union Canals.

The major challenge of the project lies in the fact that the Forth & Clyde Canal is situated 35 metres below the level of the Union Canal. Historically, the two canals had been joined near the town of Falkirk by a **sequence** of 11 locks - **enclosed** sections of canal in which the water level could be raised or lowered - that stepped down across a distance of 1.5 km. This had been **dismantled** in 1933, thereby breaking the link. When the project was **launched** in 1994, the British Waterways **authority** were keen to create a dramatic twenty-first-century **landmark** which would not only be

Rotating= turning in a circle, especially around a fixed point *rəʊ'teɪtɪŋ*

Central= vital, essential, chief, most important, crucial, significant *'sentrəl*

Restore= Repair, rebuild *rɪ'sto:*

Navigability= the degree to which an area of water is deep, wide, or safe enough for a boat to go through *'nævəgəbəl*

Sequence=chain, series (**sequ**=follow .i.e *consequence, subsequent*) *'si:kwəns*

Enclosed=surrounded by walls, objects, or structures *ɪn'kləʊz*

Dismantle= take to pieces, take apart *dɪs'mæntl*

Launch= start *ləʊntʃ*

Authority= government department *ɔ:'θorəti*

Landmark= a building or place that is easily recognized *'lændma:k*

a **fitting commemoration** of the Millennium, but also a lasting symbol of the economic regeneration of the region.

Numerous ideas were **submitted** for the project, including concepts ranging from rolling eggs to tilting tanks, from **giant seesaws** to overhead **monorails**. The eventual winner was a plan for the huge rotating steel boat lift which was to become The Falkirk Wheel. The unique shape of the structure is claimed to have been inspired by various sources, both manmade and natural, most **notably** a Celtic double headed **axe**, but also the vast turning **propeller** of a ship, the **ribcage** of a whale or the **spine** of a fish.

The various parts of The Falkirk Wheel were all constructed and **assembled**, like one giant toy building set, at Butterley Engineering's Steelworks in Derbyshire, some 400 km from Falkirk. A team there carefully assembled the 1,200 tonnes of steel, **painstakingly** fitting the pieces together to an accuracy of just 10 mm to ensure a perfect final fit. In the summer of 2001, the structure was then dismantled and transported on 35 **lorries** to Falkirk, before all being **bolted** back together again on the ground, and finally lifted into position in five large sections by **crane**. The Wheel would need to **withstand immense** and constantly changing stresses as it rotated, so to make the structure more **robust**, the steel sections

Fitting= suitable or right for a particular occasion.
'fɪtɪŋ

Commemoration= something that makes you remember and respect someone important or an important event in the past.

(**memor**=remember .i.e **memorable**, **memory**)
kə'memərə'refən

Submit= offer, propose, suggest(**mit**=send .i.e **emit**, **transmit**) seb'mit

Giant= extremely large 'dʒænt

Seesaw= a piece of equipment that children play on, made of a board that is balanced in the middle, so that when one end goes up the other goes down 'si:səʊ:

Monorail= a railway system that uses a single rail, usually high above the ground

(**mono**= one, single, ig: **monopoly**, **monolingual**) 'mənərəl

Notably= especially, most important 'nəʊtebli

Axe= a tool that has a heavy iron or steel blade at the end of a long wooden handle, used for cutting wood æks

Propeller= a piece of equipment consisting of two or more blades that spin around, which makes an aircraft or ship move pre'pelə

Ribcage=the structure of ribs that protects your heart and lungs in your chest 'rɪbkeɪdʒ

Spine=the line of bones down the centre of the back that provides support for the body spain

Assemble= bring together, put together, gather e'sembəl

Painstakingly =carefully 'peɪnzteɪkɪŋli

Lorry= a large vehicle for carrying heavy goods 'lɔri

Bolt= fasten something with a metal pin or bar bəʊlt

Crane= hoist (a large tall machine used by builders for lifting heavy things) kreɪn

Withstand= resist, stand up to= to be strong enough to remain unharmed by something such as great heat, cold, pressure, etc. wið'stænd

Immense= extremely large, enormous i'mens

Robust= strong, tough rə'bʌst

were bolted rather than **welded** together. Over 45,000 bolt holes were matched with their bolts, and each bolt was hand-tightened.

The Wheel **consists** of two sets of opposing axe-shaped arms, **attached** about 25 metres apart to a fixed central spine. Two **diametrically** opposed water-filled '**gondolas**', each with a **capacity** of 360,000 litres, are fitted between the ends of the arms. These gondolas always weigh the same, whether or not they are carrying boats. This is because, according to Archimedes' principle of displacement, **floating** objects **displace** their own weight in water. So when a boat enters a gondola, the amount of water leaving the gondola weighs exactly the same as the boat. This keeps the Wheel balanced and so, despite its **enormous** mass, it rotates through 180° in five and a half minutes while using very little power. It takes just 1.5 kilowatt-hours (5.4 MJ) of energy to rotate the Wheel -roughly the same as boiling eight small **domestic kettles** of water.

Boats needing to be lifted up enter the **canal basin** at the level of the Forth & Clyde Canal and then enter the lower gondola of the Wheel. Two **hydraulic** steel gates are raised, so as to **seal** the gondola off from the water in the canal basin. The water between the gates is then **pumped out**. A hydraulic **clamp**, which prevents the arms of the Wheel moving while the gondola is docked, is removed, allowing the Wheel to turn. In the central machine room an **array** of ten hydraulic motors then begins to rotate the central **axle**. The axle connects to the outer arms of the Wheel, which begin to rotate at a speed of 1/8 of a **revolution** per minute. As the wheel rotates, the gondolas are kept in the upright position by a simple gearing system. Two eight-metre-wide **cogs orbit** a fixed inner cog of the same width, connected by two smaller cogs travelling in the opposite direction to the outer cogs -

Weld= to join pieces of metal together by heating **weld**

Tightened= make something less easy to move 'taɪtnd

Consist of sth= to be formed from the people or things mentioned kən'sɪst əv 'sʌmθɪŋ

Attach= to fasten or connect one object to another ə'tæʃ

Diametrically= completely dærə'metrɪkli

Gondola= a long narrow boat with a flat bottom and high points at each end, used on the canals in Venice in Italy 'gondələ

Capacity=the number of things or people that a container or space can hold kə'pæsəti

Float= to stay on the surface of a liquid and not sink fləʊt

Displace= put out of place, move drs'pleɪs

Enormous=extremely large or great ɪ'nɔ:məs

Domestic= relating to the home or family də'mestɪk

Kettles= a container with a lid, handle and a spout, used for boiling water 'ketl

Canal= a channel of water kə'næl

Basin= an area of land around a large river with streams running down into it 'beɪsən

Hydraulic= moved or operated by the pressure of water or other liquid

(*hydr*=water .i.e **hydrogen**, **hydrogen**) haɪ'drolik

Seal= shut out, close up, stop entering sɪ:l

Pumped out=to remove water or other liquid from something using a pump: pʌmp't aut

Clamp= a piece of equipment for holding things together klæmp

Array= a large group of things is shown in an attractive way ə'reɪ

Axle= a bar connected to the centre of a circular object such as a wheel that allows or causes it to turn, especially one connecting two wheels of a vehicle 'æksl

Revolution= a complete circular movement around a point revə'lju:ʃən

Cog= a wheel with small bits sticking out around the edge that fit together with the bits of another wheel as they turn in a machine kɒg

Orbit= to move in a curved path around a much larger object 'ɔ:bit

so ensuring that the gondolas always remain level. When the gondola reaches the top, the boat passes straight onto the **aqueduct** situated 24 metres above the canal basin.

The remaining 11 metres of lift needed to reach the Union Canal is achieved by means of a pair of locks. The Wheel could not be constructed to **elevate** boats over the full 35-metre difference between the two canals, owing to the **presence** of the historically important Antonine Wall, which was built by the Romans in the second century AD. Boats travel under this wall via a **tunnel**, then through the locks, and finally on to the Union Canal.

Aqueduct= a structure like a bridge, that carries water across a river or valley 'ækwədʌkt

Elevate= raise, lift, make higher (*lev=rise*. i.e *elevation, elevator*) 'elvət

The presence of something= the fact that someone or something is in a place ðə 'prezns əv 'sʌmθɪŋ

Tunnel= a passage that has been dug under the ground for cars, trains etc to go through 'tʌnl

READING PASSAGE 3



Reducing the Effect of Climate Change

Mark Rowe reports on the increasingly ambitious geo-engineering projects being explored by scientists

A

Such is our dependence on fossil fuels, and such is the volume of carbon dioxide already released into the atmosphere, that many experts agree that significant global warming is now inevitable. They believe that the best we can do is keep it at a reasonable level, and at present the only serious option for doing this is cutting back on our carbon emissions. But while a few countries are making major strides in this regard, the majority are having great difficulty even stemming the rate of increase, let alone reversing it. Consequently, an increasing number of scientists are beginning to

Geo-engineering= the study of finding ways to change the earth's atmosphere in order to reduce global warming *dʒi:əʊndʒɪ'niərɪŋ*

Ambitious= determined to be successful, rich, powerful, etc. *æm'bɪʃəs*

Dependence on= the situation in which you need something all the time to continue existing *dɪ'pendəns ɒn*

Fossil fuel= a fuel such as coal or oil that is produced by the very gradual decaying of animals or plants over millions of years *'fɒsl'fju:əl*

Volume=capacity, size, extent *'volju:m*

Atmosphere= air in environment *'ætməsferə*

Inevitable= unavoidable, certain *ɪ'nevətəbəl*

Reasonable = acceptable, appropriate *'ri:zənəbəl*

Emission= release, discharge *ɪ'miʃən*

Stride= advance, progress, development *straɪd*

Stem= stop *stêm*

Reverse= to change something, such as a decision, judgment, or process so that it is the opposite of what it was before (**re**=again, back.i.e *react, recede*) *ri'ves*

explore the **alternative** of geo-engineering — a term which generally refers to the **intentional** large-scale **manipulation** of the environment. According to its **proponents**, geo-engineering is the **equivalent** of a **backup** generator: if Plan A - reducing our dependency on fossil fuels - fails, we require a Plan B, employing **grand schemes** to slow down or reverse the process of global warming.

B

Geo-engineering; has been shown to work, at least on a small **localised** scale. For decades, MayDay **parades** in Moscow have taken place under clear blue skies, **aircraft** having **deposited** dry ice, silver iodide and cement powder to **disperse** clouds. Many of the schemes now suggested look to do the opposite, and reduce the amount of sunlight reaching the planet. The most **eye-catching** idea of all is suggested by Professor Roger Angel of the University of Arizona. His scheme would **employ** up to 16 trillion **minute** spacecraft, each weighing about one gram, to form a **transparent**, sunlight-refracting sunshade in an **orbit** 1.5 million km above the Earth. This could, argues Angel, reduce the amount of light reaching the Earth by two per cent.

C

The majority of geo-engineering projects so far carried out — which include planting forests in deserts and **depositing** iron in the ocean to **stimulate** the growth of algae - have focused on achieving a general cooling of the Earth. But some look specifically at **reversing** the melting at the poles, particularly the Arctic. The reasoning is that if you **replenish** the ice sheets and frozen waters of the high latitudes, more light will be **reflected** back into space, so reducing the warming of the oceans and atmosphere.

D

The concept of releasing **aerosol sprays** into the **stratosphere** above the Arctic has been **proposed** by several scientists. This would involve using sulphur or hydrogen sulphide aerosols so that sulphur dioxide

Alternative= an alternative idea, plan etc is different from the one you have and can be used instead ɔ:l'tɜ:nətɪv

Intentional= planned, intended ɪn'tenʃənəl

Manipulation= the action of influencing or controlling something mənɪpjʊ'leɪʃn

Proponent= advocate, supporter prə'pənənt

Equivalent= parallel, similar (**equ=equal**.i.e **equate**, **equilibrium**) ɪ'kwɪvələnt

Backup= smt that you can use to replace something that does not work or is lost 'bækʌp

Grand scheme= important and large plan 'grænd skɪ:m

Localize= to limit smt to a particular area 'ləukəlaɪz

Parade= a public celebration when musical bands, brightly decorated vehicles etc move down the street pe'rɛd

Aircraft= a plane or other vehicle that can fly 'eəkra:fɪt

Deposit= place, drop, put down dɪ'pozɪt

Disperse= melt away, get rid of dɪ'spɜ:s

Eye-catching= attractive, noticeable 'aɪ kætʃɪŋ

Employ= use ɪm'plɔɪ

Minute= tiny, little, small 'mɪnɪt

Transparent= see-through, clear træn'spærənt

Orbit= a curved path followed by a planet or an object as it moves around another planet, star, moon, etc. 'ɔ:bɪt

Deposit= put, place, lay dɪ'pozɪt

Stimulate= quicken, speed up, promote 'stɪmjuleɪt

Reverse= to change something, such as the direction, order, or process, so that it is the opposite of what it was before rɪ'ves:

Replenish= refill (**plen=full** .i.e **plenty**) rɪ'plenɪʃ

Reflect= to show the image of smb/smt on the surface of smt (**fle=bend**.i.e **reflex**, **flexible**) rɪ'flekt

Aerosol= a metal container in which liquids are kept under pressure and forced out in a spray 'eərəsɒl

Spray= liquid which is forced out of a special container in a stream of very small drops spreɪ

Stratosphere= a very high position 'strætəsfer

Propose= suggest, recommend prə'pəuz

would form clouds, which would, in turn, lead to a global **dimming**. The idea is modelled on historic volcanic **explosions**, such as that of Mount Pinatubo in the Philippines in 1991, which led to a short-term cooling of global temperatures by 0.5 °C. Scientists have also **scrutinised** whether it's possible to **preserve** the ice sheets of Greenland with **reinforced high-tension** cables, preventing icebergs from moving into the sea. Meanwhile in the Russian Arctic, geo-engineering plans include the planting of millions of birch trees. Whereas the regions native **evergreen** pines shade the snow and absorb radiation, birches would **shed** their leaves in winter, thus enabling radiation to be reflected by the snow. **Re-routing** Russian rivers to increase cold water flow to ice-forming areas could also be used to slow down warming, say some climate scientists.

E

But will such schemes ever be **implemented**? Generally speaking, those who are most **cautious** about geo-engineering are the scientists involved in the research. Angel says that his plan is 'no **substitute** for developing renewable energy: the only **permanent** solution'. And Dr Phil Rasch of the US-based Pacific Northwest National Laboratory is equally **guarded** about the role of geo-engineering: 'I think all of us agree that if we were to end geo-engineering on a given day, then the planet would return to its pre-engineered condition very rapidly, and probably within ten to twenty years. That's certainly something to worry about.'

F

The US National Center for Atmospheric Research has already suggested that the proposal to **inject** sulphur into the atmosphere might affect rainfall patterns across **the tropics** and the Southern Ocean. 'Geo-engineering plans to inject stratospheric aerosols or to seed clouds would act to cool the planet, and act to increase the extent of sea ice,' says Rasch. 'But all the models suggest some impact on the **distribution** of **precipitation**'.

G

A further risk with geo-engineering projects is that you

Dim= make less bright, make less intense
dɪm

Explosion= bang ɪk'spləʊʒən

Scrutinise= examine, study, analyze
'skru:tənaɪz

Preserve= protect (serv=protect i.e conserve, reserve) prɪ'zɜ:v

Reinforce= strengthen, support rɪ:n'fɔ:s

High-tension= strong, tight haɪ'tenʃn

Evergreen= an evergreen tree or bush does not lose its leaves in winter 'evəgrɪ:n

Absorb= take in or soak up (energy, liquid or other substance...) əb'sɔ:b

Radiation= powerful and very dangerous rays come especially from nuclear reactions rə'dɪe'reɪʃn

Shed=lose, get rid of, drop ʃed

Enable= make it possible for someone / something ɪ'neɪbl

Re-routing= change the direction rɪ:rʊ:tɪŋ

Implement= put into practice, apply
'ɪmplɪment

Cautious= careful 'kɔ:ʃəs

Substitute= alternate, replacement
'sʌbstɪtju:t

Renewable energy= type of energy replaces itself naturally or is easily replaced because there is a large supply of it rɪ'nju:əbl 'enədʒɪ

Permanent= everlasting, eternal, enduring
'pɜ:mənənt

Guard= protect, defend ga:d

Inject= insert, add, bring in ɪn'dʒekt

The tropics= the hottest part of the world, which is around the equator ðə 'tropɪks

Distribution= spreading, allocation
dɪstrə'bju:ʃn

Precipitation= rainfall prɪ'sɪpɪ'teɪʃn

can “**overshoot**” says Dr Dan Hunt, from the University of Bristol’s School of Geophysical Sciences, who has studied the likely **impacts** of the sunshade and aerosol schemes on the climate. ‘You may bring global temperatures back to pre-industrial levels, but the risk is that the **poles** will still be warmer than they should be and the tropics will be cooler than before **industrialisation**. “To avoid such a **scenario**,” Hunt says, “Angel’s project would have to operate at half strength; all of which reinforces his view that the best option is to avoid the need for geo-engineering altogether.”

H

The main reason why geo-engineering is supported by many in the scientific community is that most researchers have little **faith** in the ability of politicians to agree - and then bring in - the necessary carbon cuts. Even leading **conservation** organisations see the value of investigating the potential of geo-engineering. According to Dr Martin Sommerkorn, climate change advisor for the World Wildlife **Fund**’s International Arctic Programme, ‘**Human-induced** climate change has brought humanity to a position where we shouldn’t **exclude** thinking thoroughly about this topic and its possibilities.’

Overshoot= exceed, surpass əʊvəθju:t

Impact = influence, effect ɪmpækt

Pole= the most northern or most southern point on a planet, especially the Earth pəʊl

Industrialisation= the process of developing industries in a country or an area ɪndʌstrialɪz'zeɪʃn

Scenario= the description of possible actions or events in the future sə'nærɪəʊ

Faith= belief feɪθ

Conservation= Preservation, protection kɒnsə'verʃn

Potential= likely to develop into a particular type of person or thing in the future pə'tenʃəl

Human-induced= caused by human 'hju:mən - ɪn'dju:st

Exclude= omit, miss out, eliminate, not include ɪk'sklu:d

Test 2

READING PASSAGE 1



Raising the Mary Rose

How a sixteenth-century warship was recovered from the seabed.

On 19 July 1545, English and French **fleets** were **engaged in** a sea battle off the coast of southern England in the area of water called the Solent, between Portsmouth and the Isle of Wight. Among the English **vessels** was a warship by the name of Mary Rose. Built in Portsmouth some 35 years earlier, she had had a long and successful fighting career, and was a favourite of King Henry VIII. Accounts of what happened to the ship **vary**: while **witnesses** agree that she was not hit by the French, some **maintain** that she

Fleet= ship in a navy *fli:t*

Engaged in= to be doing or to become involved in an activity *ɪn'geɪdʒd ɪn*

Vessel= a ship or large boat *'vesəl*

Vary= differ, be different *'veəri*

Witness= observe *'wɪtnəs*

Maintain= remain, make something continue at the same level, standard, etc. *meɪn'teɪn*

was **outdated**, **overladen** and sailing too low in the water, others that she was **mishandled** by **undisciplined crew**. What is **undisputed**, however, is that the Mary Rose sank into the Solent that day, taking at least 500 men with her. After the battle, attempts were made to recover the ship, but these failed.

The Mary Rose came to rest on the seabed, lying on her starboard (right) side at an angle of approximately 60 degrees. The hull (the body of the ship) **acted as** a trap for the sand and mud carried by Solent **currents**. As a result, the starboard side filled rapidly, leaving the **exposed** port (left) side to be **eroded** by **marine organisms** and **mechanical degradation**. Because of the way the ship sank, nearly all of the starboard half survived **intact**. During the seventeenth and eighteenth centuries, the entire site became covered with a layer of hard grey clay, which **minimised** further **erosion**.

Then, on 16 June 1836, some fishermen in the Solent found that their equipment was caught on an **underwater obstruction**, which turned out to be the Mary Rose. Diver John Deane happened to be exploring another **sunken** ship nearby, and the fishermen approached him, asking him to free their **gear**. Deane **dived** down, and found the equipment caught on a **timber protruding** slightly from the seabed. Exploring further, he **uncovered** several other timbers and a bronze gun. Deane continued diving on the site **intermittently** until 1840, recovering several more guns, two bows, various timbers, part of a pump and various other small finds.

The Mary Rose then **faded into obscurity** for another hundred years. But in 1965, **military** historian and

Outdated=old-fashioned, old, obsolete
current, modern, fashionable *aut'deɪtɪd*
Overladen= filled with too many people or things *əvə'leɪdn*
Mishandle= to treat something roughly, often causing damage *mɪs'hændl*
Undisciplined = behaving in an uncontrolled way # disciplined, well-behaved *ʌndɪ'siplɪnd*
Crew= sailors, seamen *kru:*
Undisputed= acknowledged, undeniable
ʌndɪ'spu:tɪd

Act as sth= do a particular job *ækt eɪz 'sʌmθɪŋ*
Current = a movement of water in a particular direction *'kʌrənt*
Exposed = not covered, unprotected, *ɪk'spəʊzd*
To be eroded = to be weaken= to be damaged *tu bi i'rəʊdɪd*
Marine = sea, oceanic, aquatic *mɛ'ri:n*
Organism= living thing, creature *'ɔ:gənɪzəm*
Mechanical = connected with machines and engines *mɛ'kænɪkəl*
Degradation= the process by which something changes to a worse condition *degr'eɪʃən*
Intact= unbroken, unharmed, undamaged # broken, damaged *ɪn'tækɪt*
Minimize= reduce, decrease, cut down, lessen # maximize, increase *'mɪnəmaɪz*

Obstruction= blockage, obstacle *əb'strʌkʃən*
Sunken = having fallen to the bottom of the sea *'sʌŋkn*
Gear= a set of equipment or tools you need for a particular activity *gɪə*
Dive= swim under water, go under water *daɪv*
Timber= wood *'tɪmbə*
Protrude= stick out from or through smt *prə'tru:d*
Uncover= detect, discover, find out # cover, conceal, hide *ʌn'kʌvə*
Intermittently = stopping and starting repeatedly or with periods in between *ɪntə'mɪtntlɪ*

Fade into obscurity= being in the state of not being known or remembered *feɪd 'ɪnto əb'skjʊərɪti*
Military = used by, involving, or relating to the army, navy, or air force *'mɪլɪtəri*

amateur diver Alexander McKee, in **conjunction** with the British Sub-Aqua Club, **initiated** a project called 'Solent Ships'. While on paper this was a plan to examine a number of known **wrecks** in the Solent, what McKee really hoped for was to find the Mary Rose. **Ordinary** search techniques proved **unsatisfactory**, so McKee entered into **collaboration** with Harold E. Edgerton, professor of electrical engineering at the Massachusetts Institute of Technology. In 1967, Edgerton's side-scan **sonar** systems **revealed** a large, unusually shaped object, which McKee believed was the Mary Rose.

Further **excavations** revealed stray pieces of timber and an iron gun. But the **climax** to the operation came when, on 5 May 1971, part of the ship's **frame** was uncovered. McKee and his team now knew for certain that they had found the **wreck**, but were as yet unaware that it also **housed** a **treasure trove** of beautifully preserved **artefacts**. Interest in the project grew, and in 1979, The Mary Rose Trust was formed, with Prince Charles as its President and Dr Margaret Rule its Archaeological Director. The decision whether or not to **salvage** the wreck was not an easy one, although an excavation in 1978 had shown that it might be possible to raise the hull. While the original aim was to raise the hull if at all **feasible**, the operation was not given the **go-ahead** until January 1982, when all the necessary information was available.

An important factor in trying to **salvage** the Mary Rose was that the remaining hull was an open shell. This led to an important decision being taken: namely to carry out the lifting operation in three very **distinct** stages. The hull was **attached** to a lifting frame via a network of bolts and lifting wires. The problem of the hull being sucked back downwards into the mud was **overcome** by using 12 hydraulic **jacks**. These raised it a few centimetres over a period of several days, as the lifting frame rose slowly up its four legs. It was only when the hull was hanging freely from the lifting frame, clear of

Amateur # professional 'amətə
Conjunction=combination kən'dʒʌŋkjən
Initiate= start, set off ɪ'nɪʃeɪt
Wreck= a ship that has sunk rek
Ordinary= normal, usual, regular, common 'ɔ:dəneri
Unsatisfactory = not good enough or not acceptable ʌnsætəs'fækteri
Collaboration= teamwork, partnership kəlæbə'reiʃən
Sonar= relating to sun 'səʊnə:
Reveal= discover, make known # hide, conceal rɪ'veɪl

Excavation= digging ekske'veiʃn
Climax= peak, highest point 'klaɪmæks
Frame= structure freɪm
Wreck = a ship that has sunk rek
House = provide space for something haus
Treasure trove= a group of valuable or interesting things 'treʒə trəʊv
Artefacts= historical objects 'ɑ:tɪfækts

Salvage = to save goods from damage or destruction, especially from a ship that has sunk 'sælvɪdʒ

Feasible= possible, practicable, workable... # impractical 'fi:zəbel

Go-ahead = an occasion when permission is given for someone to start doing something 'gəʊ əhed

Distinct = clearly different or belonging to a different type dr'strɪŋkt

Attach= glue, join, connect ə'tætʃ

Overcome = defeat or succeed in controlling or dealing with something ə'vemə'kʌm

Jack = a piece of equipment used to lift a heavy weight off the ground, such as a car, and support it while it is in the air dʒæk

the seabed and the suction effect of the surrounding mud, that the salvage operation progressed to the second stage. In this stage, the lifting frame was fixed to a **hook** attached to a **crane**, and the hull was lifted completely clear of the seabed and transferred underwater into the lifting cradle. This required **precise** positioning to locate the legs into the '**stabbing guides**' of the lifting **cradle**. The lifting cradle was designed to fit the hull using archaeological survey drawings, and was fitted with air bags to provide additional cushioning for the hull's delicate timber **framework**. The third and final stage was to lift the entire structure into the air, by which time the hull was also supported from below. Finally, on 11 October 1982, millions of people around the world **held their breath** as the timber **skeleton** of the Mary Rose was lifted clear of the water, ready to be returned home to Portsmouth.

Hook= a curved piece of metal or plastic that you use for hanging things on h^ʊk

Crane= a large tall machine used by builders for lifting heavy things k^{reɪn}

Precise= exact, specific, accurate

imprecise, inaccurate p^{rɪ'saɪs}

Stabbing = very sharp, sudden and strong 'stæbɪŋ

Guide= instruction= direction g^{aɪd}

Cradle = a structure that is used to lift something heavy up or down 'kreɪdl

Framework= the main supporting parts of a building, vehicle, or object 'freɪmw^{ɜː}k

Hold (one's) breath (idiom)= wait for something specific to happen 'həʊld (wʌnz) b^re^θ ('ɪdɪəm)

Skeleton= the main structure that supports a building, bridge etc. 'skelətən

READING PASSAGE 2



What destroyed the civilisation of Easter Island

A.

Easter Island, or Rapu Nui as it is known locally, is home to several hundred **ancient** human statues - the moai. After this **remote** Pacific island was **settled** by the Polynesians, it remained **isolated** for centuries. All the energy and resources that went into the moai - some of which are ten metres tall and weigh over 7,000 kilos - came from the island itself. Yet when Dutch explorers landed in 1722, they met a Stone Age culture. The moai were **carved** with stone tools, then transported for many kilometres, without the use of animals or wheels, to **massive** stone **platforms**. The **identity** of the moai builders was in doubt until well into the twentieth century. Thor Heyerdahl, the Norwegian ethnographer and adventurer, thought the statues had been created by pre-Inca peoples from Peru. Bestselling Swiss author Erich von Daniken believed they were built by **stranded extraterrestrials**. Modern science - linguistic, **archaeological** and **genetic**

Civilisation= human development
(*civ=citizen .i.e, civic, civil*) sɪvəl-ər'zeɪʃən

Ancient= very old 'eɪnʃənt

Remote= distant, far-off # central rɪ'meʊt

Settle= set up home, emigrate to 'setl

Isolated= remote 'aɪsəleɪtɪd

Carve= to make something by cutting into especially wood or stone, or to cut into the surface of stone, wood, etc.ka:v

Massive= very large, solid, and heavy 'mæsɪv

Platform= stage 'plætfɔ:m

Identity= who a person is aɪ'dentɪti

Stranded= stuck 'strændɪd

Extraterrestrial= a creature that people think may exist on another planet (**terr=earth**.i.e, *territory, terrain*) ekstrə'tɛrɪstɪkl

Archaeological= belonging to the study of ancient societies by examining what remains of their buildings, graves, tools etc. a:kie'lɒdʒɪkəl

Genetic= relating to genes or genetics dʒe'netɪk

evidence - has **definitively** proved the moai builders were Polynesians, but not how they moved their creations. Local **folklore** maintains that the statues walked, while researchers have tended to **assume** the ancestors **dragged** the statues somehow, using **ropes** and **logs**.

B.

When the Europeans arrived, Rapa Nui was grassland, with only a few scrawny trees. In the 1970s and 1980s, though, researchers found **pollen** preserved in lake **sediments**, which proved the island had been covered in lush palm forests for thousands of years. Only after the Polynesians arrived did those forests disappear. US scientist Jared Diamond believes that the Rapanui people - **descendants** of Polynesian settlers - **wrecked** their own environment. They had unfortunately settled on an extremely **fragile** island - dry, cool, and too remote to be properly **fertilised** by windblown volcanic **ash**. When the islanders cleared the forests for firewood and farming, the forests didn't grow back. As trees became **scarce** and they could no longer construct wooden canoes for fishing, they ate birds. Soil **erosion** decreased their crop yields. Before Europeans arrived, the Rapanui had **descended** into civil war and cannibalism, he maintains. The **collapse** of their isolated civilisation, Diamond writes, is a 'worst-case **scenario** for what may lie ahead of us in our own future'.

C.

The moai, he thinks, **accelerated the self-destruction**. Diamond interprets them as power **displays** by **rival chieftains** who, trapped on a remote little island, lacked other ways of **asserting** their **dominance**. They competed by building ever bigger figures. Diamond thinks they laid the moai on wooden sledges, **hauled** over log rails, but that required both a lot of wood and a lot of people. To **feed** the people, even more land had to be cleared. When the wood was gone and civil war

Definitively=perfectly dr'fɪnɪtɪvlɪ

Folklore= myths, legends 'fəʊklɔ:

Assume= presume, to think or accept that something is true without having proof e'sju:m

Drag= pull dræg

Rope= very strong thick string, made by twisting together many thinner strings rəʊp

Log= a thick piece of wood from a tree lɒg

Pollen= a fine powder produced by flowers, which is carried by the wind or by insects to other flowers of the same type, making them produce seeds 'pɒlən

Sediment= solid substances that settle at the bottom of a liquid 'sedəment

Descendant= offspring, previous generation dr'sendənt

Wreck= ruin, destroy, damage rek

Fragile= easily broken # strong 'frædʒaɪl

Fertilise = to spread a natural or chemical substance on land or plants, in order to make the plants grow well 'fɜ:təlaɪz

Ash= the soft grey powder that remains after something has been burned æʃ

Scarce= rare, insufficient # plentiful, abundant skeəs

Erosion= the fact of soil, stone, etc. being gradually damaged and removed by the waves, rain, or wind ɪ'rəʊʒən

Descend= fall # ascend dr'send

Collapse= breakdown, failure, end kə'læps

Scenario= situation sə'nə:riəʊ

Accelerate= quicken, speed up # slow down ək'seləreɪt

Destruction= the act or process of destroying something dr'strʌkʃən

Display = an arrangement of things dr'splaɪ

Rival= opponent # ally 'raɪvəl

Chieftain = the leader of a tribe 'tʃi:fɪn

Assert= to make other people recognize your right or authority e'sə:t

Dominance = superiority, power, authority 'dɒmənəns

Haul = drag, pull, tug ho:l

Feed= give food to, provide food for fɪ:d

began, the islanders began **toppling** the moai. By the nineteenth century none were standing.

D.

Archaeologists Terry Hunt of the University of Hawaii and Carl Lipo of California State University agree that Easter Island lost its lush forests and that it was an 'ecological **catastrophe**' - but they believe the islanders themselves weren't to blame. And the moai certainly weren't. Archaeological excavations indicate that the Rapanui went to heroic efforts to protect the resources of their wind-lashed, **infertile** fields. They built thousands of circular stone **windbreaks** and gardened inside them, and used broken volcanic rocks to keep the soil **moist**. In short, Hunt and Lipo argue, the prehistoric Rapanui were **pioneers** of **sustainable** farming.

E.

Hunt and Lipo **contend** that moai-building was an activity that helped keep the peace between islanders. They also believe that moving the moai required few people and no wood, because they were walked **upright**. On that issue, Hunt and Lipo say, archaeological evidence backs up Rapanui folklore. Recent experiments indicate that as few as 18 people could, with three strong ropes and a bit of practice, easily **manoeuvre** a 1,000 kg moai **replica** a few hundred metres. The figures' fat bellies **tilted** them forward, and a D-shaped base allowed handlers to roll and rock them side to side.

F.

Moreover, Hunt and Lipo are **convinced** that the settlers were not **wholly** responsible for the loss of the island's trees. Archaeological finds of **nuts** from the **extinct** Easter Island palm show tiny **grooves**, made by the teeth of Polynesian rats. The rats arrived along with the settlers, and in just a few years, Hunt and Lipo calculate, they would have **overrun** the island. They would have prevented the reseeding of the slow-growing palm trees and thereby **doomed** Rapa Nui's forest, even without the settlers' campaign of **deforestation**. No doubt the rats ate birds' eggs too. Hunt and Lipo also see no evidence that Rapanui

Topple= to take power away from a leader or government, especially by force *'topəl*

Catastrophe= disaster *kə'tæstrəfi*

Infertile= unproductive # fertile *ɪn'fɜːtɪl*

Windbreak = something that gives protection from the wind, such as a row of trees, bushes, or a wall
'wɪndbreɪk

Moist= wet, damp #dry *moɪst*

Pioneer= leader *paiə'nɪə*

Sustainable= able to continue for a long time *sə'steɪnəbəl*

Contend= argue, claim, assert *kən'tend*

Upright= straight up *'ʌprɪt*

Manoeuvre= move, turn *mə'nuːvə*

Replica= copy, duplicate, reproduction.
'replɪkə

Tilt= move, tip *tɪlt*

Convince= persuade *kən'veɪns*

Wholly = completely *'həʊlɪ*

Extinct= no longer in existence *ɪk'stɪŋkt*

Nut= seed *nʌt*

Groove= a thin line cut into a hard surface.
gruːv

Overrun= if a place is overrun by unwanted things or people, they spread over it in great numbers. *əvər'raːn*

Doom= ruin, destroy *dū:m*

Deforestation= the cutting or burning down of all the trees in an area *di:fɔrə'steɪʃən*

civilisation **collapsed** when the palm forest did. They think its population grew rapidly and then remained more or less **stable** until the arrival of the Europeans, who introduced deadly diseases to which islanders had no **immunity**. Then in the nineteenth century **slave** traders **decimated** the population, which **shrivelled** to 111 people by 1877.

G.

Hunt and Lipo's vision, therefore, is one of an island populated by peaceful and **ingenious** moai builders and careful **stewards** of the land, rather than by **reckless** destroyers ruining their own environment and society. 'Rather than a case of **abject failure**, Rapa Nui is an unlikely story of success', they claim. Whichever is the case, there are surely some valuable lessons which the world at large can learn from the story of Rapa Nui.

Collapse= fall down kə'læps

Stable= fixed = steady #changeable 'steribəl

Immunity= resistance, protection ɪ'mju:nəti

Slave= someone who is owned by another person and works for them for no money.
sleɪv

Decimate= destroy, devastate, ruin 'desɪmēt

Shrivel = become smaller, shrink 'ʃrɪvl

Ingenious= clever, good at inventing ɪn'dʒi:nɪəs

Steward= manager, keeper, guardian, supervisor 'stju:əd

Reckless= careless # careful, cautious 'rekles

Abject failure= the state of being extremely poor, unhappy, unsuccessful etc. 'æbdʒekt 'feɪlju:ə

READING PASSAGE 3:



Neuroaesthetics

An emerging discipline called neuroaesthetics is

seeking to bring scientific **objectivity** to the study of art, and has already given us a better understanding of many **masterpieces**. The **blurred** imagery of Impressionist paintings seems to stimulate the brain's **amygdala**, for instance. Since the amygdala plays a crucial role in our feelings, that finding might explain why many people find these pieces so **moving**.

Could the same approach also shed light on **abstract** twentieth-century pieces, from Mondrian's geometrical blocks of colour, to Pollock's seemingly **haphazard** arrangements of splashed paint on canvas? **Sceptics** believe that people claim to like such works simply

Neuroaesthetics= a field of study in which researchers attempt to understand how the brain responds to art (*neur(o)*= relating to nerves, i.e: *neuroscience*) 'njuərəʊs.ɪ:s, θetɪks

Emerging= rising ɪ'mɜ:dʒɪŋ

Discipline= field of study, branch of knowledge, subject, area 'dɪsiplɪn

Objectivity= fairness, open-mindedness # subjectivity ɒbdʒek'tɪvɪtɪ

Masterpiece= a work of art, a piece of writing or music etc that is of very high quality or that is the best of a particular artist, writer. 'ma:tste:pɪ:s

Blurred= unclear # clear, distinct bla:d

Stimulate= quicken, accelerate, arouse, inspire 'stɪmjeleɪt

Amygdala= one of two parts of the brain that affect how people feel emotions, especially fear and pleasure ə'mɪgdələ

Moving= touching, affecting, emotional 'mu:vɪŋ

Shed light on= make clear, explain, simplify ʃed laɪt on

Abstract= non-realistic, symbolic 'æbstrækɪt

Haphazard= happening or done in a way that is not planned or organized hæp'hæzəd

Sceptic= a person who disagrees with particular claims and statements 'skeptɪk

because they are famous. We certainly do have an **inclination** to follow the crowd. When asked to make simple **perceptual** decisions such as matching a shape to its rotated image, for example, people often choose a definitely wrong answer if they see others doing the same. It is easy to imagine that this **mentality** would have even more impact on a **fuzzy** concept like art **appreciation**, where there is no right or wrong answer.

Angelina Hawley-Dolan, of Boston College, Massachusetts, responded to this **debate** by asking volunteers to view pairs of paintings - either the creations of famous abstract artists or the **doodles** of infants, chimps and elephants. They then had to judge which they preferred. A third of the paintings were given no **captions**, while many were labelled incorrectly -volunteers might think they were viewing a chimp's **messy brushstrokes** when they were actually seeing an **acclaimed** masterpiece. In each set of trials, volunteers generally preferred the work of **renowned** artists, even when they believed it was by an animal or a child. It seems that the viewer can sense the artist's vision in paintings, even if they can't explain why.

Robert Pepperell, an artist based at Cardiff University, creates **ambiguous** works that are neither entirely abstract nor clearly representational. In one study, Pepperell and his **collaborators** asked volunteers to decide how' powerful' they considered an artwork to be, and whether they saw anything familiar in the piece. The longer they took to answer these questions, the more highly they rated the piece under **scrutiny**, and the greater their neural activity. It would seem that the brain sees these images as puzzles, and the harder it is to **decipher** the meaning, the more rewarding is the moment of **recognition**.

And what about artists such as Mondrian, whose paintings consist **exclusively** of horizontal and vertical

Inclination= a feeling that makes you want to do something = tendency, proclivity
ɪnkləˈneɪʃən

Perceptual= relating to the ability to notice something or come to an opinion about something using your senses
pə'zeptʃuəl

Mentality= a particular attitude or way of thinking men'tæləti

Fuzzy= unclear 'fʌzi

Appreciation= a feeling of being grateful for something someone has done əpri:ʃi'eɪʃən

Debate= discussion dr'beit

Doodle= a rough drawing 'du:dл

Caption= title, description 'kæpʃən

Messy = disordered, chaotic, confused, disorganized 'mesi

Brushstroke = the way in which something, especially paint, is put on to a surface with a brush 'brʌʃstrəʊk

Acclaimed= honored, admired, praised
ə'kleɪmd

Renowned= famous, well-known
rɪ'naʊnd

Ambiguous= uncertain, confusing, unclear æm'bɪgjuəs

Collaborator= coworkers, colleague, partner (*co-*= together; with; i.e: **coexist**, **co-ownership**) kə'læbəreɪtə

Scrutiny= examination, analysis 'skru:tɪni

Decipher= decode, interpret dr'saifə

Recognition= the act of realizing and accepting that smt is true or important rekəg'nɪʃən

Exclusively= only ɪk'sklu:.sɪv.li

lines encasing blocks of colour? Mondrian's works are **deceptively simple**, but eye-tracking studies confirm that they are **meticulously** composed, and that simply rotating a piece radically changes the way we view it. With the originals, volunteers' eyes tended to stay longer on certain places in the image, but with the **altered** versions they would **flit** across a piece more rapidly. As a result, the volunteers considered the altered versions less **pleasurable** when they later rated the work.

In a similar study, Oshin Vartanian of Toronto University asked volunteers to compare original paintings with ones which he had altered by moving objects around within the **frame**. He found that almost everyone preferred the original, whether it was a Van Gogh still life or an abstract by Miro. Vartanian also found that changing the **composition** of the paintings reduced activation in those brain areas linked with meaning and **interpretation**.

In another experiment, Alex Forsythe of the University of Liverpool analysed the visual **intricacy** of different pieces of art, and her results suggest that many artists use a key level of detail to **please** the brain. Too little and the work is boring, but too much results in a kind of '**perceptual** overload', according to Forsythe. What's more, **appealing** pieces both abstract and representational, show signs of 'fractals' - repeated **motifs recurring** in different scales, fractals are common throughout nature, for example in the shapes of mountain peaks or the branches of trees. It is possible that our visual system, which evolved in the great outdoors, finds it easier to process such patterns.

It is also **intriguing** that the brain appears to process movement when we see a handwritten letter, as if we are replaying the writer's moment of creation. This has led some to **wonder** whether Pollock's works feel so **dynamic** because the brain **reconstructs** the

Deceptively simple= looking simple, but actually the opposite dr'sep.trv.li 'sɪmpəl

Meticulously= carefully # carelessly mə'tɪkjələslɪ

Altered= changed

original 'ɔ:ltd

Flit= to move lightly or quickly and not stay in one place for very long flɪt

Pleasurable= enjoyable 'pleʒərəbl

Frame= a border that surrounds and supports a picture, door, or window freɪm

Composition= the way that people or things are arranged in a painting or photograph kəm'pəzɪʃn

Interpretation= explanation, understanding in'tɜ:pri'teɪʃn

Intricacy= complexity 'ɪntrɪkəsi

Please = satisfy plɪz

Perceptual= relating to the ability to notice something or come to an opinion about something using your senses pə'sep.tʃu.əl

Appealing= attractive, interesting, tempting, charming ə'pi:lɪŋ

Motif= pattern məʊ'ti:f

Recur = occur again, be repeated rɪ'kɜ:

Intriguing= fascinating, interesting, exciting in'tri:gɪŋ

Wonder= doubt, question, self-ask 'wʌndə

Dynamic= lively, energetic daɪ'næmɪk

energetic actions the artist used as he painted. This may be down to our brain's 'mirror neurons', which are known to **mimic** others' actions. The **hypothesis** will need to be thoroughly tested, however. It might even be the case that we could use neuroaesthetic studies to understand the **longevity** of some pieces of artwork. While the fashions of the time might shape what is currently popular, works that are best adapted to our visual system may be the most likely to **linger** once the trends of previous generations have been forgotten.

It's still early days for the field of neuroaesthetics - and these studies are probably only a taste of what is to come. It would, however, be **foolish** to reduce art **appreciation** to a set of scientific laws. We shouldn't **underestimate** the importance of the style of a particular artist, their place in history and the artistic environment of their time. Abstract art offers both a challenge and the freedom to play with different interpretations. In some ways, it's not so different to science, where we are **constantly** looking for systems and **decoding** meaning so that we can view and appreciate the world in a new way.

Reconstruct= rebuild rɪ:kən'strʌkt

Mimic= copy, imitate 'mɪmɪk

Hypothesis = theory, assumption hɪ'poθeſis

Longevity= a long life lɒn'dʒevəti

Linger= remain # leave 'lɪŋgə

Foolish= stupid, silly, unwise 'fu:lɪʃ

Appreciation= admiration, enjoyment əpri:ji'eʃən

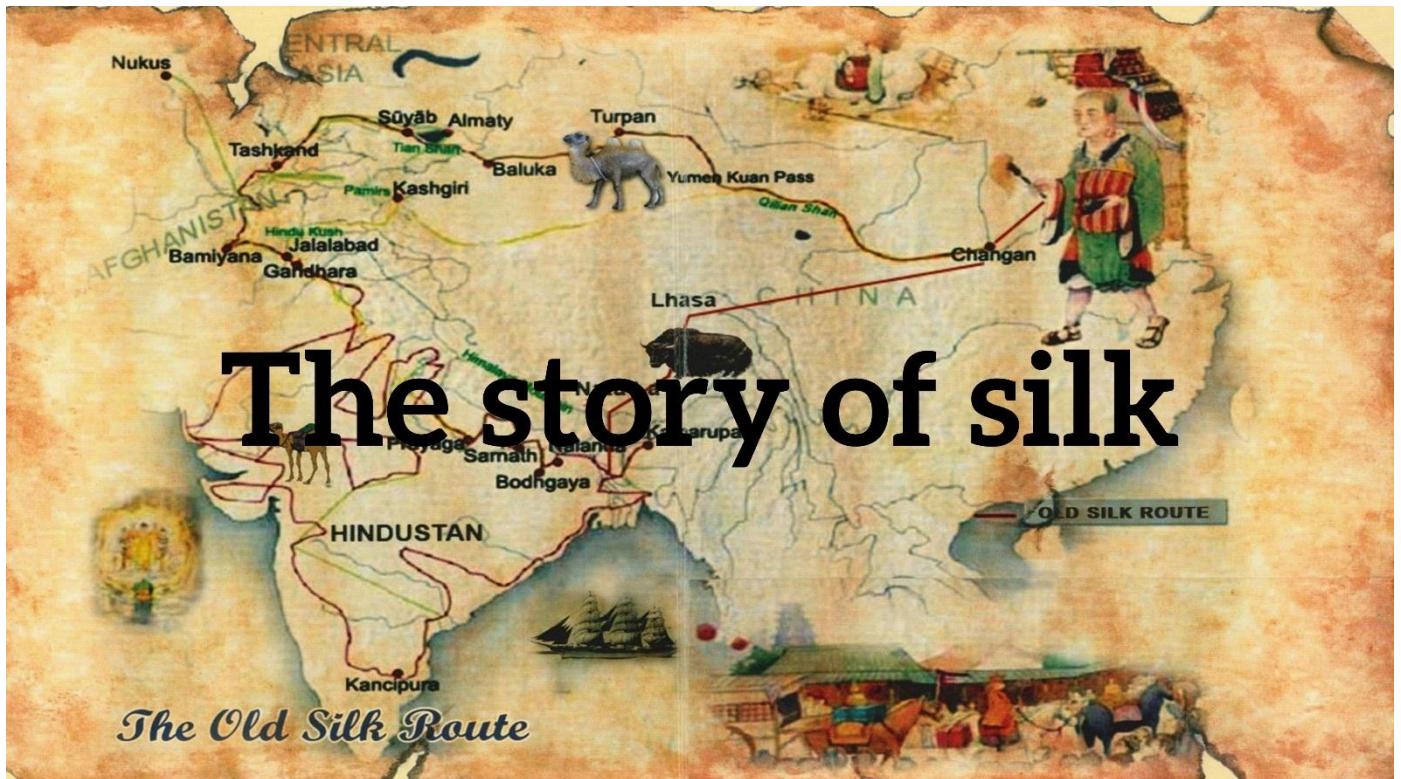
Underestimate= undervalue
overestimate (**under**= not enough, below, i.e:
underperforming) ʌndə'reſtɪmeɪt

Constantly= continually, all the time, or very often 'kon.stənt.li

Decode= decipher, interpret di:'kəud

Test 3

READING PASSAGE 1



The history of the world's most luxurious fabric, from ancient China to the present day

Silk is a fine, smooth material produced from the cocoons - soft protective shells - that are made by mulberry silkworms (insect larvae). **Legend** has it that it was Lei Tzu, wife of the Yellow Emperor, ruler of China in about 3000 BC, who discovered silkworms. One account of the story goes that as she was taking a walk in her husband's gardens, she discovered that silkworms were responsible for the destruction of several mulberry trees. She collected a number of cocoons and sat down to have a rest. It just so happened that while she was sipping some tea, one of

Luxurious= expensive, costly /lʌg'zjʊəriəs/

Fabric= material, cloth /'fæbrɪk/

Fine= well, excellent, top quality /fain/

Smooth= downy, soft, flat /smu:ð/

Legend= myth, fairy tale /'ledʒənd/

Responsible= being the primary cause of something (spon=guarantee, assurance.i.e **sponsus**, **spondere**) /rɪ'sponsəbəl/

Destruction= ruin, damage
construction /dɪ'strʌkʃən/

the cocoons that she had collected **landed in** the hot tea and started to **unravel** into a fine **thread**. Lei Tzu found that she could **wind** this thread around her fingers. Subsequently, she **persuaded** her husband to allow her to **rear** silkworms on a **grove** of mulberry trees. She also **devised** a special **reel** to draw the **fibres** from the cocoon into a single thread so that they would be strong enough to be woven into **fabric**. While it is unknown just how much of this is true, it is certainly known that silk **cultivation** has existed in China for several millennia.

Originally, silkworm farming was solely **restricted to** women, and it was they who were responsible for the growing, harvesting and weaving. Silk quickly grew into a symbol of status, and originally, only **royalty** were **entitled to** have clothes made of silk. The rules were gradually relaxed over the years until finally during the Qing Dynasty (1644–1911 AD), even **peasants**, the lowest **caste**, were also entitled to wear silk. Sometime during the Han Dynasty (206 BC–220 AD), silk was so **prized** that it was also used as a unit of **currency**. Government officials were paid their salary in silk, and farmers paid their taxes in grain and silk. Silk was also used as **diplomatic** gifts by the **emperor**. Fishing lines, bowstrings, musical instruments and paper were all made using silk. The earliest **indication** of silk paper being used was discovered in the **tomb** of a **noble** who is estimated to have died around 168 AD.

Demand for this **exotic** fabric eventually created the **lucrative** trade route now known as the Silk Road, taking silk westward and bringing gold, silver and wool to the East. It was named the Silk Road after its most **precious commodity**, which was considered to be worth more than gold. The Silk Road stretched over 6,000 kilometres from Eastern China to the Mediterranean Sea, following the Great Wall of China, climbing the Pamir mountain range, crossing modern-

Land in= fall into lænd in
Unravel= untie, loosen, separate out ʌn'rævəl
Thread= a long thin string of cotton, silk etc used to sew or weave cloth θred
Wind= roll, twist wind
Persuade= convince pe'sweɪd
Rear= raise, nurture rɪər
Grove= a group of trees planted close together grəʊv
Devise= invent, come up with, formulate, design dr'veɪz
Reel= a round object around which you wind such things as thread ri:l
Fibre= a mass of threads used to make rope, cloth etc. 'fabeɪ
Fabric = cloth or material for making clothes, covering furniture 'fæbrik
Cultivation= growing, planting kəlt'ueɪʃən

Restrict something to something= limit rɪ'strɪkt 'sʌmθɪŋ tə 'sʌmθɪŋ
Royalty= members of a royal family 'rɔɪəlti
Be entitled to (do) something= to have the right/ to be allowed to do smt bi ɪn'taɪ.teld tu:(du:) 'sʌmθɪŋ
Peasant= poor farmer 'pezənt
Caste= social class ka:st
Prized= treasured, precious, valued praɪzd
Currency= money 'kʌrənsi
Diplomatic= relating to the work of diplomats who officially represent their government in a foreign country dɪplə'mætɪk
Emperor= royal leader, monarch 'empərə
Indication= sign, mark ɪndɪ'keɪʃən
Tomb= burial place for last resting place tu:m
Noble= a member of the highest social class 'nəʊbel

Exotic= unusual, unconventional, extravagant, unfamiliar ɪg'zɒtɪk
Lucrative= profitable, thriving, flourishing 'lu:kretɪv
Precious= valuable, important 'preʃəs
Commodity= product, item kə'mɒdəti

day Afghanistan and going on to the Middle East, with a major trading market in Damascus. From there, the **merchandise** was shipped across the Mediterranean Sea. Few **merchants** travelled the entire route; goods were handled mostly by a series of **middlemen**.

With the mulberry silkworm being native to China, the country was the world's sole producer of silk for many hundreds of years. The secret of silk-making eventually reached the rest of the world via the Byzantine Empire, which ruled over the Mediterranean **region** of southern Europe, North Africa and the Middle East during the period 330—1453 AD. According to another legend, monks working for the Byzantine emperor Justinian **smuggle** silkworm eggs to Constantinople (Istanbul in modern-day Turkey) in 550 AD, **concealed** inside **hollow** bamboo walking canes. The Byzantines were as **secretive** as the Chinese, however, and for many centuries the weaving and trading of silk fabric was a strict **imperial monopoly**. Then in the seventh century, the Arabs **conquered** Persia, **capturing** their **magnificent** silks in the process. Silk production thus spread through Africa, Sicily and Spain as the Arabs swept, through these lands. Andalusia in southern Spain was Europe's main silk-producing centre in the tenth century. By the thirteenth century, however, Italy had become Europe's leader in silk production and **export**. Venetian merchants traded extensively in silk and encouraged silk growers to **settle** in Italy. Even now, silk processed in the province of Como in northern Italy enjoys an **esteemed reputation**.

The nineteenth century and industrialisation saw the downfall of the European silk industry. Cheaper Japanese silk, trade in which was greatly **facilitated** by the opening of the Suez Canal, was one of the many factors driving the trend. Then in the twentieth century, new **manmade** fibres, such as nylon, started to be used in what had traditionally been silk products, such as stockings and parachutes. The two world wars,

Merchandise= goods, products 'mɜ:tʃəndɪz
Merchant= businessman, tradesman 'mɜ:tʃənt
Middlemen= someone who buys things in order to sell them to someone else, or who helps to arrange business deals for other people 'mɪdlmæn

Region=an area of a country, especially one that has a particular characteristic or is known for something 'ri:dʒən

Smuggle= take/send/bring goods/people secretly and illegally into/out of a country 'smʌgl

Conceal= hide, cover kən'se:l

Hollow= having a hole or empty space inside 'holeʊ

Secretive= a secretive person or organization likes to keep their thoughts, intentions, or actions hidden from others 'si:kretɪv

Imperial= relating to an empire or to the person who rules it ɪm'pɪrɪəl

Monopoly= domination= exclusiveness (mono=only.i.e **monotone**, **monist**) mə'nopəli

Conquer= defeat, beat, overpower 'kɔnκə

Capture= take over, take 'kæptʃə

Magnificent= great, fine, wonderful (magn=big, large .i.e **magnitude**, **magnificien**) mæg'nɪfɪsənt

Export= sell abroad, sell overseas, sell to other countries # import 'ekspo:t

Settle in somewhere = to go to live in a new place, and stay there for a long time 'setl ɪn 'sʌmweə

Esteemed= respected, admired, honored ɪ'sti:md

Reputation= fame repjə'teɪʃən

Facilitate= make easy, make possible, enable fə'silɪteɪt

Manmade= artificial, synthetic, manufactured # natural mæn'meɪd

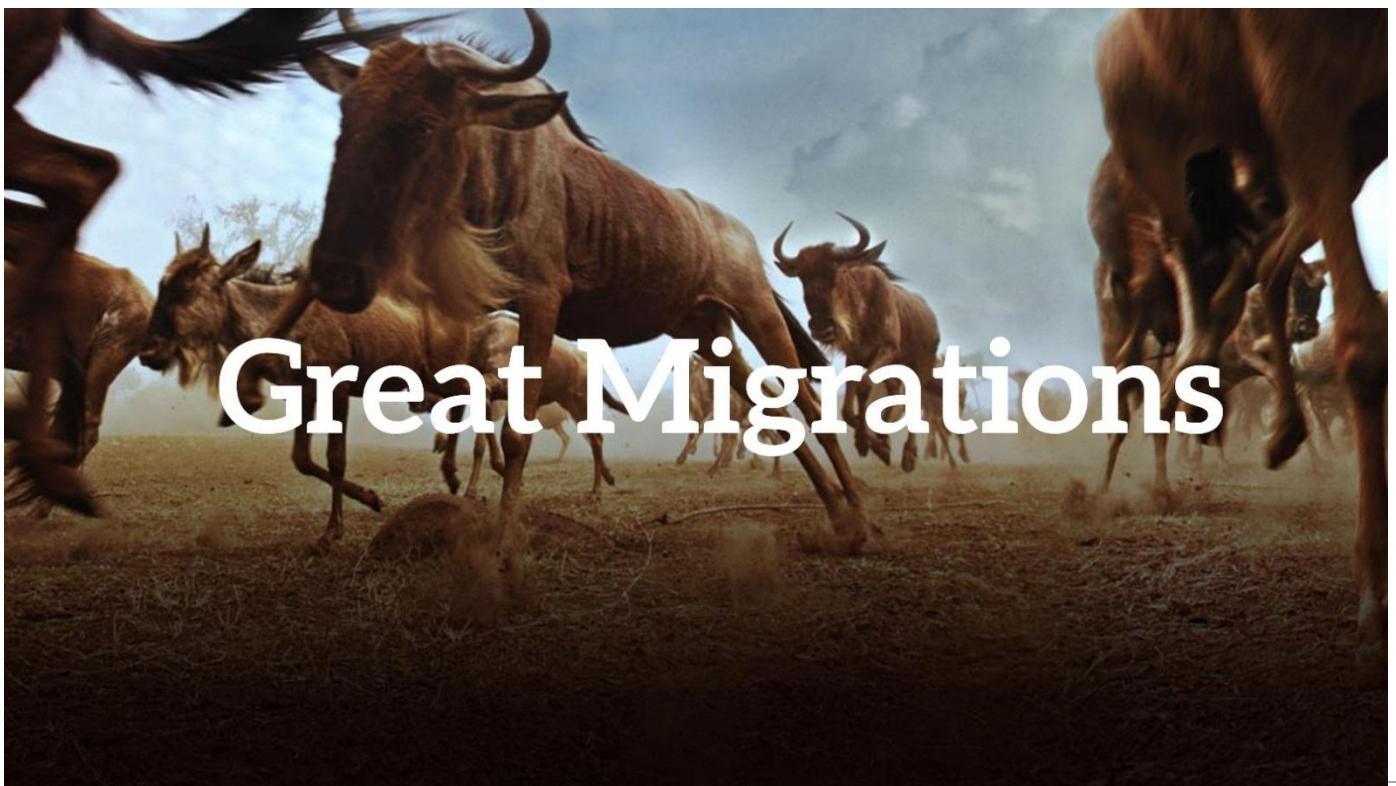
which **interrupted** the supply of **raw** material from Japan, also **stifled** the European silk industry. After the Second World War, Japan's silk production was restored, with improved production and quality of raw silk. Japan was to remain the world's biggest producer of raw silk, and practically the only major exporter of raw silk, until the 1970s. However, in more recent decades, China has gradually **recaptured** its position as the world's biggest producer and exporter of raw silk and **silk yarn**. Today, around 125,000 metric tons of silk are produced in the world, and almost two thirds of that production takes place in China.

Interrupt= stop, end, halt *ɪntə'rapt*
Raw= unprocessed, unrefined, natural *rə:*
Stifle= prevent st from happening 'stɪfəl

Recapture= bring back, take over again
ri:'kæptʃə

Silk yarn= thread used for making cloth or for knitting *sɪlk ja:n*

READING PASSAGE 2



Animal migration, however it is **defined**, is far more than just the movement of animals. It can loosely be described as travel that takes place at regular intervals - often in an annual cycle - that may involve many members of a species, and is rewarded only after a long journey. It suggests inherited instinct. The biologist Hugh Dingle has identified five characteristics that apply, in varying degrees and combinations, to all migrations. They are prolonged movements that carry animals outside familiar habitats; they tend to be linear, not zigzaggy; they involve special behaviours concerning preparation (such as overfeeding) and arrival; they demand special allocations of energy. And one more: migrating animals maintain an intense attentiveness to the greater mission, which keeps them undistracted by

Migration= relocation, resettlement, movement *maɪ'græʃn*

Define= describe correctly and thoroughly *dɪ'fain*

Inherited= inborn, innate = having qualities, physical features that controlled by gene passed from their parent *ɪn'hərɪtɪd*

Instinct (n)= nature, character *'ɪnstɪnkt*

Instinctive (adj)= intuitive, natural, innate, inborn *ɪn'sٹɪŋktɪv*

Identify= discover, find, determine *aɪ'dentɪfaɪ*

Prolonged= expanded, lengthened *prə'lɔːnd*

Linear= following a straight line *'lɪniə*

Overfeeding= eating more than they need for immediate purposes (**over-**= too much; i.e: oversensitive, overreact) *əʊvə'fi:dɪŋ*

Allocation= distribution *ælə'keɪʃn*

Undistracted = able to concentrate fully on something *ʌndɪ'strækɪtɪd*

temptations and **undeterred** by challenges that would turn other animals aside.

An arctic tern, on its 20,000 km flight from the extreme south of South America to the Arctic circle, will take no notice of a nice smelly herring offered from a bird-watcher's boat along the way. While local gulls will **dive voraciously** for such **handouts**, the tern flies on. Why? The arctic tern **resists distraction** because it is driven at that moment by an **instinctive** sense of something we humans find admirable: larger purpose. In other words, it is determined to reach its destination. The bird senses that it can eat, rest and **mate** later. Right now it is totally focused on the journey; its undivided **intent** is arrival. Reaching some gravelly coastline in the Arctic, upon which other arctic terns have **converged**, will serve its larger purpose as shaped by **evolution**: finding a place, a time, and a set of circumstances in which it can successfully **hatch** and **rear offspring**.

But migration is a **complex** issue, and biologists define it differently, depending in part on what sorts of animals they study. Joe Berger, of the University of Montana, who works on the American pronghorn and other large **terrestrial mammals**, prefers what he calls a simple, practical definition suited to his **beasts**: 'movements from a seasonal home area away to another home area and back again'. Generally the reason for such seasonal back-and-forth movement is to **seek** resources that aren't available within a single area year-round.

But daily **vertical** movements by zooplankton in the ocean - upward by night to seek food, downward by day to escape **predators** - can also be considered **migration**. So can the movement of aphids when, having **depleted** the young leaves on one food plant,

Temptation= attraction, lure, appeal
temp'teʃən

Undeterred= if you are undeterred by something, you do not allow it to stop you doing what you want ʌndər'tɜ:d

Dive= go underwater daɪv

Voracious= very eager for something, especially a lot of food və'reɪʃəs

Handout= something such as food, clothing, or money that is given free to someone who has a great need for it ˈhændaʊt

Resist= avoid, refuse to accept, defend against rɪ'zɪst

Distraction= something that stops you paying attention to what you are doing dɪ'streækʃən

Instinctive= based on natural tendency, not involving thought ɪn'stɪŋktɪv

Mate= (of two animals or birds) to have sex in order to produce young meat

Intent= intention, aim, goal, target, purpose in'tent

Converge= meet, come together kən'veɪdʒ

Evolution= growth, development i:və'lju:ʃən

Hatch= (of a young bird, fish, insect, etc.) to come out of an egg hætʃ

Rear= look after, raise rɪə

Offspring= children 'ɒf,spriŋ

Complex= complicated, difficult to understand 'kɒmpleks

Terrestrial mammals= animals giving birth to live young, not eggs and living on land rather than in the water or air tə'restrial 'mæməlz

Beast= creature, animal bi:st

Seek= search for, look for si:k

Vertical= straight up= pointing up in a line that forms an angle of 90° with a flat surface # horizontal 'vɜ:tɪkəl

Predator= an animal that kills and eats other animals (prey). 'predətə

Migration= movement from one region to another and often back again, esp. according to the season of the year maɪ'grейʃən

Deplete= reduce, eat up, lessen, exhaust, diminish # increase (**de-**= down, reduce, i.e: **destroy, degradation**) dɪ'pli:t

their **offspring** then fly onward to a different host plant, with no one aphid ever returning to where it started. Dingle is an evolutionary biologist who studies insects. His definition is more **intricate** than Berger's, **citing** those five features that **distinguish** migration from other forms of movement. They allow for the fact that, for example, aphids will become **sensitive to** blue light (from the sky) when it's time for takeoff on their big journey, and sensitive to yellow light (reflected from **tender** young leaves) when it's **appropriate** to land. Birds will **fatten** themselves **with** heavy feeding **in advance** of a long migrational flight. The value of his definition, Dingle argues, is that it focuses attention on what the **phenomenon** of wildebeest migration shares with the phenomenon of the aphids, and therefore helps guide researchers towards understanding how **evolution** has produced them all.

Human behaviour, however, is having a **detrimental** impact on animal migration. The pronghorn, which **resembles** an antelope, though they are unrelated, is the fastest land mammal of the New World. One population, which spends the summer in the mountainous Grand Teton National Park of the western USA, follows a narrow route from its summer range in the mountains, across a river, and down onto the plains. Here they wait out the frozen months, feeding mainly on sagebrush blown clear of snow. These pronghorn are **notable for** the **invariance** of their migration route and the **severity** of its **constriction** at three **bottlenecks**. If they can't pass through each of the three during their spring migration, they can't reach their bounty of summer grazing; if they can't pass through again in autumn, escaping south onto those windblown **plains**, they are likely to die trying to overwinter in the deep snow. Pronghorn, dependent on distance vision and speed to keep safe from predators, **traverse** high, open shoulders of land, where they can see and run. At one of the bottlenecks, forested hills rise to form a V, leaving a **corridor** of open ground

Offspring= the young of animal 'ɒf, sprɪŋ

Intricate = complicated, complex #

simple 'ɪntrɪkət

Cite= name, mention, refer to sایت

Distinguish= differentiate, discriminate dr'stɪŋgwɪz

Sensitive to= responsive to, reactive to, easily influenced by 'sensətɪv tə

Tender= easily hurt or damaged 'tendər

Appropriate= suitable, proper, fitting ə'prɔپری-ət

Fatten sb with= to become fatter by doing something. 'fætn ˈsʌmbɒdi wið

In advance (of something) = before something happens ɪn ed've:n:s (əv 'sʌmθɪŋ)

Phenomenon= a fact or situation that is observed to exist or happen frɪ'nومینن

Evolution= the gradual change and development of an idea, situation, or object i:və'lju:ʃən

Detrimental= harmful, negative, damaging # beneficial detra'mentl

Resemble= look like, be similar to # differ rɪ'zembəl

be notable for= be famous for bi 'neutəbəl fə

Invariance= constancy; stability # variance, difference ɪn'veriəns

Severity= dangerousness, extremity, harshness sə'veriti

Constriction= restriction, limitation kən'strɪkʃən

Bottleneck= a place in a road where the traffic cannot pass easily, so that there are a lot of delays 'bɒtlnek

Plain= a large area of flat dry land plæɪn

Traverse= cross, pass through, go over 'trævə:s

Corridor= long, narrow passage, passage way 'kɔرڈو:

only about 150 metres wide, filled with private homes. Increasing development is leading toward a **crisis** for the pronghorn, **threatening** to **choke off** their passageway.

Conservation scientists, along with some biologists and land managers within the USA's National Park Service and other **agencies**, are now working to **preserve** migrational behaviours, not just species and habitats. A National Forest has **recognised** the **path** of the pronghorn, much of which passes across its land, as a protected migration corridor. But neither the Forest Service nor the Park Service can control what happens on private land at a bottleneck. And with certain other migrating species, the challenge is complicated further - by vastly greater distances traversed, more **jurisdictions**, more borders, more dangers along the way. We will require **wisdom** and **resoluteness** to ensure that migrating species can continue their journeying a while longer.

Crisis= disaster, catastrophe, trouble, hard times 'kraɪsɪs

Threaten= endanger, put smb/smt at risk 'θretn

Choke off= to prevent something from happening tʃəʊk ɒf

Conservation= protection, preservation, safeguarding kɒnse'veɪʃən

Agency= group, organization 'eɪdʒənsi

Preserve= maintain, protect, conserve prɪ'zɜ:v

Recognize= identify, know 'rekəgnائز

Path= way, route pa:θ

Jurisdiction= rules, legal decisions dʒʊərɪəs'dɪkʃən

Wisdom= understanding, intelligence, knowledge 'wɪzdəm

Resoluteness= determination, perseverance 'rezəlu:tneɪs

READING PASSAGE 3



Preface to “How the other half thinks: Adventures in mathematical reasoning”

A

Occasionally, in some difficult musical compositions, there are beautiful, but easy parts - parts so simple a beginner could play them. So it is with mathematics as well. There are some discoveries in advanced mathematics that do not depend on specialized knowledge, not even on algebra, geometry, or trigonometry. Instead they may involve, at most, a little arithmetic, such as ‘the sum of two odd numbers is even’, and common sense. Each of the eight chapters in this book **illustrates** this phenomenon. Anyone can understand every step in the reasoning. The thinking in each chapter uses at most only elementary arithmetic, and sometimes not even that. Thus all readers will have the chance to

Reasoning= the process of thinking about something in order to make a decision
'ri:zənɪŋ

Composition= work of art, piece of music, etc kom'pozɪʃən

Advanced= higher # foundation, elementary ed've:nst

Specialized= designed or developed for a particular purpose # generalized 'speʃ.el.aɪzd

Geometry= the study in mathematics of the angles and shapes dʒe'ɔmətri

Arithmetic= the science of numbers involving adding, multiplying etc (*arithm*=count, number .i.e logarithm, antilogarithm) ə'rɪθmətɪk

Odd number= a number that cannot be divided exactly by two, for example 1,3, 5,7 etc. # **even number** əd 'nʌmbə

Illustrate= demonstrate, show, describe
'ɪləstreɪt

Elementary= basic, simple, straightforward, uncomplicated elə'mentəri

Arithmetic= the science of numbers involving adding, multiplying etc ə'rɪθmətɪk

participate in a mathematical experience, to **appreciate** the beauty of mathematics, and to become familiar with its logical, yet **intuitive**, style of thinking.

B

One of my purposes in writing this book is to give readers who haven't had the opportunity to see and enjoy real mathematics the chance to appreciate the mathematical way of thinking. I want to **reveal** not only some of the **fascinating** discoveries, but, more importantly, the reasoning behind them. In that respect, this book differs from most books on mathematics written for the general public. Some present the lives of colorful mathematicians. Others describe important **applications** of mathematics. Yet others go into mathematical **procedures**, but **assume** that the reader is **adept** in using algebra.

C

I hope this book will help **bridge** that **notorious gap** that **separates** the two cultures: the humanities and the sciences, or should I say the right brain (intuitive) and the left brain (analytical, numerical). As the chapters will illustrate, mathematics is not restricted to the analytical and numerical; **intuition** plays a significant role. The **alleged** gap can be narrowed or completely **overcome** by anyone, in part because each of us is far from using the full **capacity** of either side of the brain. To illustrate our human **potential**, I **cite** a structural engineer who is an artist, an electrical engineer who is an opera singer, an opera singer who published mathematical research, and a mathematician who publishes short stories.

D

Other scientists have written books to explain their fields to non-scientists, but have necessarily had to **omit** the mathematics, although it provides the **foundation** of their theories. The reader must remain a **tantalized spectator** rather than an involved participant, since the **appropriate** language for describing the details in much of science is

Participate in (v)= take part in pa.'tɪsəpeɪt in
Participant (n)= a person who takes part in or becomes involved in a particular activity pa.'tɪsəpeɪnt

Appreciate= value, respect, cherish, treasure, think highly of ə'pri:ʃeɪt
Intuitive= instinctive, natural ɪn'tju:ɪtɪv

Reveal= bring to light, show, point out rɪ'veɪl

Fascinating= interesting, attractive # boring, dull 'fæsəneɪtɪŋ

Application= implementation, use, utilization æplɪ'keɪʃən

Procedure= process, method, practice prə'skri:dʒə

Assume= presume, suppose, guess... ə'sju:m

Adept= skillful, expert, proficient, gifted, talented # Inept 'ædɛpt

Bridge a gap= to make the difference between them smaller brɪdʒ ə gæp

Notorious= infamous nəʊ'tɔ:riəs

Separate= divide, split up, break up 'sepəreɪt

Intuition= the ability to understand or know something because of a feeling rather than by considering the facts. intju:'ɪʃən

Alleged= unproven, suspected # confirmed ə'ledʒd

Overcome= defeat, control, get over əʊvə'kʌm

Capacity= ability kə'pæsəti

Potential= capability, capacity, ability pə'tenʃəl

Cite= name, mention, refer to səɪt

Omit= neglect, ignore, forget əʊ'mɪt

Foundation= base, basis faʊn'deɪʃən

Tantalize= to excite or attract someone by offering or suggesting something that is unlikely to be provided or is not enough 'tæntəl-aɪz

Spectator= viewer, watcher, observer spek'teɪtər

Appropriate= suitable, acceptable ə'prəʊpri-eɪt

mathematics, whether the subject is expanding universe, subatomic particles, or chromosomes. Though the broad outline of a scientific theory can be **sketched** intuitively, when a part of the physical universe is finally understood, its **description** often looks like a page in a mathematics text.

E

Still, the non-mathematical reader can go far in understanding mathematical reasoning. This book presents the details that illustrate the mathematical style of thinking, which involves **sustained**, step-by-step **analysis**, **experiments**, and **insights**. You will turn these pages much more slowly than when reading a novel or a newspaper. It may help to have a pencil and paper ready to check **claims** and **carry out** experiments.

F. As I wrote, I kept in mind two types of readers: those who enjoyed mathematics until they were turned off by an unpleasant episode, usually around fifth grade, and mathematics **aficionados**, who will find much that is new throughout the book. This book also serves readers who simply want to **sharpen** their **analytical** skills. Many careers, such as law and medicine, require extended, **precise** analysis. Each chapter offers practice in following a sustained and closely argued line of thought. That mathematics can develop this skill is shown by these two **testimonials**:

G

A physician wrote, the **discipline** of analytical thought processes [in mathematics] prepared me extremely well for medical school. In medicine one is faced with a problem which must be thoroughly analyzed before a solution can be found. The process is similar to doing mathematics.'

A lawyer made the same point, "Although I had no **background** in law - not even one political science course — I did well at one of the best law schools. I **attribute** much of my success there to having learned, through the study of mathematics, and, in particular, **theorems**, how to analyze principles. Lawyers who

Sketch= draft, outline *sketʃ*

Description= a piece of writing or speech that gives details about smb/smt *dɪ'skripjən*

Sustained= continuous, ongoing, constant *sə'steɪnd*

Analysis= study, investigation, examination *e'naλɪsɪs*

Experiment= test *ɪk'sperɪmənt*

Insight= a clear, deep understanding of a complicated problem or situation *ɪn'saɪt*

Claim= a statement that something is true, even though it has not been proved *kleɪm*

Carry out= do, conduct *'kæri 'aut*

Aficionado= enthusiast, fan, admirer *ə'fiʃə'nə:dəʊ*

Sharpen= enhance, improve *'ʃa:pən*

Analytical= logical, systematic, scientific, rational *ænə'lɪtɪkəl*

Precise= exact, accurate *pri'saɪs*

Testimonials= statements, confirmations *testɪ'məʊnɪəlz*

Discipline= an area of knowledge or teaching, especially one such as history, chemistry, mathematics etc that is studied at a university *'dɪsɪplɪn*

Background= experience *'bækgraʊnd*

Attribute smt to smb/smt= to believe or say that a situation or event is caused by something *ə'trɪbju:t 'sʌmθɪŋ tə 'sʌmbodi/ 'sʌmθɪŋ*

Theorem= a statement that can be shown to be true *'θɪərəm*

have studied mathematics can master the legal principles in a way that most others cannot.'

I hope you will share my **delight** in watching as simple, even **naive**, questions lead to **remarkable** solutions and **purely** theoretical discoveries find **unanticipated** applications.

Delight= enjoyment, pleasure, happiness, joy *dɪ'lært*

Naive= simple, inexperienced, immature
sophisticated *naɪ'i:v*

Remarkable= extraordinary, amazing, outstanding, significant, incredible
ordinary *ri'ɔ:ri:nəbi:l*

Purely= completely and only *'pjue:lɪ*

Unanticipated= unexpected, surprising, unforeseen *ʌn.aen'tɪs.t̬.per.t̬id*

TEST 4

READING PASSAGE 1



Twins Research

To biomedical researchers all over the world, twins offer a precious opportunity to untangle the influence of genes and the environment - of nature and nurture. Because identical twins come from a single fertilized egg that splits into two, they share virtually the same genetic code. Any differences between them - one twin having younger looking skin, for example - must be due to environmental factors such as less time spent in the sun.

Alternatively, by comparing the experiences of identical

Biomedical= relating to how biology affects medicine bəɪəʊd' medɪkl

Twin= one of two children born at the same time to the same mother twɪn

Precious= valuable, cherished, treasured 'preʃəs

Untangle= understand or explain something that is mysterious or complicated ʌn'tæŋgəl

Nurture= the education and care that you are given as a child, and the way it affects your later development and attitudes 'nɜːtʃə

Identical twin= one of a pair of brothers or sisters born at the same time, who develop from the same egg and look almost exactly alike ɪd'entɪkəl twɪn

Fertilize = to cause an egg or seed to start to develop into a new young animal or plant by joining it with a male cell 'fɜːtəlaɪz

Split= divide, break # merge splɪt

Virtually= almost, nearly 'vɜːtʃuəli

twins with those of **fraternal** twins, who come from separate eggs and share on average half their DNA, researchers can **quantify** the **extent** to which our genes affect our lives. If identical twins are more similar to each other with respect to an **ailment** than fraternal twins are, then **vulnerability** to the disease must **be rooted** at least in part in **heredity**.

These two lines of research - studying the differences between identical twins to **pinpoint** the influence of environment, and comparing identical twins with fraternal ones to measure the role of **inheritance** - have been **crucial** to understanding the **interplay** of nature and nurture in determining our personalities, behavior, and vulnerability to disease.

The idea of using twins to measure the influence of heredity dates back to 1875, when the English scientist Francis Galton first suggested the approach (and **coined the phrase** 'nature and nurture'). But twin studies took a surprising **twist** in the 1980s, with the arrival of studies into identical twins who had been separated at birth and **reunited** as adults. Over two decades 137 sets of twins eventually visited Thomas Bouchard's lab in what became known as the Minnesota Study of Twins Reared Apart. Numerous tests were **carried out** on the twins, and they were each asked more than 15,000 questions.

Bouchard and his colleagues used this mountain of data to identify how far twins were affected by their **genetic makeup**. The key to their approach was a **statistical** concept called heritability. In broad terms, the heritability of a **trait** measures the extent to which differences among members of a population can be explained by differences in their genetics. And wherever Bouchard and other scientists looked, it seemed, they found the **invisible** hand of genetic influence helping to shape our lives.

Lately, however, twin studies have helped lead scientists to a **radical** new conclusion: that nature and

Fraternal=connected with the relationship that exists between brothers *frə'tɜ:nl*

Quantify= count, calculate, measure *'kwɒntɪfaɪ*

Extent= degree, level *ɪk'stent*

Ailment= illness, disease *'eɪlmənt*

Vulnerability= the state of being easily affected by something *vʌl'nerə.ə'bɪl.ə.ti*

Be rooted in something = to be based on something or caused by something *bi 'ru:tɪd ɪn 'sʌmθɪŋ*

Heredity= the process by which mental and physical qualities are passed from a parent to a child before the child is born.

(*here=cling, stick .i.e adhere, coherence*)
he'redəti

Pinpoint= identify *'pɪnpɔɪnt*

Inheritance= money or objects that someone gives you when they die *ɪn'hیرətəns*

Crucial= extremely important or necessary
'kru:ʃəl

Interplay= relationship, interaction

(*inter- = among, between, i.e: intersection, international*) *'ɪntəpleɪ*

Coin the phrase= invent a term *kɔɪn ðə freɪz*

Twist = change *twɪst*

Reunite= bring back together, come together *ri:ju:nait*

Carry out= do, implement *'kæri 'aʊt*

Genetic makeup= genetic combination
dʒrɪ'netɪk 'meɪkʌp

Statistical= numerical *stə'tɪstɪkəl*

Trait= a particular quality in your personality *treɪt*

Invisible = impossible to see *ɪn'vezəbl*

Radical= fundamental, basic, essential
'rædɪkəl

nurture are not the only **elemental** forces at work. According to a recent field called **epigenetics**, there is a third factor also in play, one that in some cases serves as a bridge between the environment and our genes, and in others operates on its own to shape who we are.

Epigenetic processes are chemical reactions **tied** to neither nature nor nurture but **representing** what researchers have called a 'third **component**'. These reactions influence how our genetic code is expressed: how each gene is strengthened or weakened, even turned on or off, to build our bones, brains and all the other parts of our bodies.

If you think of our DNA as an **immense** piano keyboard and our genes as the keys - each key symbolizing a **segment** of DNA responsible for a particular note, or **trait**, and all the keys combining to make us who we are - then epigenetic processes **determine** when and how each key can be struck, changing the **tune** being played.

One way the study of epigenetics is **revolutionizing** our understanding of biology is by **revealing a mechanism** by which the environment directly impacts on genes. Studies of animals, for example, have shown that when a rat experiences stress during **pregnancy**, it can cause epigenetic changes in a **fetus** that lead to behavioral problems as the rodent grows up. Other epigenetic processes appear to **occur randomly**, while others are normal, such as those that guide embryonic cells as they become heart, brain, or liver cells, for example.

Geneticist Danielle Reed has worked with many twins over the years and thought deeply about what twin studies have taught us. 'It's very clear when you look at twins that much of what they share is **hardwired**', she says. 'Many things about them are absolutely the same and **unalterable**. But it's also clear, when you get to know them, that other things about them are different. Epigenetics is the origin of a lot of those differences, in my view.'

Reed credits Thomas Bouchard's work for today's **surge** in twin studies. 'He was the **trailblazer**', she

Elemental= basic, fundamental *elə'mentl*

Epigenetics= the scientific study of changes in the behaviour of genes that are caused by things that a living thing experiences *epədʒə'netɪks*

Tied= linked, joined, related *taɪd*

Represent= stand for, symbolize
reprɪ'zent

Component= part, factor, element
kəm'pənənt

Immense=extremely large, enormous
ɪ'mens

Segment= section, part, piece, sector
'segmənt

Trait= characteristic, feature *trɛɪt*

Determine= decide *dɪ'tɜ:mɪn*

Tune= melody *tju:n*

Revolutionize= develop, transform

re'velu:ʃənaɪz

Reveal= show, display, exhibit # conceal
rɪ'veɪl

Mechanism = process, system, operation
'mekənɪzəm

Pregnancy= when a woman has a baby growing inside her body *'pregnənsɪ*

Fetus= a baby or young animal before it is born *'fi:təs*

Occur = happen *ə'kə:*

Randomly = unexpectedly = in an unplanned way *'rændəmli*

Hardwired= if an attitude, way of behaving etc is hard-wired, it is a natural part of a person's character that they are born with and cannot change *ha:d'waɪəd*

Unalterable= unchangeable, fixed
ʌn'ɔ:lterəbəl

Surge = sudden and great increase *sɜ:dʒ*

Trailblazer= pioneer *'treɪlbleɪzə*

says. 'We forget that 50 years ago things like heart disease were thought to be caused entirely by lifestyle. Schizophrenia was thought to be due to poor **mothering**. Twin studies have allowed us to be more **reflective** about what people are actually born with and what's caused by experience.'

Having said that, Reed adds, the latest work in epigenetics promises to **take our understanding even further**. 'What I like to say is that nature writes some things in pencil and some things in pen,' she says. 'Things written in pen you can't change. That's DNA. But things written in pencil you can. That's epigenetics. Now that we're actually able to look at the DNA and see where the pencil writings are, it's sort of a whole new world.'

Mothering= the process of caring for children in the way that a mother does.

'mʌðərɪŋ

Reflective= thinking carefully and quietly
rɪ'flektɪv

Take our understanding even further = increase our knowledge 'teɪk 'aʊər ʌndə'stændɪŋ i:vn 'fɜ:ðə

READING PASSAGE 2



Though we might think of film as an essentially **visual** experience, we really cannot afford to **underestimate** the importance of film sound. A meaningful sound track is often as **complicated** as the image on the screen, and is ultimately just as much the responsibility of the director. The entire sound track consists of three **essential ingredients**: the human voice, sound effects and music. These three tracks must be mixed and **balanced** so as to produce the necessary **emphases** which in turn create **desired** effects.

Topics which essentially refer to the three previously mentioned tracks are discussed below. They include **dialogue**, synchronous and asynchronous sound effects, and music.

Let us start with dialogue. As is the case with stage drama, dialogue serves to tell the story and expresses feelings and **motivations** of characters as well. Often with film **characterization** the audience **perceives**

Visual = relating to seeing 'vɪʒuel
Underestimate = underrate, undervalue # overestimate ʌndə'restɪmeɪt
Complicated = complex # simple, easy 'kɒm.plɪ.kæ.tɪd
Essential = necessary or needed ɪ'senʃəl
Ingredient = element, factor, part ɪn'grɪ:dɪənt
Balanced = containing an equal amount or number of similar things or people 'bæl.ənst
Emphasis = special attention or importance 'emfəsɪs
Desired = expected, wanted # unwanted dr'zɑɪəd

Dialogue = conversation 'daɪəlɒg
Motivation = enthusiasm for doing something məʊtə'veɪʃən
Characterization = the way in which the character of a real person or thing is described kærəktərɪz'eɪʃən
Perceive = recognize, become aware of pe'si:v

little or no difference between the character and the actor. Thus, for example, the actor Humphrey Bogart is the character Sam Spade; film **personality** and life personality seem to **merge**. Perhaps this is because the very **texture** of a performer's voice supplies an **element** of character.

When voice textures fit the performer's **physiognomy** and **gestures**, a whole and very realistic **personal emerges**. The viewer sees not an actor working at his **craft**, but another human being **struggling** with life. It is interesting to note that how dialogue is used and the very amount of dialogue used varies widely among films. For example, in the highly successful science-fiction film 2001, little dialogue was evident, and most of it was **banal** and of little **intrinsic** interest. In this way the film-maker was able to **portray** what Thomas Sobochack and Vivian Sobochack call, in An Introduction to Film, the '**inadequacy** of human responses when compared with the **magnificent** technology created by man and the visual beauties of the universe'.

The comedy Bringing Up Baby, on the other hand, presents practically non-stop dialogue delivered at **breakneck** speed. This use of dialogue **underscores** not only the **dizzy** quality of the character played by Katherine Hepburn, but also the **absurdity** of the film itself and thus its humor. The audience is bounced from gag to gag and conversation to conversation; there is no time for audience **reflection**. The audience is **caught up in** a whirlwind of activity in simply managing to follow the **plot**. This film presents pure **escapism** - largely due to its **frenetic** dialogue.

Synchronous sound effects are those sounds which are synchronized or matched with what is viewed. For

Personality= traits, character pə:sə'naeləti

Merge= combine, unite # separate, split mɜ:g

Texture= the quality of something (eg. voice) that is rough or smooth or soft or hard 'tekstʃə

Element= a part of sth 'eləment

Physiognomy= the general appearance of a person's face fɪzi'ɒnəmi

Gesture= a movement of part of your body, especially your hands or head, to show what you mean or how you feel 'dʒestʃə

Personal = belonging or relating to one particular person 'pɜ:sonəl

Emerge= to appear by coming out of something or out from behind something ɪ'mɜ:dʒ

Craft= skill, ability, technique kra:f:t

Struggle= to experience difficulty and make a very great effort in order to do something 'strʌggl

Banal=trivial= ordinary and not interesting, because of a lack of new or different ideas. be'næ:l

Intrinsic= natural ɪn'trɪnsɪk

Portray= to represent or describe someone or something in a painting, film, book, or other artistic work po:t'reɪ

Inadequacy= insufficiency, lack # abundance ɪn'ædəkwəsi

Magnificent= wonderful, outstanding, brilliant mæg'nɪfɪsənt

Breakneck= fast, rapid, quick 'breɪknæk

Underscore= emphasize, highlight, underline # ignore ʌndə'skɔ:

Dizzy= stupid and forgetful 'dizi

Absurdity= illogicality, ridiculousness, foolishness # logic, reasonableness əb'sɜ:d

Reflection=serious and careful thought rɪ'fleksʃən

be/get caught up in something= to be or get involved in something, especially something bad bi:/'get 'kɔ:t ʌp ɪn 'sʌmθɪŋ

Plot= story line plot

Escapism = activities or entertainment that help you forget about bad or boring things for a short time ɪ'skeɪpɪzəm

Frenetic= frantic, fast and not very organized frə'netɪk

example, if the film portrays a character playing the piano, the sounds of the piano are projected. Synchronous sounds contribute to the realism of film and also help to create a particular atmosphere. For example, the 'click' of a door being opened may simply serve to **convince** the audience that the image portrayed is real, and the audience may only **subconsciously** note the expected sound. However, if the 'click' of an opening door is part of an **ominous** action such as a **burglary**, the sound mixer may call attention to the 'click' with an increase in volume; this helps to **engage** the audience in a moment of **suspense**.

Asynchronous sound effects, on the other hand, are not matched with a visible source of the sound on screen. Such sounds are included so as to provide an **appropriate** emotional **nuance**, and they may also add to the realism of the film. For example, a film-maker might **opt** to include the background sound of an ambulance's siren while the foreground sound and image portrays an arguing couple. The asynchronous ambulance siren underscores the psychic **injury** incurred in the argument; at the same time the noise of the siren adds to the realism of the film by acknowledging the film's city setting.

We are probably all familiar with background music in films, which has become so **ubiquitous** as to be **noticeable** in its **absence**. We are aware that it is used to add **emotion** and **rhythm**. Usually not meant to be noticeable, it often provides a tone or an emotional attitude toward the story and /or the characters depicted. In addition, background music often **foreshadows** a change in mood. For example, **dissonant** music may be used in film to **indicate** an approaching (but not yet visible) **menace** or disaster. Background music may **aid** viewer understanding by linking scenes. For example, a particular musical theme **associated with** an individual character or situation may be repeated at various points in a film in order to remind the audience of **salient motifs** or ideas.

Convince= persuade kən'veɪns

Subconsciously= unintentional
consciously səb'kɒn.fəs.li

Ominous=suggesting that something unpleasant is likely to happen 'ɒmɪnəs

Burglary= breaking and entering, theft, robbery 'bɜ:g'ləri

Engage somebody in something=
to attract someone's attention and keep them interested ɪn'geɪdʒ ə'sʌmbədi ɪn 'sʌmθɪŋ
Suspense= tension, uncertainty, doubt, anxiety, nervousness sə spens

Appropriate=suitable or right for a particular situation or occasion ə'priəpri-ət

Nuance= a very slight, hardly noticeable difference in manner, colour, meaning 'nju:a:ns

Opt= to make a choice, especially of one thing or possibility instead of others ɒpt

Injury= physical harm or damage to someone's body caused by an accident or an attack 'ɪndʒəri

Ubiquitous = popular, common, pervasive, prevalent # rare ju:'bɪkwɪtəs

Noticeable= clear, obvious 'nəʊtɪsəbəl

Absence= nonexistence, lack ə'æbsəns

Emotion= feeling ɪ'meʊʃən

Rhythm= beat 'rɪðəm

Foreshadow= anticipate fo:'ʃæðəʊ

Dissonant = lacking harmony 'dɪs.ən.ənt

Indicate=to show, point, or make clear in another way 'ɪndɪkeɪt

Menace= threat, danger 'menɪs

Aid= help or support eɪd

Associate with= link with, connect with ə'səʊsɪeɪt wið

Salient= important, main, outstanding, noticeable, obvious, remarkable 'seɪlɪənt

Motif= pattern məʊ'ti:f

Film sound **comprises conventions** and **innovations**. We have come to expect an **acceleration** of music during car chases and creaky doors in horror films. Yet, it is important to note as well that sound is often brilliantly **conceived**. The effects of sound are often largely **subtle** and often are noted by only our **subconscious** minds. We need to **foster** an awareness of film sound as well as film space **so as to** truly **appreciate** an art form that sprang to life during the twentieth century - the modern film.

Comprise= include, contain, consist of kəm'praɪz
Convention= rule, standard, principle kən'venʃən
Innovation= improvement, modernization inə'veiʃən
Acceleration= speeding up, quickening, increase in speed ək'selə'reiʃən
Conceive= think, see, perceive, grasp, appreciate, apprehend kən'si:v
Subtle= delicate, indirect # obvious 'sʌtl
Foster= promote, encourage 'foste
So as to= in order to, in an attempt to 'səʊ ez tu:
Subconscious=connected with feelings that influence your behaviour even though you are not aware of them sʌb'kɔnʃəs
Appreciate = acknowledge, recognize, be aware of e'pri:fieɪt

READING PASSAGE 3



A

Of all mankinds **manifold** creations, language must **take pride of place**. Other inventions -the wheel, agriculture, sliced bread - may have **transformed** our **material** existence, but the **advent** of language is what made us human. Compared to language, all other inventions pale in significance, since everything we have ever **achieved** depends on language and **originates** from it. Without language, we could never have **embarked on** our **ascent** to **unparalleled** power over all other animals, and even over nature itself.

Marvellous= amazing, awesome /'mævələs/
Manifold= various, many and different

'mænəfəuld

Take pride of place= if something has or takes pride of place, it is put in the best place for people to see because it is the thing you are most proud of 'terk praid ev 'pleis

Transform= change, alter, modify træns 'fɔ:m

Material = relating to physical objects or

money rather than emotions m

Advent= arrival, start 'ædvent

Achieve = get, gain, obtain, acquire

Originates

Embark on= to start something, especially something new, difficult, or exciting

Accept—the process of becoming more

Ascent= the process of becoming important or powerful than before.

Unparalleled = emphasize smt is

B

But language is **foremost** not just because it came first. In its own right it is a tool of **extraordinary sophistication**, yet based on an idea of **ingenious simplicity**: ‘this **marvellous** invention of composing out of twenty-five or thirty sounds that **infinite** variety of expressions which, whilst having in themselves no likeness to what is in our mind, allow us to **disclose** to others its whole secret, and to make known to those who cannot **penetrate** it all that we imagine, and all the various **stirrings of our soul**’ This was how, in 1660, the **renowned** French grammarians of the Port-Royal abbey near Versailles **distilled** the **essence** of language, and no one since has celebrated more eloquently the **magnitude** of its achievement. Even so, there is just one **flaw** in all these **hymns** of praise, for the **homage** to languages unique **accomplishment** **conceals** a simple yet **critical incongruity**. Language is mankind’s greatest invention - except, of course, that it was never invented. This apparent **paradox** is at the core of our fascination with language, and it holds many of its secrets.

C

Language often seems so skillfully drafted that one can hardly imagine it as anything other than the perfected **handiwork** of a master **craftsman**. How else could this **instrument** make so much out of barely three dozen measly morsels of sound? In themselves, these **configurations** of mouth p,f,b,v,t,d,k,g,sh,a,e and so on - **amount to** nothing more than a few **haphazard** spits and splutters, random noises with no meaning, no ability to express, no power to explain. But run them through the cogs and wheels of the language machine,

Foremost=most important or best; leading

‘fo:məʊst

Extraordinary=very unusual, special, unexpected, or strange *ɪk'strɔ:dənəri*

Sophistication= complexity *sə,frs.tʃɪ'keɪʃən*

Ingenious=very suitable for a particular purpose and resulting from clever new ideas
‘ɪndʒi:nju:əs

Simplicity= easiness # complexity *sim'plɪsəti*

Marvellous=extremely good; wonderful
‘ma:vələs

Infinite=very great; impossible to measure
‘ɪnfənɪt

Disclose= reveal, make known # hide *dɪsl'kləʊz*

Penetrate= understand, grasp, perceive
‘penətreɪt

Stirring of our soul= the arousing of deep emotion *'stɪ:riŋ əv 'aʊə səʊl*

Renowned= famous, well-known *rɪ'naʊnd*

Distill= to get the main ideas or facts from a much larger amount of information *dɪ'stl*

Essence= the basic or most important idea or quality of something *'esəns*

Magnitude=the large size or importance of something *'mægnɪtju:d*

Flaw= fault, error *flo:*

Hymn= a song of praise *hɪm*

Homage= respect, honor *'hɒmɪdʒ*

Accomplishment= achievement *ə'kʌm.plɪʃ.mənt*

Conceal= hide, cover up *kən'seɪl*

Critical=extremely important because a future situation will be affected by it *'krɪtɪkəl*

Incongruity= strangeness, inappropriateness
ɪnkən'gru:əti

Paradox= inconsistency, contradiction = a situation or statement that seems impossible or is difficult to understand because it contains two opposite facts or characteristics *'pærədoks*

Handiwork= something done skillfully with the hands *'hændiwrk*

Craftsman= someone who is very skilled at a particular craft *'kra:fsmən*

Instrument= tool, gadget *ɪnst्रəmənt*

Configuration= the shape or arrangement of the parts of something (*fig=form, shape .i.e figure, configure*) *kən'fɪgʊ'reɪʃən*

Amount to something= be the same as
ə'maʊnt tu 'sʌmθɪŋ

Haphazard= random, disorganized
hæp'hæzəd

let it arrange them in some very special orders, and there is nothing that these **meaningless** streams of air cannot do: from sighing the **interminable** boredom of existence to **unravelling** the fundamental order of the universe.

D

The most extraordinary thing about language, however, is that one doesn't have to be a genius to set its wheels in **motion**. The language machine allows just about everybody from pre-modern **foragers** in the subtropical savannah, to post-modern philosophers in the suburban sprawl - to tie these meaningless sounds together into an **infinite** variety of **subtle** senses, and all apparently without the slightest **exertion**. Yet it is precisely this **deceptive ease** which makes language a **victim of its own success**, since in everyday life its **triumphs** are usually **taken for granted**. The wheels of language run so smoothly that one rarely bothers to stop and think about all the resourcefulness and **expertise** that must have gone into making it tick.

Language **conceals** art.

E

Often, it is only the **estrangement** of foreign tongues, with their many **exotic** and **outlandish** features, that brings home the wonder of languages design. One of the **showiest stunts** that some languages can **pull off** is an ability to build up words of breath-breaking length, and thus express in one word what English takes a whole sentence to say. The Turkish word çehirliliçtiremediklerimizdensiniz, to take one example, means nothing less than 'you are one of those whom we can't turn into a town-dweller'. (In case you were wondering, this **monstrosity** really is one word, not merely many different words **squashed** together - most of its **components** cannot even stand up on their own.)

F

Meaningless= worthless # meaningful
'mi:nɪŋləs

Interminable= endless= long and boring
ɪn'tɜ:mɪneɪbəl

Unravel= to understand or explain something that is mysterious or complicated ʌn'rævəl

Motion= the act or process of moving or the way something moves 'məʊʃən

Foragers= hunters 'fɔ:rdʒərs

Infinite= never-ending, unlimited 'ɪnfɪnɪt

Subtle= not easy to notice or understand unless you pay careful attention 'sətl

Exertion= a lot of mental and physical effort ɪg'zɜ:tʃən

Deceptive= misleading, false dɪ'septɪv

Ease= effortlessness, no difficulty i:z

Be a victim of your own success= to be badly affected by some unexpected results of being very successful bi ə 'vɪktɪm əv jər əʊn sək'ses

Triumph= victory, win, conquest, success 'traɪmf

Take for granted= to believe something is true without first making sure that it is 'teɪk fə 'gra:nɪtd

Expertise= expert knowledge or skill in a particular subject, activity or job ekspz:ti:z

Conceal=to hide somebody/something kən'si:l

Estrangement = separation, division used to describe one of several parts of which something is made ɪ'streɪndʒd

Exotic= unusual, out of the ordinary, strange # familiar, conventional ɪg'zotɪk

Outlandish= strange, unusual, weird aut'lændɪʃ

Showy stunt= something that is done to attract people's attention, especially in advertising or politics. 'ʃəʊɪ stʌnt

Pull off= succeed, do well pʊl ɒf

Monstrosity = something that is very ugly and usually large mon'strəsəti

Squash = squeeze = to push something into a small space skwɒʃ

component=used to describe one of several parts of which something is made kəm'pənənt

And if that sounds like some one-off freak, then consider Sumerian, the language spoken on the banks of the Euphrates some 5,000 years ago by the people who invented writing and thus **enabled** the **documentation** of history. A Sumerian word like munintuma'a ('when he had made it suitable for her') might seem rather **trim** compared to the Turkish colossus above. What is so **impressive** about it, however, is not its lengthiness but rather the **reverse** - the **thrifty compactness** of its construction. The word is made up of different slots, each **corresponding** to a particular portion of meaning. This **sleek** design allows single sounds to **convey** useful information, and in fact even the **absence** of a sound has been enlisted to express something specific. If you were to ask which bit in the Sumerian word corresponds to the pronoun 'it' in the English translation 'when he had made it suitable for her', then the answer would have to be nothing. Mind you, a very particular kind of nothing: the nothing that stands in the empty slot in the middle. The technology is so **fine-tuned** then that even a non-sound, when carefully placed in a particular position, has been invested with a specific function. Who could possibly have **come up with** such a **nifty contraption**?

Enable= allow, make possible # prevent
ɪ'neɪbəl

Documentation= records dokjəmən 'teɪʃən

Trim= neat, shorten trim

Impressive= extraordinary, remarkable
unimpressive, ordinary ɪm'prezɪv

Reverse= opposite, contrary rɪ'vers

Thrifty=careful about spending money
and not wasting things 'θrɪfti

Compactness= neatness = the fact that everything fits neatly into a little space
kəm'pæktnəs

correspond to = to be very similar to or the same as something else

(cor= together, with) kɔrɪ'spond tu:

Sleek= smooth sli:k

Convey= express kən'veɪ

Absence= lack, non-existence
presence, attendance 'æbsəns

Fine-tune = to make very small changes to something such as a machine, system, or plan, so that it works as well as possible fain'tju:n

Come up with= to think of an idea, find out, create 'kʌm 'ʌp wið

Nifty= ingenious, clever, effective 'nɪfti

Contraption= a piece of equipment or machinery kən'træپʃən

List of root words

No.	Root, prefix, suffix	Meaning	Examples
1.	urb	City	urban = city, inner-city, metropolitan, town suburb = an area on the edge of a large town or city where people who work in the town or city often live
2.	dem-	People	demographic = relating to the population and groups of people in it democracy = the belief in freedom and equality between people, or a system of government based on this belief
3.	re-	do again	renewal = the act or process of making changes to something in order to improve it so that it becomes more successful reverse = to change something, such as a decision, judgment, or process so that it is the opposite of what it was before re-routing = change the direction
4.	de-	reduce, down	despoil = damage, spoil, ruin deplete = to reduce something in size or amount, especially supplies of energy, money, etc deforestation = the cutting or burning down of all the trees in an area
5.	semi-	Half	semi-arid = have little rain but is not completely dry

6.	vol, volut	change, turn	evolve = <i>develop gradually</i> revolution = <i>a movement in a circle or curve around a central point</i>
7.	optim	Best	optimum = <i>most favorable, best, greatest</i>
8.	herb	Grass	herbicide = <i>a substance used to kill unwanted plants</i> herbal = <i>relating to or made from herbs</i>
9.	cid	Kill	pesticide = <i>a chemical substance used to kill harmful insects, small animals, wild plants, and other unwanted organisms</i>
10.	inter-	among, between	interplay = <i>relationship, interaction</i> intersection = <i>the place where two or more roads join or cross each other</i>
11.	ed	Eat	edible = <i>suitable or safe for eating</i>
12.	tract	pull, draw	tractor = <i>a strong vehicle with large wheels, used for pulling farm machinery</i>
13.	ex-	Out	expose = <i>make something uncovered or <u>hidden</u> <u>able</u> to be <u>seen</u></i> exterior = <i>the outside part of sth</i> exclude = <i>not include</i>
14.	vari	Vary	variation = <i>something that is done in a way that is different from the way it is usually done</i> variety = <i>a different type of something</i>
15.	nav	relating to ship	navigability = <i>the <u>degree</u> to which an area of water is <u>deep, wide,</u></i>

			<i>or <u>safe</u> enough for a <u>boat</u> to go through</i> naval = <i>belonging to a country's navy, or relating to military ships</i>
16.	memor	Remember	commemoration = <i>something that makes you remember and respect someone important or an important event in the past</i> memorable = <i>likely to be remembered or worth remembering</i>
17.	mit	Send	submit = <i>offer, propose, suggest</i> emit = <i>send out gas, heat, light, sound, etc</i>
18.	mono	only, one	monorail = <i>a railway system that uses a single rail, usually high above the ground</i> monopoly = <i>complete control of something, especially an area of business, so that others have no share</i>
19.	hydr	Water	hydraulic = <i>operated by or involving the pressure of water or some other liquid</i>
20.	orb	Circle	orbit = <i>to move in a curved path around a much larger object</i>
21.	aqu-	Water	aqueduct = <i>a structure like a bridge, that carries water across a river or valley</i> aquarium = <i>a glass container in which fish and other water creatures can be kept</i>
22.	lev	Rise	elevate = <i>raise, lift, make higher</i>

			elevation = <i>the height of a place above the level of the sea</i>
23.	geo-	of or relating to the earth	geo-engineering = <i>the study of finding ways to change the earth's atmosphere in order to reduce global warming</i>
24.	equ-	Equal	equivalent = <i>parallel, similar</i> equilibrium = <i>a state of balance</i>
25.	loc	Place	localize = <i>to limit smth to a particular area</i> relocation = <i>the process of moving to a different place to work, or of moving employees to a different place to work</i>
26.	min-	less, smaller	minute = <i>tiny, little, small</i> minority = <i>a smaller number/part</i>
27.	-plen	Full	replenish = <i>refill</i>
28.	aer-	air, atmosphere	aerosol = <i>a metal container in which liquids are kept under pressure and forced out in a spray</i> aeroplane = <i>a vehicle designed for air travel that has wings and one or more engines</i>
29.	serv	protect, save	preserve = <i>protect</i> conservation = <i>the protection of natural things such as animals, plants, forests etc, to prevent them from being spoiled or destroyed</i>
30.	over-	too much	overshoot = <i>exceed, surpass</i> overladen = <i>filled with too many people or things</i>

			overrun = if a place is overrun by unwanted things or people, they spread over it in great numbers
31.	mis-	done wrongly, badly	mishandle = to treat something roughly, often causing damage misbehavior = to behave badly
32.	un-	the opposite of N/V/ADJ/ADV	undisciplined = behaving in an uncontrolled way # disciplined , well behaved unanticipated = not having been expected to happen
33.	in-	not, un	intact = unbroken, unharmed, undamaged # broken, damaged infertile = unproductive # fertile
34.	tact	Touch	intact = untouched, unbroken, unharmed, undamaged, # broken, damaged tactile = related to the sense of touch
35.	salv-	Save	salvage = to save goods from damage or destruction, especially from a <u>ship</u> that has sunk
36.	civ	Citizens	civilisation = human development civic = of a town or city or the people who live in it
37.	extra-	Outer	extraterrestrial = a creature that people think may exist on another planet extracurricular = an extracurricular activity or subject is not part of the usual school or college course
38.	terr-	Earth	territory = a large area that has some local government terrain = an area of land, when considering its natural features

39.	archae-	Ancient	archaeological = <i>belonging to the study of ancient societies by examining what remains of their buildings, graves, tools etc</i>
40.	neur(o)-	relating to nerves	neuroscience = <i>the scientific study of the nervous system and the brain</i> neuroaesthetics = <i>a field of study in which researchers attempt to understand how the brain responds to art</i>
41.	co-, cor- con-	together, with	collaborator = <i>coworkers, colleague, partner</i> correspond = <i>to be very <u>similar</u> to or the same as something else</i> conjunction = <i>combination</i>
42.	under-	not enough, below	underestimate = <i>undervalue # overestimate</i> underprivileged = <i>without the money, possessions, education, opportunities, etc. that the average person has</i>
43.	magn	great, large	magnitude = <i>the large size or importance of something</i> magnificent = <i>very good, beautiful, or deserving to be admired</i>
44.	line-	Line	linear = <i>following a straight line</i>
45.	arithm	count, number	arithmetic = <i>the <u>science</u> of numbers involving adding, <u>multiplying</u> etc</i> logarithm = <i>a number which shows how many times a particular number, called the base, has to be multiplied by itself to produce another number</i>
46.	mechan	Machine	mechanism = <i>process, system, operation</i>

47.	vis	See	visual = <u>relating to seeing</u> visit = <i>to go to a place in order to look at it, or to a person in order to spend time with them</i>
48.	fig	form, shape	figure = <i>the symbol for a number or an amount expressed in numbers</i> configuration = <i>the shape or arrangement of the parts of something</i>
49.	vers	turn, change	versatile = <i>able to change easily from one activity to another or able to be used for many different purposes</i> reverse = <i>to change the direction, order, position, result, etc. of something to its opposite</i>

ARTICLES RELATED TO PASSAGES IN TEST 1

TEST 1

PASSAGE 1: CROP- GROWING SKYSCRAPERS

ARTICLE 1: Growing Up: Skyscraper Farms Seen as a Way to Produce Food Locally-And Cut Greenhouse Emissions

Could growing crops on high-rise buildings feed growing urban populations, thereby sparing the need to **cultivate (Cam10 -cultivating)** more and more tracts of land?

Dear EarthTalk: What is "vertical farming" and how is it better for the environment?

—Jonathan Salzman, New York City

"Vertical farming" is a term coined by Columbia University professor of environmental health and microbiology Dickson Despommier to describe the concept of growing large amounts of food in urban high-rise buildings—or so-called "farmscrapers."

According to the vision first developed in 1999 by Despommier and his students, a 30-story building built on one city block and engineered to maximize year-round agricultural **yield (Cam11- yields)**—thanks largely to artificial lighting and advanced hydroponic and aeroponic growing techniques—could feed tens of thousands of people. Ideally the recipients of the bounty would live in the surrounding area, so as to avoid the transport costs and **carbon emissions (Cam 11)** associated with moving food hundreds if not thousands of miles to

Cultivate = Grow = Farm

Yield= the amount of profits, crops etc that something produces

carbon emissions = carbon dioxide that planes, cars, factories, etc. produce, thought to be harmful to the environment

consumers.

“Each floor will have its own watering and nutrient monitoring systems,” Despommier **elaborated (Cam8)** to online magazine Miller-McCune.com, adding that every single plant’s health status and nutrient consumption would be tracked by **sensors (Cam 8-sensory, Cam 9)** that would help managers ward off diseases and increase yield without the need for the chemical fertilizers and pesticides so common in traditional outdoor agriculture.

“Moreover, a gas chromatograph will tell us when to pick the plant by analyzing which flavonoids the produce contains,” Despommier said. “It’s very easy to do...These are all right-off-the-shelf technologies. The ability to construct a vertical farm exists now. We don’t have to make anything new.”

With world population set to top nine billion by 2050 when 80 percent of us will live in cities, Despommier says vertical farming will be key to feeding an increasingly urbanized **human race (Cam 9,13)**. His Vertical Farm Project claims that a **vertical farm** on one acre of land can grow as much food as an outdoor farm on four to six acres. Also, vertical farms, being indoors, wouldn’t be subject to the vagaries of weather and pests.

“The reason we need **vertical farming(Cam 11)** is that horizontal farming is failing,” Despommier told MSNBC, adding that if current practices don’t change soon, humanity will have to **devote (Cam9)** to agriculture an area bigger than Brazil to keep pace with global food demand. Another benefit of vertical farming is that former farmland could be returned to a natural state and even help fight **global warming (Cam 8,11)**. As agricultural land becomes forest and other green space, plants and trees there can store carbon dioxide while also serving as habitat for wildlife otherwise **displaced (Cam11- displace)** by development.

Elaborate= intricate, complicated, complex...

Sensors = a device that reacts to heat, light, or movement

human race = all people, considered as a group

vertical farming = = an idea for a way of farming in which plants are grown or animals are kept in tall structures with many levels

devote = dedicate = give = offer

global warming = an increase in the temperature of the air and the oceans around the world

Displace = put out of place, move

Vertical farming is not without critics, who argue that the practice would use huge amounts of electricity for the artificial lights and **machinery** (**Cam 9**) that would **facilitate** (**Cam 10**) year-round harvests. Bruce Bugbee, a Utah State University crop physiologist, believes that the power demands of vertical farming—growing crops requires about 100 times the amount of light as people working in office buildings—would make the practice too expensive compared to traditional farming where the primary input, sunlight, is free and **abundant** (**Cam 9**). Proponents argue that vertical farms could produce their own power by tapping into local **renewable sources** (**Cam 9,11** **renewable energy**) (solar, wind, tidal or geothermal) as well as by burning biomass from crop waste

machinery = machines, often large machines

facilitate = help = assist

Abundant = plentiful, rich, ample
#scarce...

Renewable = Renewable forms of energy can be produced as quickly as they are used

PASSAGE 2: THE FALKIRK WHEEL

ARTICLES 2: 10 Most Amazing Engineering Achievements

1. The International Space Station (ISS)

First on our list is a space age engineering **accomplishment** (Cam 10,11). The ISS was launched in 1998 and has been orbiting Earth ever since. The station holds a **crew** (Cam 12,13) of 6 astronauts and is the largest **artificial** (Cam 11,13) object in orbit: it is 72.8 m (239 ft) long, 108.5 m (356 ft) wide and around 20 m (66 ft) in height. It is so big that it's possible to see the ISS from earth with the naked eye. The ISS is used for research in different fields of science and lately HD cameras that send live streaming of Earth over the internet were installed

Accomplishment= achievement, success...

Crew= team, group

Artificial= synthetic, non-natural, man-made

2. The Large Hadron Collider (LHC)

Still in the field of recent technology **achievements** (cam 12,13), the Large Hadron Collider (LHC) is the largest particle collider in the world, built in the years 1998-2008 by CERN (the European Organization for Nuclear Research). It was built by thousands of scientists and engineers from hundreds of universities and from more than 100 countries. The LHC is a 27 km (17 mi) long tunnel, 175 metres (574 ft) deep in the ground beneath the borders of France and Switzerland. So what is the LHC used for? Simply put, it **enables** (Cam 12,13) scientists to **reproduce** (Cam 9,10- reproduction) the state of the universe (very) shortly after the Big Bang, and test **relevant** (Cam 12,13) theories. In 2013 an experiment in the LHC proved the existence of the Higgs boson **particle** (Cam 11)

Achievement= attainment, accomplishment

Enable = allow, make possible, permit, aid, support, facilitate, empower....

reproduce = to make a copy of something

relevant = related

particle = a very small piece of something

3. The Panama Canal

Marvel= wonder, awesome sight, amazing thing...

The Panama Canal is an engineering **marvel (cam 8)** that truly shows how **mankind** (Cam 11) can overcome obstacles and not just live on Earth, but make changes on its surface to better meet its needs. Built from 1881 till 1914 (1881 till 1904 by France, and then construction was taken over by the USA), the Panama Canal is a 77.1 km (48 mi) long **artificial** ship **canal (Cam 11,13)** that connects the Atlantic Ocean to the Pacific Ocean through Panama, thus creating a significantly important **route (Cam 12,13)** in international **maritime(Cam 13)** trade that cuts shipping time (and cost). The **canal** has a lock at each of its ends that lift ships to an artificial lake called Lake Gatun, which is 26 metres (85 ft) above sea level, and used to **traverse (Cam 11-traversed, Cam 10- traversing)** the land to the other ocean. When a ship reaches the other side, the second lock lowers it back to sea level

4. The Great Pyramid of Giza

The Great Pyramid Of Giza is the oldest and largest between the 3 pyramids of Giza. It is the oldest and the only still standing structure of the Seven Wonders of the Ancient World, and inspired architects and engineers for thousands of years. The Great Pyramid was built around 2560 – 2540 BC, with a height of 146.5 metres (481 ft) and is listed as an UNESCO cultural world **heritage site (Cam 9)**. The **immense (Cam 9,11)** structure was constructed entirely using manual labor and for many centuries has been a source of great debates over the exact ways they were constructed: how the **enormous (Cam 11,13)** blocks were carried for long distances and to great heights without modern **machinery (Cam 9,10)**, how the **incredible (Cam 11)** precision was achieved, and more

5. The Channel Tunnel (The Chunnel)

Opened in 1994, the Channel Tunnel is an undersea connection between England and France. Crossing the English Channel, the tunnel holds the record for longest undersea portion, at 37.9 km

mankind = all people, considered as a group

artificial = Artificial= synthetic, non-natural, man-made

canal = a long stretch of water made by people for boats to travel along

route = road =path = way

maritime = marine = relating to the sea

Traverse= pass through= to move across, over, or through something, especially an area of land or water

Heritage= the traditional beliefs, values, customs etc of a family, country, or society.

Immense = great, huge, enormous...

Enormous = **Immense** = great = huge

machinery = machines, often large machines

incredible = amazing = extraordinary

(23.5 mi) out of a total length of 50.5 km (31.4 mi). The tunnel reaches a depth of impressive 75 m (250 ft) and allow trains to travel at 160 kmh (99 mph). With the channel tunnel passengers can travel from London to Paris in just 2 hours 15 minutes!

6. The Great Wall Of China

The Great Wall Of China is the longest **man made** (**Cam 11**) structure, stretching for 8,850 kilometers. It was built in the 14th century and protected the northern borders of the Chinese Empire from the attacks of nomadic tribes. The Great Wall is sometimes falsely claimed to be seen from space with the naked eye. This construction is a **remarkable** (**Cam 9,12**) achievement that shows the **persistence** (**Cam 9**) and **capabilities** (**Cam 12**) of the Chinese Empire. The Great wall is the most famous wall and most famous man-made barrier in the world

7. Hoover Dam

Built in the years 1931 till 1936, during the Great Depression, the Hoover dam is one **spectacular** (**Cam 10,12**) **concrete** (**cam 12**) arch dam. It may not be one of the largest dams in the world today, but its construction in the middle of the desert in Nevada is remarkable and shows **determination** (**Cam 8**) and self belief. Its impact on it's surrounding, giving life to the once empty desert by means of electricity and **irrigation** (**Cam 10**) water, is priceless. The dam provides electricity to Nevada, Arizona, and California

8. Burj Khalifa Building

As of the beginning of 2015, the Burj Khalifa building in Dubai is by far the tallest freestanding structure in all of the world at a height of 828 meters (2,717 ft) and 163 floors. Completed in 2010, the **immense** (**Cam 9,11**) building is an engineering **accomplishment** (**Cam 10,11**) like no other,

Manmade= **artificial**, synthetic, manufactured # natural

Remarkable= extraordinary, amazing, outstanding, significant, incredible # ordinary

Persistence= determination to do something even though it is difficult or other people oppose it.

Capabilities = capacities = abilities = potentials

Spectacular= stunning, fantastic, impressive

concrete = a very hard building material made by mixing together cement, sand, small stones, and water

determination = the ability to continue trying to do something, although it is very difficult

Irrigate= to supply land or crops with water.

Immense = = great, huge, enormous

<p>designed to stand earthquakes, strong winds and other hazards. A building like that would seem completely impossible just a century ago</p>	<p>Accomplishment = achievement, success</p>
<p>9. The Millau Viaduct</p> <p>Bridge building is a key mean in overcoming natural obstacles like rivers and canyons. Overtime the technology of bridge building improved and as of 2015, the Millau Viaduct is at the front of that technology. The Millau Viaduct bridge is 343 metres (1,125 ft) tall, the tallest bridge in the world. Opened in 2004, this 4 lanes bridge is a cable-stayed bridge that spans the valley of the River Tarn near Millau in southern France. The bridge is the tallest structure in France, taller than the Eiffel Tower!</p>	
<p>10. Delta Works flood barrier and the Oosterscheldekering</p> <p>The Delta Works is the largest flood barrier (Cам 9) project in the world and one of the largest man-made barriers in history, protecting a large land area in the Netherlands. It consists of number of means including dams and surge barriers. The Oosterscheldekering (Eastern Scheldt storm surge) is one of those surge barriers, and at a length of 9 km (5.6 miles) it is the largest surge barrier in the world. The Oosterscheldekering is located 1.5 hours drive from Amsterdam. The Delta Works is crucial (Cам 9,11) to the Netherlands as over a quarter of the country including over half its population is below sea level.</p>	<p>Barrier = Block = Obstacle</p> <p>Crucial = vital, very important, central...</p>

PASSAGE 3: REDUCING THE EFFECTS OF CLIMATE CHANGE

ARTICLE 3: Geoengineering may be used to combat global warming, experts say

The world may increasingly look to **geoengineering** (Cam 11) in the wake of the latest UN **climate** (Cam 12,13) report, which says it could be **adopted** (Cam 12,13) as a **temporary** (Cam 13- **temporarily**) “remedial measure” if the world heads towards dangerous levels of warming.

The authors of the new 1.5C study by the Intergovernmental Panel on Climate Change say there is high agreement that the **injection** (Cam 10,11- **inject**) of millions of tonnes of **sulphur dioxide** (Cam 11) into the **stratosphere** (Cam 11) could help limit temperature rises to the most **ambitious** (Cam 11,12) target of the Paris accord.

But the authors warn there are major uncertainties about the social, environmental and **ecological** (Cam 10,11) impacts, which mean the world would be far better off if **policymakers** (Cam 13) strengthened natural cooling systems such as forest cover and **accelerated** (Cam 11- **acceleration**) efforts to reduce **carbon emissions** (Cam 11).

The lengthy document – which was approved at the weekend by all 195 nations in the UN – mentions several options for **man-made** (Cam 11) **interference** (Cam 9,12) in climate systems, including ocean fertilisation, carbon dioxide removal, **marine** (Cam 9,11) cloud brightening, cirrus cloud thinning and ground-based albedo modification.

Geoengineering = the study and activity of finding ways to change the earth's atmosphere in order to reduce global warming
Climate = weather
Temporary = Short-term = Momentary

Injection = Insertion = Addition
sulphur dioxide = a poisonous gas that is a cause of air pollution in industrial areas

Stratosphere = a very high position

Ambitious = Determined = Striving = Motivated

ecological = relating to ecology or the environment
policymakers = a member of a government department, legislature, or other organization who is responsible for making new rules, laws

Accelerate= quicken, speed up # slow down

carbon emissions = carbon dioxide that planes, cars, factories, etc. produce, thought to be harmful to the environment

man-made = synthetic, Artificial # natural

Interference=an act of interfering (to deliberately get involved in a situation where you are not wanted or needed).

Marine = sea, oceanic, aquatic

Stratosphere = a very high position

<p>But it focused most on stratospheric (Cam 11) aerosol (Cam 11) injection, a technique that essentially mimics (Cam 11,13) the effect of a volcano by pumping gas into the sky that turns into aerosols, which reflect (Cam 13- reflection, Cam 12- reflecting) part of the sun's heat.</p>	<p>Aerosol= a metal container in which liquids are kept under pressure and forced out in a spray</p>
<p>Although the authors do not include such strategies in their pathways to 1.5C above pre-industrial (Cam 8,11) temperatures, they raise the possibility that it could be used as a supplementary (Cam 8) measure if this target is missed.</p>	<p>Mimic= imitate, copy...</p>
<p>"If mitigation (Cam 12- mitigate, mitigating) efforts do not keep global mean temperature below 1.5C, solar radiation (Cam 9,11) modification can potentially (Cam 9,12) reduce the climate impacts of a temporary temperature overshoot, in particular extreme (Cam 12,13) temperatures, rate of sea level rise and intensity (Cam 9,10) of tropical cyclones, alongside intense mitigation and adaptation efforts," the report observes.</p>	<p>Reflect = throw back (heat, light, or sound) without absorbing it</p>
<p>A search for palliatives will be necessary as the world is almost certain to miss the 1.5C goal. Current national pledges are forecast to lead to at least 3C of warming by the end of the century – and that is if governments keep their commitments. (Cam 10,13)</p>	<p>pre-industrial= of or relating to a time before industrialization.</p>
<p>The IPCC is clearly hesitant to endorse such emergency measures in part because this could allow government leaders to continue pushing problems into the future, but also because of the immense (Cam 11) risks involved.</p>	<p>Supplement= add to, enhance, increase, make bigger</p>
<p>The report notes that the injection of sulphur dioxide would change rainfall patterns and weather circulation (Cam 8- circulate) as well as disrupting (Cam 10- disruption) stratospheric chemistry and ice formation. It could also result in more ultraviolet light</p>	<p>Mitigate= lessen, reduce, alleviate...</p>
	<p>Radiations = a form of energy that comes especially from nuclear reactions, which is very harmful to living things</p>
	<p>Potential= possible, likely</p>
	<p>Extreme= severe, intense, excessive, harsh</p>
	<p>Intensity= strength, power, amount...</p>
	<p>Commitment= responsibility, promise</p>
	<p>Immense=extremely large, enormous</p>
	<p>Circulation = movement = flow</p>
	<p>Disrupt= to prevent something, from continuing as usual</p>
	<p>Stratosphere = a very high position</p>

<p>exposure (Cam 11,13), which would have a negative impact on human health.</p>	<p>Exposure= the fact of experiencing something or being affected by it</p>
<p>Ethical and institutional questions also arise over who would oversee such operations and which areas would be affected. The report suggests a number of UN organisations as possible supervisory bodies. But authors also observe (Cam 10,13 – observed) that there are scarcely (Cam 8- scarcely, Cam 12) any laws or regulations (Cam 8,10) to stop any country that wants to push ahead by itself. The only guideline cited was the Convention on Biodiversity which states “no climate-related geoengineering activity that affects biodiversity (Cam 12) may take place.”</p>	<p>Observe= watch, view, scrutinize...</p> <p>Scarce= rarely = hardly = barely</p> <p>Regulation = rule = guideline = principle</p> <p>Biodiversity= the variety of plants and animals in a particular place.</p>
<p>There are doubts also over effectiveness. While the aerosols might constrain temperature rises, they would not stop the accumulation (Cam 10,13- accumulate) of carbon dioxide in the atmosphere (Cam 11,13) and the acidification of the oceans. What happens when this “temporary measure” is halted (Cam 10,12 - halt) is also an area of concern, as the planetary system might suddenly be hit by a surge (Cam 8,12) in temperature.</p>	<p>Accumulate= to gather, collect...</p> <p>Atmosphere= air in environment</p> <p>Halt = prevent= stop= discontinue</p> <p>Surge= to increase suddenly.</p>
<p>The IPCC says these uncertainties constrain the ability to implement (Cam 11- implemented) solar radiation management in the near future. But with the 1.5C target current on course to be overshot at some point between 2030 and 2052, the urgency is likely to grow.</p>	<p>Implement= put into practice, apply</p>
<p>Johan Rockström, coauthor of the recent Hothouse Earth study, said the IPCC report was likely to stimulate (Cam 11,12 – stimulated) discussion of these extreme emergency measures.</p>	<p>Stimulate= accelerate, arouse, inspire, promote</p>
<p>“I think this will raise solar radiation management to the highest political level. We currently have no framework (Cam 11,13) for this,” he said. “I’m</p>	<p>framework = a system of rules, ideas, or beliefs that is used to plan or decide something</p>

very scared of this technology but we need to turn every stone now.”

James Hansen said the tipping point in public opinion was more likely to come at a slightly higher temperature, but by then it may already be too late.

“2C would force geoengineering on today’s young people. Geoengineering, if global temperature passes 2C, would start, at the latest, once ice sheet **collapse (Cam 11,12 – collapsed)** begins,” he told the Guardian. “Unfortunately, because of the inertia of the system, geoengineering then would probably be too late to **prevent (Cam 12,13)** locking in the eventual loss of coastal cities.”

Collapse= breakdown, failure, end...

Prevent= stop.

TEST 2:

PASSAGE 1: RAISING THE MARY ROSE

ARTICLE 1: Intrepid French hunt for sunken warships Cordelière and Regent

The **spirit** (Cam 8) of famed French explorer Jacques Cousteau lives on in a mission to find the **wrecks** (Cam 11) of two **warships** (Cam 9,11), one French and one English, that **sank** (Cam 11) 500 years ago off the Brittany port of Brest.

Instead of Cousteau's old minesweeper Calypso, it is the French culture ministry's surveillance ship André Malraux and its doughty crew of scientists and divers.

Today's adventure: to locate, **excavate** (Cam 11- excavation) and eventually raise the wrecks of the Cordelière and the Regent - two behemoths of the Tudor seas that sank together in the **Battle** (Cam 11,13) of Saint-Mathieu in 1512.

And filling the Cousteau role is Michel L'Hour, marine **archaeologist** (Cam 12,13) extraordinaire and veteran of a thousand missions to explore France's underwater **heritage** (Cam 9,13).

"I have been obsessed with finding these ships for 40 years," he says, ruddy-faced and bearded like any proper sea-dog.

Spirit = soul = essence

Wreck= a ship that has sunk

warships = a ship supplied with guns, for use in war

sank(past simple of sink) = to go down below the surface of water

excavate =dig

Battle = Combat = Conflict = Fight

Archaeologist= the person studying about ancient societies by examining what remains of their buildings, graves, tools etc

Heritage= the history, traditions and qualities that a country or society has had for many years and that are considered an important part of its character

"I am not so young any more, and I think this may be my last mission. If I can locate the ships, then leave them to my **colleagues** (Cam 12,13) to **excavate**, I will be a happy man."

How the two ships were sunk

For the French, or rather for the people of Brittany, the Cordelière has mythic status. She was the flagship of the duchy's last **independent** (Cam 12,13) ruler and revered heroine, the Duchess Anne.

And she was captained up until the moment of sinking (and his death) by another Breton hero, Hervé de Portzmoguer, a kind of patriot-corsair. His Frenchified name Primauguet is still given to **vessels** (Cam 11,13) of the French navy to this day.

But the English have a hand in this tale too.

The Regent was, in its day, every bit as important as its sister ship the Mary Rose, which was famously raised from the Solent 36 years ago and is now **on display** (Cam 11,13) in Portsmouth.

If anything, the Regent was the bigger ship. And if Henry VIII's Mary Rose is anything to go by, then this would be a stupendous find indeed.

The trouble is no-one knows exactly where the Battle of Saint-Mathieu took place.

It was during one of the lesser-known wars between England and an alliance of France and a still-independent Brittany.

On 10 August 1512, the Franco-Breton **fleet** (Cam 8,11) was at anchor off Brest when it sighted the approaching English. Most of the French ships made haste to get to safety through the mouth of the inner bay of Brest, a passage known as the goulet.

colleague = coworker, partner, Collaborator

independent = self-reliant = self-sufficient

vessel= **boat**, sailing boat, ship, craft

on display= on show= something that is on display is in a public place where people can look at it

Fleet= ship in a navy

But the Cordelière and two other ships stayed to fight off the attack. The Regent bore down on the Cordelière and for two or three hours there was close-quarters fighting. But then, and no-one knows why, it all ended with a **massive** (**Cam 10,11**) **explosion** (**Cam 9,11**).

The two ships, **entangled** (**Cam 13- entangling, Cam 8- entanglement**) in battle, sank together to the bottom. Hundreds died.

Out there, somewhere

With backing from the French government, the Brittany region, universities and industry, Michel L'Hour has **assembled** (**Cam 11**) a multidisciplinary team to find what he knows must be down there somewhere.

Tides (**Cam 9,10**) and **currents** (**Cam 9,11**) have been recalculated. Previous efforts had failed to spot that the calendar changed in 1582.

Naval charts of the sea floor have been **re-examined** (**Cam 10,13- examined**). Historians are looking through the few **contemporary** (**Cam 9**) accounts of the battle, and the search is on for clues from parish and other archives.

Massive= huge, enormous, very big...

Explosion= bang

entangled = involved with something or someone in a way that makes it difficult to escape

Assemble= bring together, put together, gather

Tide= wave.

Currents = flow = stream

re-examined = to look at something in detail again

Contemporary= someone who lived or was in a particular place at the same time as someone else.

PASSAGE 2: WHAT DESTROYED THE CIVILISATION OF EASTER ISLAND

ARTICLE 2: New theory paints more sophisticated picture of ancient Easter Island

For decades, **mystery** (Cam 12,13) has swirled around what happened to the founding population of the remote Easter Island, known for its towering stone statues **depicting** (Cam 12) large carved heads. A long-held theory suggests that after the islanders **set up** (Cam 9,13) camp and **carved** (Cam 10,11) the giant statues, they destroyed their own society through infighting and a **depletion** (Cam 11-depleted) of natural resources.

But a new study suggests a different **scenario** (Cam 11) entirely, and the islanders could have a more **complex** (Cam 12,13) history than previously believed.

Many aspects of the island, the statues and the Polynesian **seafarers** (Cam 11) who arrived there 900 years ago have been studied over the years. But a study published Monday in the Journal of Pacific Archaeology uses multiple data sets from recent **excavations** (Cam 11) to provide a better understanding of the society that created the **statues** (Cam 11) and how they were carved.

So the researchers used an unlikely method to study the society and discern what might have happened: a chemical analysis of stone tools used on the statues.

What they learned from **excavating** four of the statues and the volcanic stone basalt tools used to **carve** them painted a different picture: a **sophisticated** (Cam 11- **sophistication**, Cam 13- **sophisticated**) and **collaborative** (Cam 9,10) society.

Mystery= unknown, unidentified...

Depict= show, represent, describe, illustrate...

Set up= start, establish

Carve= to make something by cutting into especially wood or stone, or to cut into the surface of stone, wood, etc.

Scenario= the description of possible actions or events in the future

complex = complicated, Intricate

seafarers = a person who travels by sea

Excavation= digging

Statue = Sculpture.

Sophisticated= **advanced**, highly developed, **complex**, complicated, elaborate

Collaborative= joint, two-away, shared...

"The idea of competition and **collapse** (Cam 8,11) on Easter Island might be overstated," said lead study author Dale Simpson Jr., an **archaeologist** (Cam 12,13) at the University of Queensland, in a statement. "To me, the stone carving industry is **solid evidence** (Cam 13) that there was **cooperation** (Cam 13) among families and **craft** (Cam 13) groups."

A **complex** society

Easter Island is 2,300 miles off the coast of Chile. About 900 years ago, the founding population landed on the island, called Rapa Nui in the local language. These Polynesian seafarers came on two canoes and were led by Hotu Matu'a, who would become the island's first **chief** (Cam 11), according to oral tradition.

The population soared to include thousands of people, and they carved full-body figures, called moai, to **represent** (Cam 13- **representation**, Cam 12- **represented**) important Rapa Nui **ancestors** (Cam 11). There are nearly a thousand statues, many buried up to their heads due to the passage of time. The largest statue is over 70 feet tall.

Their **sheer** (Cam 10) size and number is **indicative** (Cam 9,13) of a complex, sophisticated society, according to the researchers.

"Ancient Rapa Nui had chiefs, priests, and guilds of workers who fished, farmed, and made the moai. There was a certain level of sociopolitical organization that was needed to carve almost a thousand statues," Simpson said.

During the statue excavations, Jo Anne Van Tilburg, director of the Easter Island Statue Project, and her Rapa Nui excavation team recovered about 1,600 stone tools. They did a close chemical and mass spectrometer analysis of **fragments** (Cam 9, Cam 10- **fragmentation**) from 17 of the tools, called toki.

"We wanted to **figure out** (Cam 12, 13) where the **raw materials** (Cam 11,12) used to manufacture the artifacts came from," said Laure Dussubieux, a study co-author and Field

Collapse= breakdown, failure, end

Archaeologist= the person studying about ancient societies by examining what remains of their buildings, graves, tools etc.
Solid= strong, certain, firm, concrete

evidence = anything that helps to prove that something is or is not true

Cooperation= collaboration

Craft= a job or activity in which you make things with your hands, and that you usually need skill to do

chief = the person in charge of a group or organization

Represent= stand for, symbolize

Ancestor= a person related to you who lived a long time ago

Sheer = absolute = complete

Indicative= a sign that something exists, is true, or is likely to happen

Fragment= a small piece of something that has broken off or that comes from something larger.

Figure out = to understand or solve something

Raw=fresh = unprocessed, unrefined, untreated...

Museum scientist, in a statement. "We wanted to know if people were taking material from close to where they lived."

The location is key because there are three sources, or quarries, where the islanders could have **gathered (Cam 12, Cam 13 -gathering)** material for tools. The basalt quarries cover the size of two football fields. Basalt samples reveal their sources through their chemical **elements (Cam 12,13)**, which link back to the geology of the site.

"The majority of the toki came from one quarry complex -- once the people found the quarry they liked, they stayed with it," Simpson said. "For everyone to be using one type of stone, I believe they had to **collaborate (Cam 9,10)**. That's why they were so successful -- they were working together."

Looking ahead

This contrasts with the idea that the residents ran out of resources and fought amongst themselves, the researchers said. But later on, it is believed that the arrival of **colonists (Cam 12- colonised)** and the **institution (Cam 10,12)** of slavery **decimated (Cam 11)** the population.

"There's so much **mystery** around Easter Island, because it's so **isolated (Cam 11)**, but on the island, people were, and still are, **interacting (Cam 8,13)** in huge amounts," Simpson said.

"There are thousands of Rapa Nui people alive today -- the society isn't gone."

But the researchers also urge caution and believe that this study is just the beginning, laying the groundwork for more research.

"The near **exclusive (Cam 11,13)** use of one quarry to produce these seventeen tools supports a view of craft specialization based on information exchange, but we can't know at this stage if the interaction was collaborative," Van Tilburg said. "It may also have been coercive in some way. Human behavior is complex. This study encourages further mapping and stone sourcing, and our excavations continue to **shed new light on (Cam 11)** moai carving."

Gather = Accumulate, collect

Element= factor.

collaborate = cooperate = work in partnership = work together

colonists = someone who settles in a new colony

Institution= a large organization that has a particular kind of work or purpose.

Decimate= destroy, devastate, ruin

Isolated= remote

Interacting = relating= networking = cooperating

Exclusive= available or belonging only to particular people, and not shared.

shed light on = explain = make clear = clarify =

PASSAGE 3: NEUROAETHETICS

ARTICLE 3: Neuroaesthetics

Willem de Kooning, the famous Dutch-American **abstract** (Cam 11.12) expressionist painter, continued to paint for several years after developing Alzheimer's disease. But his paintings were different somehow, more deeply expressing his abstract style, according to some art critics. De Kooning's change in style **explicitly** (Cam 8, 12 – explicit) makes the case that art can serve as a window into the workings of the human brain, that when the brain changes, so too do artistic expression and perception.

But what in the brain **triggers** (Cam 12,13) **aesthetic** (Cam 10- aesthetically, Cam 11) experiences? And how does knowledge of basic brain **mechanisms** (Cam 11,12) **inform** (Cam 8,13) our understanding of these experiences? These questions are at the heart of an **emerging discipline** (Cam 11) **dedicated to** (Cam 10,12) exploring the neural processes underlying our appreciation and production of beautiful objects and artwork, experiences that include **perception** (Cam 9,12), **interpretation** (Cam 9,11), emotion, and action. This new field represents a convergence of neuroscience and empirical aesthetics—the study of aesthetics rooted in observation—and is dubbed neuroaesthetics, a term **coined** (Cam 11) in the 1990s by vision **neuroscientist** (Cam 9,12) Semir Zeki of University College London.

Neuroaesthetics is both **descriptive** (Cam 8,9) and experimental, with **qualitative** (Cam 10) observations and quantitative tests of **hypotheses** (Cam 13) , aimed at advancing

Abstract= non-realistic, symbolic

Explicitly = clearly = obviously

Trigger= activate, generate, cause...

Aesthetic = relating to the enjoyment or study of beauty

Mechanism = process, system, operation

Inform = tell = notify

Emerging = in an early state of development

Discipline = regulation = control = strictness

Dedicate= to give all your attention and effort to one particular thing.

Perception= view, opinion...

Interpretation= explanation, understanding

Coined = invented

neuroscientist = a scientist who studies the nervous system and the brain

Descriptive= describing how the words of a language are actually used, rather than saying how they ought to be used= expressive= Illustrative

our understanding of how humans process beauty and art. While the field is still young, interest is growing, as evidenced by several recent books on the topic. Moreover, recent workshops such as “Pain and Pleasure: The Art and Science of Body Representation,” held in Venice last November, and “Visual Arts and the Brain,” held at the Royal Society of Medicine in London the following month, **demonstrate (Cam 9,13)** the international scope of this discipline as it **addresses (Cam 12,13)** various aesthetic experiences, and their underlying neural correlates, in health and in disease.

Art and the brain

Early **neuroaesthetic (Cam 11)** writings in the late 1990s by Zeki and University of California, San Diego, neuroscientist Vilayanur Ramachandran **identified (Cam 12,13)** parallels between an artist’s **approach (Cam 12,13)** to her visual world and her brain’s processing of visual information. Light entering our eyes is segregated into a number of elemental **properties (Cam 10,13)**, such as luminance, color, and motion, that are processed in different visual centers in our brains. At the turn of the 20th century, artists played with these elements in their artwork. For example, the French artists Henri Matisse and André Derain highlighted color to express emotions, and the American sculptor Alexander Calder **isolated (Cam 11)** visual motion in his mobiles (below), whose **suspended (Cam 13) components (Cam 11,13)** were delicately positioned to be moved by air currents or motors.

Artists often **depict (Cam 13-depicted, depiction)** mental **representations (Cam 9)** of an object rather than its physical form. Their renditions do not **adhere (Cam 9- adherents)** strictly to the light, shadow, and color properties of objects in the physical world, yet they **appeal (Cam 11- appealing)** to us. Shadow contours are too **fleeting** and changeable to provide

qualitative = relating to the quality or standard of something rather than the quantity
hypotheses = theories = assumptions

Demonstrate= show, indicate, prove

Address= solve, tackle, deal with

Neuroaesthetics= a field of study in which researchers attempt to understand how the brain responds to art

Identify= discover, find, detect...

approach= move toward, come close to

Property= a quality or characteristic that something has

Isolated= remote

Suspended = postponed

Component= part, factor, element

Depict= show, represent, describe, illustrate...

Representation= picture, painting, drawing, picture, illustration

Adherent= supporter= believer= devotee

Appeal = attract = fascinate = interest = charm

Fleet= ship in a navy

Reliable= dependable, trustworthy, good
#unreliable, untrustworthy

reliable (Cam 10,12) information about real-world objects, so our brains never **evolved** (Cam 11,13) to be **sensitive** (Cam 11,13) to the shape of shadows. As a result, inaccurately shaped shadows in works of art are not displeasing to our eyes. By contrast, artists are typically careful to **depict** shadows as having less luminance than the object casting the shadow, as people are sensitive to the brightness of objects relative to shadows.

Moreover, some artists, at least implicitly, use perceptual “tricks.” One such trick is the peak-shift principle, in which artists **exaggerate** (Cam 13- **exaggerated**) certain features through the use of shape, shading, or color. The idea that exaggerated features **enhance** (Cam 13- **enhanced**) an intended response was first **articulated** (Cam 11- **articulate**) in 1954 by the ethologist Nikolaas Tinbergen, who observed that seagull chicks more **vigorously** (Cam 10- **vigorous**) peck a disembodied long, thin stick with three red stripes at the end than they do at their mother’s beak, which has a red spot near the tip. But the use of the peak-shift principle in art predates Tinbergen. This perceptual mechanism can be seen in bronze **sculptures** (Cam 10) of the 12th-century Chola **dynasty** (Cam 11) in India, where the goddesses’ large breasts and hips and narrow waists enhance female sensuality, grace, poise, and dignity.

Artists also capitalize on the way the human visual system processes information in two interacting neural systems referred to as the “what” and the “where” streams. Form and color are processed in the “what” stream, revealing an object’s identity. Luminance and motion are processed in the “where” stream, which **reveals** (Cam 12,13) an object’s location. Viewers of some **impressionist paintings** (Cam 11), such as Claude Monet’s *Impression, Sunrise* (opposite page), observe that the effect of shimmering on water surfaces or the sun’s glow on the horizon appears because the

Evolve= develop, change, grow...
Sensitive= easily offended, easily upset, easily hurt

Depict= show, represent, describe, illustrate...

Exaggerated= being described as better, larger etc than it really is

Enhance = increase = boost = strengthen = enrich

Articulate= speak out.

Vigorous= strong and healthy...

Sculpture= statue.

dynasty = a series of rulers or leaders who are all from the same family, or a period when a country is ruled by them

Reveal= bring to light, show, point out

impressionist paintings = a style of painting, which began in France in the 1860s, in which the artist tries to represent the effects of light on an object, person, area of countryside, etc

objects are painted with the same luminance but different colors. While the brain can identify these objects, their location is hard to fix, because the “where” stream does not register objects that have the same brightness as their background. Consequently the water and the sun in the Monet painting are seen as unstable in their location, lending the painting that shimmering quality.

TEST 3

PASSAGE 1: THE STORY OF SILK

ARTICLE: Debate (cam 9,11): What China's new Silk Road means for Europe

China's Belt and Road Initiative (BRI) is the biggest **infrastructure** (cam 12,13) project in human history. This overarching program – which includes overland **routes** through Central Asia in the Silk Road Economic Belt, plus a seaborne **component** (cam 8 ,11,12,13) called the Maritime Silk Road that **skirts** (cam 12) the southern rim of Asia on the Indian Ocean route to the Middle East and Europe – is central to China's **ambition** (cam 10) of becoming the preeminent world power.

Its **completion** (cam 9), planned for the 100th anniversary of the founding of the Chinese People's Republic in 2049, will **cement** (cam 11) Beijing's influence over the huge Eurasian **continent** (sub-continent – cam 13) and parts of Africa, containing some 65 countries and more than 4 billion people.

The terminus of the BRI's overland and **maritime** (cam 13) **segments** (cam 10,11) is Europe, which has had "virtually zero" influence on the **mammoth** (Cam 8,10) project. The passivity of one of the world's biggest economic, political and strategic players mirrors China's own passivity when challenged by the West in the 18th and 19th centuries, as Prince Michael of Liechtenstein, the founder and chairman of Geopolitical Information Services (GIS), noted in a recent analysis.

To discuss the new Silk Road's **implications** (cam 8) of this project for Europe, GIS brought together leaders from Polish business and

Debate= argument, discussion...

Infrastructure= the basic systems and structures that a country or organization needs in order to work properly, for example roads, railways, banks etc.

route = road =path = way

Component= part, factor, element

skirts = to go around or move along the edge of something

Ambition= aim, goal, objective...

Completion = achievement = accomplishment

Cement = strengthen = boost

Continent = area = region = zone

maritime = marine = relating to the sea

Segment= section, part, piece, sector

Virtually= almost, nearly

Mammoth= enormous, huge, massive...

Implications = consequences = significance

politics for a debate at the Warsaw headquarters of the daily newspaper *Rzeczpospolita* on Nov. 20, 2017. The **distinguished** (cam 10) **panel** (cam 8) of speakers included:

- Ryszard Czarnecki, vice president of the European Parliament
- Grzegorz Kurdziel, management board member of Poczta Polska SA
- Cornelius Ochmann, director of the Foundation for Polish-German Cooperation
- Radosław Pyffel, Polish representative and **alternate** (cam 12) director at the Asian Infrastructure Investment Bank (AIIB)
- Karol Zarajczyk, CEO of Ursus SA, a Warsaw-based **tractor** (cam 11) and agricultural machines manufacturer

“Europe is seeing a **reversal** (reverse – cam 10,11) in the economic pecking order, with investment and influence spreading from east to west

While these points were **acknowledged** (acknowledging –cam 11) by Mr. Pyffel, Poland’s **representative** (Cam 13-representation, Cam 12- represented) on the AIIB, he noted that Chinese plans and the Western response had already gone “beyond the discussion stage.” At this point, China’s **expansion** (cam 10,12) is **irreversible** (cam 10) – the main question is “whether we take part or not.” He noted that when China found itself in an analogous position in the 1990s, it was careful to protect its **internal** (cam 8,9) market. Europe would also do well to take a pro-active role in developing business **strategies** (cam 12,13) to get the most benefit from BRI, as Poczta Polska was now doing. “Otherwise, when the next BRI summit is held in 2019, Chinese bureaucrats will be the ones coming up with ideas,” he said

Distinguished= differentiate, tell apart...

Panel = a small group = team = board = committee

Alternate= substitute, different...

Tractor= a strong vehicle with large wheels, used for pulling farm machinery

Reversal = turn around

Acknowledged = admitted = recognized

representative = someone who speaks or does something officially for group of people

Expansion= growth, development, increase, spreading out...

Irreversible= irreversible damage, change etc is so serious or so great that you cannot change something back to how it was before.

Internal= inside, inner...

Strategy= plan.

PASSAGE 2: GREAT MIGRATIONS

ARTICLE: Why migratory birds?

Avian migration is a natural miracle. Migratory birds fly hundreds and thousands of kilometres to find the best **ecological** (cam 10,11) conditions and **habitats** (cam 11) for feeding, **breeding** (cam 12) and raising their young. When conditions at breeding sites become unfavourable, it is time to fly to regions where conditions are better.

There are many different migration **patterns** (cam 12). The **majority** (cam 11) of birds migrate from northern breeding areas to southern wintering grounds. However, some birds breed in southern parts of Africa and migrate to northern wintering grounds, or **horizontally** (cam 10), to enjoy the **milder** (mild-cam 8, mildly –cam 12) **coastal** (cam 13) climates in winter. Other birds reside on lowlands during the winter months and move up a mountain for the summer.

Migratory birds have the perfect morphology and physiology to fly fast and across long distances. Often, their journey is an **exhausting** (**exhausted** – cam 13) one, during which they go to their limits. The Red Knot has one of the longest total migration **routes** (cam 8,13) of any bird, travelling up to 16,000 kilometres twice a year. It breeds in Siberia and overwinters on the west coast of Africa, some even going down to the tip of South Africa.

It is truly amazing how migratory birds can **navigate** (**navigation** –cam 8, **navigator**-cam 13) with pin-point **accuracy** (cam 11). Exactly how migrating birds find their flyways is not fully understood. It has been shown that they are able to orientate by the sun during the day, by the stars at night, and by the geomagnetic field at any time. Some species can even **detect**

ecological = relating to ecology or the environment

Habitat= the natural home of a plant or animal.

Breed= reproduce= if animals breed, they mate in order to have babies.

Pattern= the regular way in which something happens, develops, or is done.

Majority = main, popular, common

horizontally = parallel to the ground or to the bottom or top edge of something

Milder = slighter

coastal = in the sea or on the land near the coast (coast : where the land meets the sea)

Exhaust= run out, use up, deplete

route = road =path = way

Navigate= to understand or deal with something complicated.

Accuracy=exactness, precision...

Detect = recognize, discover, find

(cam 9,13) polarized light, which many migrating birds may use for navigation at night.

Migration is a perilous journey and involves **a wide range of (cam 8,12)** threats, often caused by human activities. And as **diverse (cam 9,10)** as people and their habits in different countries are, so are the threats the birds face. As migratory birds depend on a range of sites along their **distribution (cam 11,12)** area, the loss of wintering and stopover sites could have a dramatic **impact on (cam 11,13)** the birds' chances of survival.

Flying long distances involves crossing many borders between countries with differing environmental politics, **legislation (cam 9)** and conservation measures. It is **evident (cam 12,13)** that international cooperation among governments, NGOs and other stakeholders is required along the entire flyway of a species in order to share knowledge and to **coordinate (cam 9)** conservation efforts. The legal **framework (cam 11,13)** and coordinating instruments necessary for such **cooperation (cam 13)** is provided by multilateral environmental agreements such as CMS and AEWA.

World Migratory Bird Day has a global outreach and is an effective tool to help raise global awareness of the threats faced by migratory birds, their ecological importance, and the need for international **cooperation to conserve (cam 13)** them.

a wide range of = many, various, numerous...

Diverse= different, varied...

Distribution= spreading, allocation

impact on = influence = affect

Legislation = law= rule...

evident= clear= obvious= visible = apparent

Coordinate= collaborate = to organize an activity so that the people involved in it work well together and achieve a good result.

framework = a system of rules, ideas, or beliefs that is used to plan or decide something

Cooperation= collaboration

conserve= preserve, protect, maintain, save, safeguard

PASSAGE 3: PREFACE TO “HOW THE OTHER HALF THINKS: ADVENTURES IN MATHEMATICAL REASONING”

ARTICLE 3: The first four standard

Standard 4: Reasoning

All students will develop reasoning ability and will become self-reliant, independent mathematical thinkers.

Descriptive (Cam 8,9) Statement

Mathematical reasoning is the **critical (cam 10,12)** skill that enables a student to make use of all other mathematical skills. With the development of mathematical reasoning, students recognize that mathematics makes sense and can be understood. They learn how to **evaluate (cam 9)** situations, select problem-solving **strategies (cam 12,13)**, draw logical conclusions, develop and describe solutions, and recognize how those solutions can be applied. Mathematical reasoners are able to **reflect on (cam 9,10)** solutions to problems and **determine (cam11,13)** whether or not they make sense. They **appreciate (cam 11)** the **pervasive (cam 10)** use and power of reasoning as a part of mathematics.

Meaning and Importance

There are various terms used to refer to "reasoning": critical thinking, higher-order thinking, logical reasoning, or simply reasoning. Different subject areas tend to use different terms. Across all of these subject areas, however, there are commonalities. The following phrases often appear in discussions of how reasoning is used (**adapted (cam 8,11)** from Resnick, 1987, pp 2-3):

- **Nonalgorithmic** - The **route (Cam 12,13)** to a solution is not fully **specified** in advance.

Descriptive= describing how the words of a language are actually used, rather than saying how they ought to be used= **expressive**= **Illustrative**

Critical= significant, important, vital, crucial, essential...

Evaluate : to judge how good, useful,or successful something is= **assess**= **appraise**

Strategy= problem, project, plan.

reflect on = to affect other people's opinion of someone or something

Determine = decide = specify

Appreciate = acknowledge, recognize, be aware of

Pervasive= existing everywhere.

Adapted from = created = designed

route = road =path = way

specified = detailed = identified

- **Complex** (Cam 12,13) - The complete path to a solution is not fully **apparent** (cam 8,9) from any single vantage point.
- **Multiple criteria** (cam 10)- The conditions established in the problem may **conflict** (cam 11) with one another.
- **Uncertainty** - Not everything that **bears** (cam 8) on the task at hand is known.
- **Imposing meaning** - The individual must find structure in **apparent** disorder.
- **Effortful** - There is considerable mental work involved in the **elaborations** (cam 8) and judgments required.
- **Self-regulation (regulation -cam 8,10)**- The individual monitors his or her own progress, and determines the appropriate course of action.
- **Multiple solutions** - There is no single "best" solution; rather, there are many solutions, each with costs and benefits.
- **Nuanced judgment** - The results must be **interpreted** (interpreting, interpretation, interpret – cam 9,10,11,12).

Development and Emphases

Every student has **potential** (cam 12,13) for higher-order thinking. The key is to unlock the world of mathematics through a student's natural **inclination** (cam 11) to strive for purpose and meaning. Reasoning is fundamental to the knowing and doing of mathematics. **Conjecturing (Conjectures – cam 9)** and demonstrating the logical validity of conjectures are the **essence** (cam 10,11,13) of the creative act of *doing* mathematics. To give more students access to mathematics as a powerful way of making sense of the world, it is essential that an **emphasis** (cam 10,12) on reasoning pervade all mathematical activity. In order to become confident, self-reliant mathematical thinkers,

complex = complicated, Intricate ...
Apparent= evident= clear= obvious= visible
Criteria = standards = principles ..
Conflict= contradict, disagree, differ
Bears on sth = to be connected or related to something
Imposing = large, impressive, and appearing important
Elaboration=intricacy, complication, complex...
Self-regulation = the act of making certain yourself that you act according to the rules, rather than having this done by other people
Interpret= understand, comprehend, make sense of, explain

Potential= possible, likely
Inclination= a feeling that makes you want to do something = tendency, proclivity
Conjecture= guess, hypothesis...
Essence= the most basic and important quality of something
Emphasis= stress = special attention or importance

students need to develop the **capability (cam 12)** to confront a mathematical problem, **persevere (perseverance- cam 8)** in its solution, and evaluate and **justify (unjustified – cam 8)** their results.

In summary, mathematical reasoning is the glue that **binds (binding –cam 12)** together all other mathematical skills. By using **inductive and deductive (deduction – cam 10)** reasoning as they learn mathematical concepts and solve (cam 12,13) mathematical problems, students come to recognize the **extent (cam 11,12)** to which reasoning applies to mathematics and to their world.

capability = capacity, ability

persevere = persist = continue doing something in a determined way, despite having problems

justify = to show that something is reasonable, right, or true

binds together = **unite** = tie

deductive = logical = reasonable

Extent= degree, level

TEST 4:

<p>PASSAGE 1: RESEARCH USING TWINS</p> <p>ARTICLE 1:</p> <p>A new documentary chronicles (cam 9) the lives of triplets separated at birth in a controversial (cam 10) study — here's how scientists continue to use twins in research</p> <p>Twins have always fascinated scientists, especially as the subjects of studies about the influence of environment and genetics.</p> <p>The new documentary "Three Identical Strangers," which is now in theaters, tells the story of the ultimate (cam 9,13) test of nature versus nurture (cam 8,11): it follows three identical (cam 11,12) brothers who were separated at birth and raised by different families.</p> <p>In 1980, two of the brothers met while attending Sullivan County Community College, and after making headlines, found the third triplet (tripled –cam12). Aside from looking alike, the three shared similar behavioral quirks and preferences.</p> <p>But they were not the only twins in the study — according to NPR, of the 13 children involved, three sets of twins and one set of triplets have discovered one another. A book titled "Identical Strangers: A Memoir of Twins Separated and Reunited (cam 11)" was published in 2007 by a pair of twins who were also involved, Elyse Schein and Paula Bernstein.</p> <p>The other four subjects still do not know they have identical twins (cam 11).</p> <p>A controversial twin study</p>	<p>Chronicle= story, record...</p> <p>Controversial= causing a lot of disagreement, because many people have strong opinions about the subject being discussed.</p> <p>Ultimate = crucial = vital = decisive</p> <p>Nurture= the education and care that you are given as a child, and the way it affects your later development and attitudes</p> <p>Identical = exactly the same</p> <p>Triplet= one of three children born to the same mother at the same time</p> <p>Involve= include, contain, comprise...</p> <p>Reunite= bring back together, come together</p> <p>Identical twin= one of a pair of brothers or sisters born at the same time, who develop from the same egg and look almost exactly alike</p>
--	--

The study was conducted by child psychiatrist Peter Neubauer and Violet Bernard, a child psychologist. They worked with the Louise Wise Agency, which matched Jewish orphans with **adoptive (adoption –cam 12) families**, to **craft (cam 12,13)** a secret experiment that would test how much of a person's behavior is genetically influenced and how much is environmentally influenced.

The researchers carefully controlled which families the identical siblings **ended up (end up –cam9,13)** in, withheld information about their biological parents, and didn't tell the adoptive families that the children were twins or had siblings. Instead, they told the families that their children were being followed for a study about the development of adopted children.

The study ultimately ended in 1980, and because of the fear of backlash and **controversy** over **ethics (cam13)** and consent, Neubauer never published the results. The data is **sealed (cam 8,10)** in a Yale archive until 2066.

This is the only twin study that followed its subjects from **infancy** (infant –cam11,13), but it's far from the only time scientists have used genetically identical siblings in research.

Why scientists are obsessed with twins

The annual Twins Days Festival in Twinsburg, Ohio attracts the largest hoard of twins from all over the world. And you bet scientists are in attendance as well.

Conducted **properly (cam 10,11)**, twin experiments can give scientists **insights (cam 13,11)** into how different habits, treatments, or lifestyles affect two people with the same **genetic makeup (cam 11)**. Studying identical twins can also help scientists **pinpoint (cam 13)** the effect of **epigenetics (cam 11)**, or environmental influences, on gene expression

Adoptive families: families with a child or children who have been adopted (an adopted child has been legally made part of a family that he or she was not born into)

Craft = make = create = produce

End up= to be in a particular place or situation, state after a series of events, especially when you did not plan it.

Ethics = morals

Seal= shut out, close up, stop entering

infancy = the time when someone is a baby or a very young child

Properly = right = suitably = correctly

Insight= perception, awareness, understanding, comprehension

Genetic makeup = genetic combination

Pinpoint= locate, identify, find

Epigenetics= a branch of genetics that studies the chemical reactions that turn genes on and off

Determine = decide = specify

traits = character, personality, qualities...

and function. This can help **determine** (cam 8,11) if certain **traits** (cam 10) or diseases lean more heavily on genetics or the environment.

In history, twins have been used in research about I.Q., everyday diseases, eating disorders, **obesity** (cam 13), developmental and psychological traits, and sexual orientation, according to Smithsonian Magazine.

In a **comprehensive** (cam 8,13) review of twin studies worldwide, which was published in Nature Genetics in 2015, researchers found that on average, environment and genetics have a 50/50 influence on a person's traits and disease. But certain conditions like bipolar disorder **rely** (cam 13) more heavily on genetics.

Today, twin studies are still commonly used. There are studies on mood and anxiety disorders as well as **asthma** (cam 12) and allergies. The Minnesota Center for Twin and Family Research collects community-contributed data from twins that helps them map out mental health outcomes and examine the development of **substance** (cam 8) use and related behavior disorders. For one study, they examined personality development of twins to see whether environment or genes **played a role in** (cam 9) risk-taking behaviors that lead to **substance** abuse.

Most famous, however, are NASA's twin studies. After astronaut Scott Kelly got back from a year in space, scientists **observed** (cam 10,13) that 7% of his genes were expressed differently than those of his **identical** twin. The genes that were **altered** (cam 9) were related to the **immune** (cam 8) system, bone formation, DNA repair, and responses to an oxygen-depleted (cam 11) or carbon-dioxide rich environment.

On top of this, Scott Kelly's telomeres — the caps at the ends of our chromosomes that affects cell aging — appeared to get longer in space, but they shrunk back when he returned

Obesity= fatness, overweightness

Comprehensive= thorough, in-depth, complete #partial, limited

rely on= depend on

asthma = a chest disease in which breathing can become difficult, often caused by an allergic reaction

Substance = element, material, ingredient...

Play a role in= to have an effect or influence on something = influence, impact, affect

Observe= watch, view, scrutinize...

Altered= changed # original

Deplete= reduce, eat up, lessen, exhaust, diminish # increase

to Earth. His gut also hosted different bacteria, and he returned two inches taller.

NASA recently sent 20 mice into space while their twins stay on Earth. In partnership with astronauts on the International Space Station, agency scientists plan to study changes in the **rodents** (cam 11) microbiomes and circadian cycles.

rodents = any of various small mammals with large, sharp front teeth, such as mice and rats

PASSAGE 2: AN INTRODUCTION TO FILM SOUND

ARTICLE 3: Sound in Filmmaking

“Sound” **refers (cam 11) to** everything we hear in a movie — words, sound effects, and music. Sound is used in film to heighten a mood, provide us with information about the location of a **scene (cam 11)**, advance the **plot (cam 13)**, and tell us about the characters in the story.

There are two **categories (cam 9)** of sound in film: Diegetic and Non-Diegetic. Diegetic Sound refers to all those audio **elements (cam 8)** that come from sources inside the world we see on the screen, including dialogue, doors slamming, footsteps, etc. Non-Diegetic Sound refers to all those audio elements that come from outside of the **fictional (fiction –cam 11)** world we see on screen, including the musical score and sound effects like the screeches in the shower scene in *Psycho*.

How do Sound Effects help to Shape a Film?

Sound effects can be used to add mood or **atmosphere (cam 8)** to a film by creating a soundscape that accents or adds another layer of meaning to the images on the screen.

Pitch (cam 13), tempo, and volume may be **altered (cam 9)** to **indicate (cam 10)** how the filmmaker expects the **audience (cam 11)** to respond to a given noise. For instance, high-pitched sounds, including screams or squealing tires, help to create a sense of anxiety, while low-pitched sounds, including the sounds of waves or the swinging of a door, can be used to create a sense of calm or **mystery (cam 12)**.

Perhaps the most interesting use of sound in a movie is the very **absence (cam 12)** of it: silence. At key points in a film, directors may use silence in much the same way that they would use a freeze **frame (cam 12)**. Both tend to **arrest**

refers to = cite = mention = name

scene = a part of a play or film in which the action stays in one place for a continuous period of time

Plot= story of film/book...

Category= a category in retailing is a group of the same products (ex: soft drinks, detergents, etc)

Element= factor.

fictional = imaginary

Atmosphere= air in environment

Pitch= tone = how high or low a sound is

Altered= changed # original

Indicate= point out, show, suggest...

audience = the group of people together in one place to watch or listen to a play, film,...

Mystery= secrecy, unknown, unidentified...

absence= lack, non-existence# presence

Frame= structure

Arrest = capture = seizure # release

(arrested –cam 12, arresting –cam 13) the audience's attention to highlight some action or change in story direction. Silence can be used to build up a scene's **intensity (cam 9)** or to **foreshadow (cam 11)** impending **doom (doomed – cam 11)**

In recent years, special sound effects have been added to movies in order to heighten the film experience. Many of these sound effects, including **explosions (cam 11)**, phaser **blasts (blasted –cam 12,13)**, wind, and animal sounds are drawn from computer sound effects libraries and are added to a film after the movie has been shot. Besides creating louder and more dramatic movies, these effects have tended to draw more attention to movie sound. With advancements in surround sound, sound effects have developed a more "directional" element, appearing to come from a specific place or direction. This directional quality of sound (alongside elements such as echoes) **enhances (cam 12)** a **three-dimensional (dimension – cam 12)** sense of space in the movie.

How Does Music Help to Shape a Film?

If we step back and think about it, music is one of the most **peculiar (Cam 10) conventions (cam 11)** in movies. No one questions that music should be a part of movies because we've all grown used to the idea that, in a movie, when two people kiss, we should hear music in the background. Or when the platoon attacks the beach, a **symphony (cam 12)** should provide the **inspiration (cam 12)** behind their assault. Of course, no one has a soundtrack **accompanying (cam 9,12)** their real lives. But in movies we not only accept this convention, we demand it.

Music can be used for a number of effects in a movie. The most obvious way music scores are used is to guide the emotional response of the audience. They provide **clues (cam 8,10)**, or, in most cases, huge signposts, that tell audiences how the filmmaker wants them to react to a given scene.

Intensity= strength, power, amount...

Foreshadow= anticipate

Doom= ruin, destroy

Explosion= bang

Blast= criticize

Enhance= improve, boost, enrich, Increase

three-dimensional = having or appearing to have height, length, and width and therefore looking real

peculiar= strange = weird = unusual

Convention= standard, rule, principle

Symphony= a long piece of music usually in four parts, written for an orchestra.

Inspiration= a person, experience, place etc that gives you new ideas for something you do

Accompany= go along with, go together with...

Clue= evidence, sign...

Some directors play against our expectations and use music in ways we might not expect. Stanley Kubrick shocked audiences when he used “Singin’ in the Rain” as the backdrop to a horrible rape scene in *A Clockwork Orange* (1971). Music can also provide an overture for a movie when it’s used as the **backdrop (cam 9)** for the opening **credits (cam 11)**. The brassy **theme (cam 9)** music **composed (cam 13)** by John Williams for Star Wars is one famous and often-parodied example.

In some instances, directors use music to **foreshadow** upcoming events. In horror movies, for example, the score is often used to build up **tension (cam 8)** and **suspense (cam 11)** just before the monster attacks one of its victims.

Finally, music can be used to shape the **ethnic (cam 13)** or cultural context of a film.

Backdrop= the conditions or situation in which something happens.

credits = the list of the names of people and organizations who helped to make a movie

Theme= **subject**, topic, subject matter

Composed by = written by = created by

Tension= worry, nervousness, anxiety...

Suspense= uncertainty, doubt, anxiety, nervousness

ethnic = relating to a race or national group of people

PASSAGE 3: THIS MARVELLOUS INVENTION

ARTICLE: Top 10: Life's greatest inventions

4. Language

As far as humans are concerned, language has got to be the **ultimate (cam 9)** **evolutionary (cam 8,10)** **innovation (cam 9)**. It is central to most of what makes us special, from **consciousness (conscious –cam 12)**, **empathy (cam 9)** and mental time travel to symbolism, **spirituality (spirit –cam 8)** and **morality (cam 12)**. Language may be a **defining (cam 8)** factor of our species, but just how important is it in the evolutionary **scheme (cam 11)** of things?

A decade ago, John Maynard Smith, then emeritus professor of biology at the University of Sussex, UK, and Eors Szathmary from the Institute of Advanced Study in Budapest, Hungary, published *The Major Transitions in Evolution*, their description of life's great leaps forward. They identified these crucial steps as innovations in the way information was organised and **transmitted (cam 8)** from one generation to the next – starting with the origin of life itself and ending with language.

Exactly how our **ancestors (cam 9)** took this leap is possibly the hardest problem in science, Szathmary says. He points out that **complex (Cam 12,13)** language – language with syntax and grammar, which builds up meaning through a hierarchical arrangement of subordinate clauses – **evolved (cam 9)** just once. Only human brains are able to produce language, and, contrary to popular belief, this ability is not **confined (cam 8)** to specialised regions in the brain such as Broca's and Wernicke's areas. If these are damaged

Ultimate = crucial = vital = decisive

Evolutionary= relating to the way in which plants and animals develop and change gradually over a long period of time.

Innovation= modernization, improvement, advance...

Consciousness= awareness = realization = perception

Empathy=the ability to understand other people's feelings and problems .

Spirituality = Deep feelings and beliefs of a religious nature

Morality= ethics.

Define= describe correctly and thoroughly

Scheme= **plan**, project, programme, strategy

Transmit= convey, pass on...

Ancestor= a person related to you who lived a long time ago

complex = complicated, Intricate ...

Evolve= develop, change, grow...

Confine = restrict = limit = kept

others can take over. Szathmary likens language to an amoeba, and the human brain to the **habitat** (cam 12) in which it can **thrive** (cam 11). “A surprisingly large part of our brain can **sustain** (sustainable –cam 10,11) language,” he says.

But that raises the question of why this language amoeba doesn’t **colonise** (**colonized** – cam 12) the brains of other animals, especially primates. Szathmary is **convinced** (cam 8,10) the answer lies in neural networks unique to humans that allow us to perform the complex hierarchical processing required for grammatical language. These networks are shaped both by our genes and by experience. The first gene associated with language, FOXP2, was identified in 2001, and others will surely follow.

So why don’t our close evolutionary relatives, **chimps** (cam 11) and other primates, have similar abilities? The answer, recent analysis seems to suggest, lies in the fact that while humans and chimps have many genes in common, the versions expressed in human brains are more active than those in chimps. What’s more, the brains of newborn humans are far less developed than those of newborn chimps, which means that our neural networks are shaped over many years of development **immersed** (cam 9) in a linguistic environment.

In a sense, language is the last word in biological evolution. That’s because this particular evolutionary innovation allows those who possess it to move beyond the realms of the **purely** (cam 11) biological. With language, our ancestors were able to create their own environment – we now call it culture – and **adapt** (cam 8) to it without the need for genetic changes.

Habitat= the natural home of a plant or animal.

Thrive= flourish = Grow well

sustain= support = maintain

colonise = to establish political control over an area, and send your citizens there to settle

Convinced= persuaded.

Chimp = an intelligent African animal that is like a large monkey without a tail

Immersed in = completely involved in an activity

Purely= completely and only

Adapt= get a feel to, get used to, familiarize yourself...

PHỤ LỤC

IELTS READING ANSWER SHEET | Phiên bản chỉnh sửa

Phù hợp việc tự luyện IELTS Reading tại nhà

Để làm tốt bài thi IELTS Reading, một điều quan trọng là có chiến lược làm bài nhanh và hiệu quả. Trong đó, kỹ năng sử dụng answer sheet đóng vai trò rất quan trọng. Một số bạn thậm chí không sử dụng answer sheet trong lúc luyện tập. Điều này là không nên vì rất nhiều trường hợp transfer câu trả lời từ sách sang answer sheet sẽ bị nhầm. Ngoài ra, khác với listening có 10 phút để transfer câu trả lời từ booklet sang answer sheet, trong bài thi reading, các bạn nên điền câu trả lời trực tiếp vào answer sheet lúc làm bài để tiết kiệm tối đa thời gian.

Dưới đây là link answer sheet dùng cho bài thi Reading sử dụng trong các kỳ thi IELTS chính thức

<https://drive.google.com/open?id=OB2TloHBJlsvnXzRhR29MN25FSFFiWDVGcDc4SVhrYmc3cU4w>

Tuy nhiên, để phục vụ việc ghi chép các lỗi thường gặp trong quá trình làm bài và tạo điều kiện cho việc “rút kinh nghiệm” trong các lần làm bài kế tiếp, mình khuyên các bạn sử dụng answer sheet sau

Link download

https://drive.google.com/open?id=1C_bY208s2_zK8FKzJzqCvPpSoCx4TLd8

Ưu điểm của answer sheet này

- Các phần thông tin chỉ dùng cho kỳ thi thật đã được cắt bỏ, thay vào đó là cột thông tin problem và solution để các bạn có thể ghi chú các thông tin cần thiết sau mỗi lần làm bài
- Bảng điểm tham khảo để các bạn tiện đối chiếu sau khi làm bài xong

Hướng dẫn cách ghi answer sheet mới

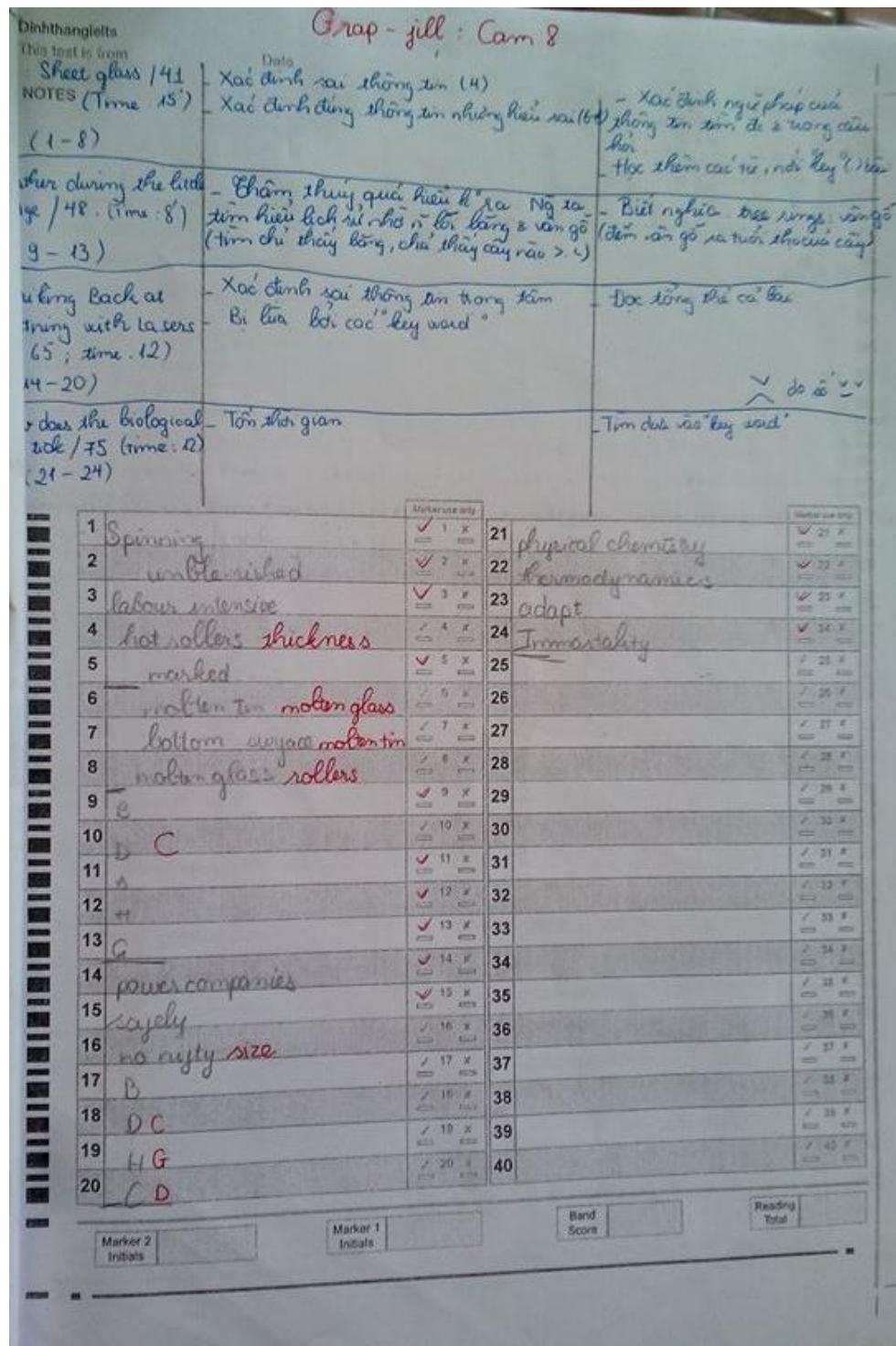
Dinhthanglieu		This test is from Test 4 Cam9 Date 31st Jan 2018	
NOTES		Ghi các vấn đề bạn gặp phải ở cột này	
		Tự đưa ra các cách giải quyết cho các vấn đề đó ở cột này	
#	Problem	Solution	
1	Không hiểu câu chưa thông tin quan trọng vì quá dài	Phân tích cấu trúc ngữ pháp câu, lược bỏ phần không quan trọng	
2	TRUE FALSE NOT GIVEN bị sai nhiều (40%)	Cần đọc kỹ hơn thông tin và chú ý các từ bẫy như ONLY, ALL, v.v...	

Thường xuyên xem lại phần NOTES này, đặc biệt là trước khi bạn làm 1 test bất kỳ vì nó là kinh nghiệm bạn đúc rút được

1	Marker use only	✓ 1 x	Marker use only	✓ 21 x
2	Marker use only	✓ 2 x	Marker use only	✓ 22 x
3	Marker use only	✓ 3 x	Marker use only	✓ 23 x

Sau đó ghim các tờ answer sheet của bạn lại thành 1 quyển và đọc đi đọc lại thường xuyên, và đặc biệt là đọc thật kỹ trước khi làm một test mới

Ảnh chụp answer sheet của học sinh mình áp dụng theo cách phía trên. Nhờ việc rút kinh nghiệm từ những lỗi sai và áp dụng các giải pháp do bạn ấy tự đưa ra thì từ lúc bắt đầu học làm được khoảng 18-20/40 câu đúng (tương đương 5.5), bạn ấy đã tiến bộ rất nhiều và trong 2 lần thi thật thì đạt lần lượt 6.5 và 7.0 Reading)



RẤT CÁM ƠN CÁC BẠN ĐÃ SỬ DỤNG CUỐN SÁCH. MÌNH RẤT MONG NHẬN ĐƯỢC THÊM NHỮNG Ý KIẾN ĐÓNG GÓP CŨNG NHƯ NHỮNG CHIA SẺ VỀ VIỆC BẠN ĐÃ DÙNG SÁCH HIỆU QUẢ TRONG VIỆC LÀM BÀI IELTS READING RA SAO. TEAM SOẠN SÁCH SẼ CẢM THẤY CÓ THÊM ĐỘNG LỰC LỚN NẾU BẠN SHARE NHỮNG ĐÁNH GIÁ VỀ CUỐN SÁCH TRÊN CÁC GROUP CŨNG NHƯ FACEBOOK CÁ NHÂN.



Phương Anh
21 July

[Boost your vocabulary review]

Hi cả nhà, mình vừa thi ielts tháng 6 vừa rồi và có sử dụng bộ Boost your vocabulary của anh Dinh Thang và các bạn trong group. Không biết các bạn khác thấy sao nhưng nó thực sự giúp mình rất nhiều khi làm bài . Phải thừa nhận là mình rất lười học từ vựng. Thường thì mình sẽ đoán từ dựa theo ngữ cảnh, tuy nhiên k phải lúc nào cũng đoán đúng, Thế nên, trước ngày thi 1 tháng mình bắt đầu học theo bộ Vocab này, cũng là một cách mình ôn quay vòng bộ Cam.

Trong khi làm bài có từ mới nào xuất hiện nhiều lần thì mình sẽ gạch chân, sau đó khi chấm xong thì sẽ tra trong quyển Vocab, đồng thời đọc lại toàn bộ cả test đấy. Sau 3 quyển thì mình đã học được kha khá cặp từ đồng nghĩa. mình có thể định vị đoạn văn có câu trả lời nhanh hơn bằng việc tìm từ đồng nghĩa với keyword trong câu hỏi, đặc biệt với dạng matching information.

Và sau 1 tháng học theo bộ sách thì mình đã cải thiện được điểm Reading từ 7.5-8.0 lên 9.0. Hi vọng chia sẻ của mình sẽ phần nào giúp các bạn trong quá trình ôn thi

Em cũng xin cảm ơn anh Thắng cùng các bạn biên tập sách vì bộ sách tuyệt vời. Mong mọi người tiếp tục ra những tài liệu hữu ích để giúp các bạn ôn thi sớm được giải thoát khỏi ielts như em à 😊))

13 Comments 13 Shares

IELTS™

Test Report Form

NOTE: Admission to undergraduate and post graduate courses should be based on the ACADEMIC Reading and Writing Modules.
GENERAL, READING and Writing Modules are not designed to test the full range of language skills required for academic purposes.
It is recommended that the candidate's language ability as indicated in this Test Report Form be re-assessed after two years from the date of the test.

Centre Number	VN002	Date	23/JUN/2018	Candidate Number	003312
---------------	-------	------	-------------	------------------	--------

ACADEMIC

Candidate Details

Family Name	[Redacted]			
First Name	PHUONG ANH			
Candidate ID	174519469			
Date of Birth	[Redacted]	Sex (M/F)	F	Scheme Code
Country or Region of Origin				
Country of Nationality	VIETNAM			
First Language	VIETNAMESE			

Test Results

Listening	8.0	Reading	9.0	Writing	8.0	Speaking	8.0	Overall Band Score	7.5	CEFR Level	C1
-----------	-----	---------	-----	---------	-----	----------	-----	--------------------	-----	------------	----

Administrator Comments

[Large empty box for comments]

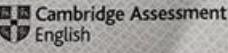
Centre stamp

Validation stamp


Administrator's Signature

Date: 03/07/2018

Test Report Form Number: 18VN003312LEP002A

Logos:
 BRITISH COUNCIL  idp 

The validity of this IELTS Test Report Form can be verified online by recognising organisations at <http://ielts.ucas.org.uk>

<https://www.facebook.com/groups/IELTSfamily/permalink/1789370387775377>

 **An An**
22 July at 20:08

[Review sách Boost your vocabulary]

Mình thi IELTS từ đầu năm nay, nhưng quá trình học có sử dụng sách này nên mình muốn review với các bạn cách sử dụng sách hiệu quả và cũng như gửi lời cảm ơn sâu sắc đến tác giả và nhóm biên soạn.

Mình đạt 9.0 Reading, khởi điểm là 7.5-8.0 Reading.

Cách học của mình như sau:

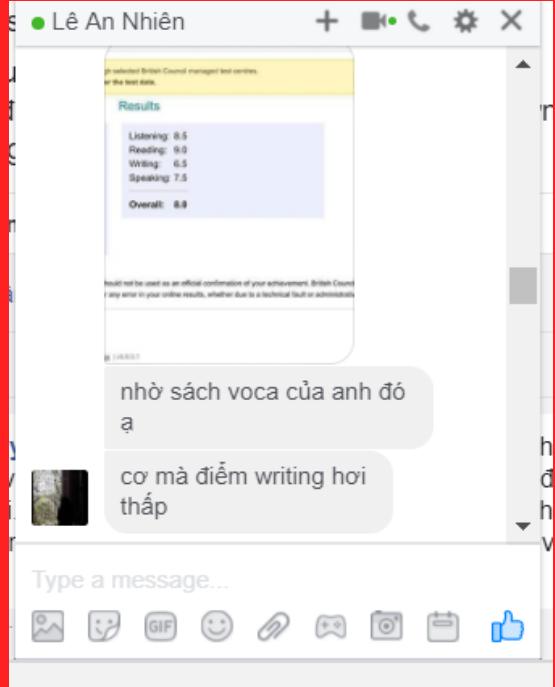
- 1.Tra phiên âm và nghĩa của những từ chưa biết (Sách có nhiều synonym nên đoán cũng được, đỡ mất công tra nghĩa).
- 2.Học thuộc hết tất cả các từ vựng có trong đó, vì là từ vựng kèm đoạn văn theo ngữ cảnh nên rất dễ nhớ từ).

Mình thường học và nhớ theo cả cụm đồng nghĩa:

Vd: Tuition=teaching=guidance=training.

Cách học từ vựng các bạn có thể tham khảo theo link này, mình cảm thấy khá hay:
<https://www.facebook.com/groups/ieltsngocbach/permalink/2565485983522048/>

- 3.Theo mình thì không nên giới hạn một ngày học bao nhiêu từ cả,cái quan trọng là phải ÉP BẢN THÂN học thường xuyên và liên tục từng ngày vì bản thân nó rất dễ quên,ngày hôm sau học nhớ khảo lại bài ngày hôm trước.
Một cách để đỡ quên từ vựng là hãy cố gắng tiếp xúc và đọc thật nhiều thứ bằng tiếng anh.
- 4.Cứ như thế mình học xoay vòng tròn trong 4 quyển sách boost.



The screenshot shows a messaging interface with a title bar "Lê An Nhiên". Below it is a summary of British Council test results:

Listening: 8.5
Reading: 9.0
Writing: 6.5
Speaking: 7.5
Overall: 8.8

Below the results, there is a note: "Results may not be used as an official confirmation of your achievement. British Council is not responsible for any error in your online results, whether due to a technical fault or administrative error."

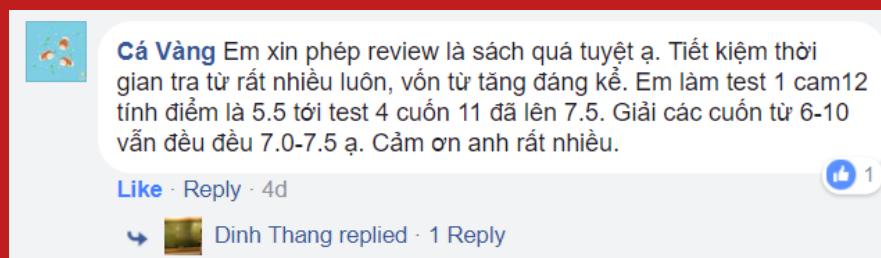
Two messages are visible in the conversation:

- "nhờ sách voca của anh đó à"
- "cơ mà điểm writing hơi thấp"

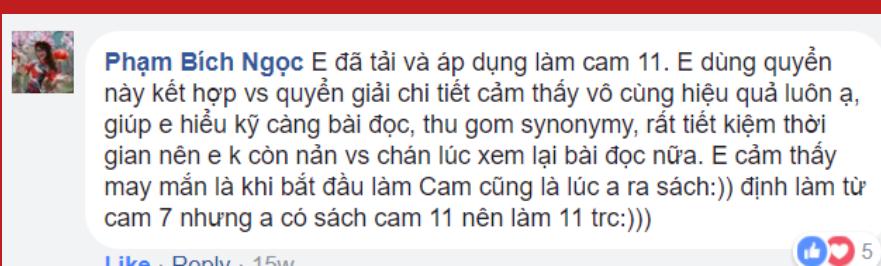
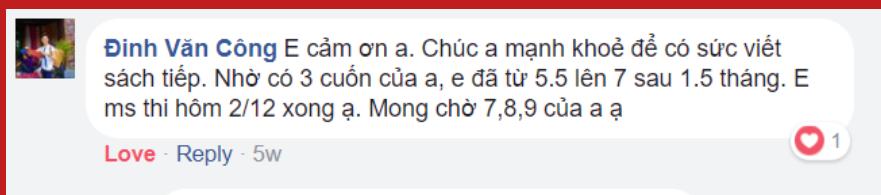
The message input field says "Type a message..." and includes standard messaging icons.



<https://www.facebook.com/groups/IELTSfamily/permalink/1791366800909069>



<https://www.facebook.com/dinhthangielts/posts/2037751856500217>



<https://www.facebook.com/groups/IELTSfamily/permalink/1495634343815651/>



Phía trên là một vài trong số rất nhiều review tích cực mà team đã nhận được và thực sự đã giúp bọn mình rất nhiều trong thời gian qua. Hy vọng team sẽ đón nhận thêm nhiều review như vậy nữa.

Trân trọng,

 dinhthangielts

Bạn có thể tìm các tài liệu Boost your vocabulary cuốn 9, 10, 11, 12 tại

Facebook Group IELTS Việt

Facebook Group IELTS family – Các nhóm tự học IELTS

Hoặc

facebook.com/dinhthangielts

ielts-dinhthang.com

Từ 2017 đến nay, bộ sách vẫn đang được cung cấp MIỄN PHÍ. Bạn nào sử dụng sách và thấy có kết quả tốt thì rất mong các bạn hãy chia sẻ với team làm sách và mọi người cùng biết. Xin đừng im lặng.

Chân thành cảm ơn các bạn!

Đinh Thắng

thangwrm@gmail.com