READING

READING PASSAGE 1

You should spend about 20 minutes on Questions 1-12, which are based on Reading Passage 1 on the following pages.

Questions 1-5

Passage 1 has six paragraphs, A-F.
Choose the correct heading for paragraphs A-D and F from the list of headings below.
Write the correct number, i-ix, next to Questions 1-5.

List of Headings

i. Improvements to faba bean farming
ii. Increasing productivity to secure the future of Legume farming
iii. The Importance of legumes
iv. The nutritional value of legumes
v. The effect of farming on the environment
vi. Legumes in the diet of ancient peoples
vii. The importance of reducing meat consumption
viii. Archaeological discoveries
ix. Legumes as a provider of protein

1 Paragraph A
2 Paragraph B
3 Paragraph C
4 Paragraph D

Example	*Answer*
Paragraph E	i

5 Paragraph F

LIVEWORKSHEETS

A The health benefit of legumes has been widely known for centuries. Also known as pulses or, more commonly, beans, they belong to an extremely large category of vegetables containing over 13,000 species. Only grains supply more calories and protein to the world's population. Today, agricultural researchers and scientists are experimenting with varieties of legumes that are easier to harvest, more resistant to disease and yield better crops.

B Beans are often referred to as 'the poor person's meat' but this label is unfair - considering the health benefits of legumes, they should really be called 'the healthy alternative to meat'. Beans contain a rich and varied supply of nutritional

substances, which are vital for keeping in good health. Diets rich in beans are used to help with a variety of health issues including lowering cholesterol levels, improving blood sugar control in diabetics, reducing the risk of many cancers, lowering the risk of heart disease and lowering blood pressure. Beans are a good source of protein but are often considered to be an 'incomplete' protein as they lack the essential amino acids that we need to complete our diet. Foods from animals (meat, fish, eggs, dairy products), on the other hand, contain protein and amino acids. However, many cultures combine beans with grains to form a complete protein that is a high-quality substitute for meat - rice and soy in Japan, corn and beans in Mexico, rice and lentils in the Middle East. Beans are also a good source of fibre, giving the consumer between 5 and 8.6 grams of fibre per 100 grams eaten. Fibre is an important ingredient in a healthy diet with great benefits to our digestive system and in reducing cholesterol levels, which in turn reduces our risk of heart disease. Fibre also helps US to feel full and control our appetite.

C Why is it important to substitute meat as much as possible? First of all because of the health implications - red meat in particular has a high fat content. Secondly, antibiotics and other chemicals are used in the raising of poultry and cattle. Thirdly, the cost to the environment is much greater in raising cattle than it is in growing crops. To produce a kilogram of beef, farmers need to feed the cow 15 kilograms of grain and a further 30 kilograms of forage.

D Little wonder then that legumes have been used from ancient times. According to Trevor Brice in *Life and Society in the Hittite World,* the Hittites, an ancient people living in Anatolia from the eighteenth century BC, ate a wide variety of legumes including peas, beans, faba beans, chickpeas and lentils. And in ancient Egypt,

LIVEWORKSHEETS

Ramses II is known to have offered 11,998 jars of beans to the god of the Nile. Archaeologists have found the remains of legumes on land beneath Lake Assad in Syria dating back to 8,000 BC and, astonishingly, a 4,000-year-old lentil seed found during an excavation in Turkey has been germinated, allowing scientists to compare the ancient variety with the organic and genetically engineered varieties of today. Professor Nejat Bilgen from Dumlupinar University, who led the archaeological team, said that the lentils were found in a container dating from the Bronze age. The plant grown from the ancient lentil was found to be 'pretty weak' in comparison with modern varieties.

E Modern agricultural research has tended to focus on grain production, breeding new varieties of wheat and other crops rather than improving the varieties of legumes, which can suffer from low yields and unstable harvests. For this reason, farmers started to abandon them in favour of more dependable crops, which had had the benefits of scientific improvement. Recently, scientists have returned to legumes to identify desirable characteristics such as height, good crop production and resistance to pests in order to cross different plants with each other and produce a new, improved variety. Using traditional breeding methods agricultural scientists are transforming the faba bean into a variety that is easier to grow. Traditional varieties are undependable as they rely on insects to pollinate them. But faba bean types that can self-fertilise naturally were discovered and this gene is being bred into new varieties, other faba bean varieties have been found that produce higher yields or shorter crops. Faba bean plants tend to grow tall and fall over in the field making them difficult to harvest mechanically so breeding plants that are 50% shorter means they are more stable. Unlike the traditional plants, the new faba bean plants end in a flower - this means that more of the plant's energy is transformed into producing beans instead of unusable foliage.

F With the new varieties, farmers in some regions are achieving a marked rise in production - between 10 to 20% improvement. Scientists have also managed to develop a commercial faba bean able to resist the parasitic weed Orobanche, which has been known to destroy whole fields of the crop. The future of legumes and the farmers who grow them is becoming brighter. Legumes are an important source of nourishment for humans and also for the soil: the beans take nitrogen directly from the atmosphere and fix it into the soil to provide nutrients for other crops and save the farmer the cost of artificial fertiliser. Making legumes a profitable crop for the future may prove an essential factor in feeding growing populations

LIVEWORKSHEETS

Questions 6-11

Do the following statements agree with the information given in Reading Passage 1?
Write

TRUE	*if the statement agrees with the information*
FALSE	*if the statement contradicts the information*
NOT GIVEN	*if there is no information on this*

6 Legumes are second to grain in providing people with calories and protein.

7 Beans can help to cure heart disease.

8 Antibiotics are used when farming animals for food.

9 Scientists have the opportunity to see how similar modern and ancient lentil plants are.

10 Agricultural scientists are making the faba bean easier to grow in dry areas.

11 New varieties of faba bean can destroy parasitic weeds.

Question 12

What *is the best title for Reading Passage 1?*

Choose the correct letter A, B or C.

A The health benefits of beans and pulses

B Diet in ancient times

C Agricultural scientists give legumes a new lease of life

LIVEWORKSHEETS

READING PASSAGE 2

*You should spend about 20 minutes on **Questions 13-29**, which are based on Reading Passage 2 below.*

What is dyscalculia?

When you look at the morning newspaper or check a news webpage, numbers are everywhere: the date is 12th September; it's 16°c in London; England lose 2-1 at football; the time is 12.30. But for people with dyscalculia, dealing with numbers presents a particular everyday difficulty. Dyscalculia is a learning difficulty in mathematics. It was originally uncovered by Kosc - a Czech researcher - after research into damage to parts of the brain involved in mathematical cognition. Dyscalculia can have two causes: brain damage or 'acquired dyscalculia' and developmental dyscalculia - or dyscalculia from birth. Whichever the cause, dyscalculia has three features: problems with mathematics; problems with mathematics only, not other areas of learning; and the assumption that these problems are rooted in brain activity.

Unlike dyslexia - difficulties with words - dyscalculia has been relatively little studied until recently. Very little is known about its causes, prevalence or how to treat it. Estimates indicate that between 3% and 6% of the population could be affected. The figures refer to children who only have difficulties with maths but have good or excellent performance in other areas of learning. People with dyscalculia have difficulty with the most basic aspects of numbers and mathematics, but this does not mean that the person affected has difficulty with higher mathematical reasoning or arithmetic. In fact, the evidence from brain-damaged dyscalculic people shows that an individual might suffer dyscalculia but can even show great ability in abstract mathematical reasoning.

Dyscalculia appears to be related to an ability shared between humans and many other animals. This is called 'subitizing' and is the capacity to count the number of objects by briefly looking at them. Subitizing seems to be an innate skill present in humans from birth and is a useful survival skill for humans and animals: there is a big advantage in being able to count how many predators or prey there are. Experiments with babies show that we are able to count at a very early age: if a baby sees a doll put behind a screen then another doll is also put behind the screen, the baby expects to see two dolls when the screen is removed. Babies will look longer at things they didn't expect to see, so if the screen is removed and the baby sees only one doll or three dolls, they stare at this unexpected sight longer, proving our ability to count from infancy. Dyscalculia could be explained by the lack of this innate capability. Genetic causes could include known genetic disorders such as Fragile X

LIVEWORKSHEETS

syndrome. However, as well as genetic factors, there could also be environmental causes such as drinking alcohol during pregnancy, which can result in underdevelopment of the brain.

There are many signs of dyscalculia including some well-established and some less well researched. There are a number of symptoms that we are relatively certain of. Firstly, counting: whilst discalculic children can learn the sequence of numbers - 1,2, 3,4,5, etc- they have difficulty counting backwards or forwards, particularly in twos or threes. Secondly, they find learning and remembering number facts difficult and often lack confidence even when they have the right answer. They can't use rules correctly either; for instance they may know that 4 + 2 = 6 but not be able to see that 2 + 4 = 6 or understand the concept of addition. Thirdly, they have problems with numbers with zeros and don't understand that the numerals 10,100 and 1,000 are the same as the words ten, one hundred and one thousand. Fourthly, dyscalculic children may not be good at using money or telling the time. Concepts of speed or temperature may be difficult for them to fully understand. Finally, they may have problems in understanding directions or in following a map.

Diagnosing and treating dyscalculia is not straightforward as there are many reasons for being bad at maths including poor teaching, lack of motivation and inability to concentrate for long periods of time. An important result of present research will be to improve our methods for identifying children with dyscalculia. The treatment of the problem, however, is a different matter. Many people think that, because the cause of dyscalculia is in the brain, it can't be treated. But this is a misunderstanding. Every time we learn a new fact or skill, our brain changes. Furthermore, if we practise a new skill extensively the brain changes considerably. This is related to a property of the brain called 'plasticity', which simply means the ability of the brain to develop and change, particularly during childhood. Dyscalculia could be treated by experiences at home, providing an environment that encourages children to count. Schools could pay more attention to making sure children understand basic mathematical concepts before dealing with more advanced ideas; they should, for example, avoid teaching the division of fractions before ensuring children have understood to concept of division. Teaching maths through a multi-sensory approach using speech, sound, writing and reading simultaneously has been shown to be a good approach. Finally, maths should be taught in short blocks of time and lessons should build on what was taught previously.

Questions 13-16

Complete the sentences below.

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

LIVEWORKSHEETS

13 A person with dyscalculia cannot solve basic..... problems.

14 The condition was first discovered by a researcher investigating..... to the brain.

15 Dyscalculia can be caused by injury to the brain or it can be present .....

16 Other aspects of..... are not affected by dyscalculia

Questions 17-22

Do the following statements agree with the information given in Reading Passage 2? *Write*

TRUE	*if the statement agrees with the information*
FALSE	*if the statement contradicts the information*
NOT GIVEN	*if there is no information on this*

17 There is not much information on how many people have dyscalculia.

18 People with dyscalculia are not able to do advanced maths.

19 *Subsitizing* means knowing how many things there are by counting them.

20 Experiments show that babies are able to count to four

21 One explanation is that people with dyscalculia have not inherited a common ability.

22 Drinking alcohol may be linked to the development of dyscalculia.

Questions 23-29

Classify the following as typical of

A *reasons for being bad at maths*

B *plasticity*

C *dyscalculia*

D *the treatment of dyscalculia*

LIVEWORKSHEETS

Write the correct letter. A, B, C or D, next to Questions 23

23 limiting maths teaching to short periods

24 being unmotivated to learn

25 the brain developing, especially when young

26 not associating words about figures with numbers

27 needing practice at telling the time

28 using all the senses when doing maths

29 poor concentration for longer lengths of time

LIVEWORKSHEETS

READING PASSAGE 3

You should spend about 20 minutes on ***Questions 30-40,*** *which are based on Reading Passage 3 below.*

Crowd mapping

One of the most exciting mass movements today is crowd mapping: sharing data collectively to produce a visualisation on a map giving almost-instant information on current events. Crowd mapping produces a picture of events on the ground as they happen by taking text messages and social media feeds together with geographic data to distribute real-time, interactive information on events such as revolutions, wars, humanitarian crises and natural disasters. This new application of social networking can bring fresh insights into events, which can be nearly impossible to cover through traditional methods of journalism where individuals report into a central newsroom. It has the additional advantage of mapping longer-term trends that fall in and out of the news.

Technologies like mobile phones and the world wide web have made it possible for those people caught up in a war or natural disaster to broadcast information from the affected area and for this information to be collected in a way that emergency aid services can use and act on. In a disaster situation the most current information is essential because the needs of, for example, flood victims change minute by minute. It enables response organisations to get an understanding of a crisis situation quickly (thus it is sometimes called *crisis mapping),* give targeted aid to people most in need and form a network of reliable reporters on the ground to check information going to the live updated map. When an emergency situation arises, a small army of volunteers comes together to collect incoming information and put it on the map. Some of the information comes from official sources such as the United Nations, but the most powerful aspect of data collection is the ability to pull information from Twitter posts, emails and text messages. Once this information is available, volunteers collaborate via the Internet to put data on to a map, which is updated every second to build a comprehensive picture of the scale and severity of the disaster. Volunteers from all over the world translate the messages coming in from the disaster zone into English and plot the information on the live interactive map.

One of the originators of crowd mapping is Ushahidi. The developers of crowd mapping software began the project in Kenya to map reports of violence after a controversial election result in 2008. Later, in 2010 in Haiti, a similar approach of collectively sharing information to help emergency services deal with the situation

LIVEWORKSHEETS

was adopted. A small team released a free phone number - 4636 - to allow victims of the 7.0-magnitude earthquake to text their requests for medical aid, water and shelter. Over 1,000 workers and volunteers around the globe, contacted via Facebook, translated the messages, mostly in Haitian Creole. They then prioritised and geolocated the requests for help via crowd mapping software. Through this service, emergency response teams were able to save the lives of hundreds of people and send food, water and medicine to tens of thousands. The success of Project 4636 led to the development of crowd mapping when dealing with critical and even non-critical situations.

Most recently, crowd mapping has been used to track violent activity in warzones and areas with uprisings. In one country, when the people rose up against their leader, the United Nations monitored the escalating violence via a crowd map to provide them with information on what was happening in the country. In another country, rebel fighters reported people who were missing, killed or arrested according to eyewitnesses, other uses for the software have included the Danish people's attempt to map the extent Oí CCTV surveillance in their country. Since the project began, 2,220 CCTV cameras have been photographed and verified by journalists. However, not all attempts a1 crowd mapping have been successful. The attempt to map an uprising in one country was cut short when the authorities took the country offline and, when the Internet was brought back, the crowd map had been forgotten.

There are other downsides to crowdmapping. According to George Chamales, there are security challenges: it must be ensured that the system stays operational and that the information collated is not misused. Firstly, the lead crowd map tends to be the one that is set up first and has the most users. Unfortunately, the organisation behind the first crowd map may not be the best one to manage the complex process of collecting and managing the data. Secondly, there are several platforms for producing crowd maps including commercial products and open source projects like Ushahidi. Some have even been developed fora particular crisis such as the nuclear meltdown in Fukushima - all of these have their own disadvantages: commercial software may need to patch bugs in the programme; open source software may overlook security in favour of functionality. The information collected needs to come from trustworthy sources, which are then relied on for more reports; this may make the person sending the report a potential target in war situations. Finally, there is the human element in processing the information, relying on thousands of volunteers to translate, categorise and prioritise the information. There is an obvious risk in giving strangers access to messages generated in dangerous circumstances: messages may be deleted and the sender's identity may be compromised.

While the introduction of any new technology has flaws, George Chamales believes that crowdmapping cannot afford to go through the same maturation as other

LIVEWORKSHEETS

technologies: the risks to people using it in hostile political situations are too great and could lead to them being arrested or killed. Furthermore, over time the technology may be labelled as dangerous, leading organisations to shun an extremely useful instrument. The answer, Chamales believes, can be found in developing standards through collaboration between IT security experts and the crowdmapping movement. New challenges and issues will arise with each crisis mapped by the people affected, but George Chamales thinks that establishing security standards would be a good starting point to allow this valuable new form of networking to evolve.

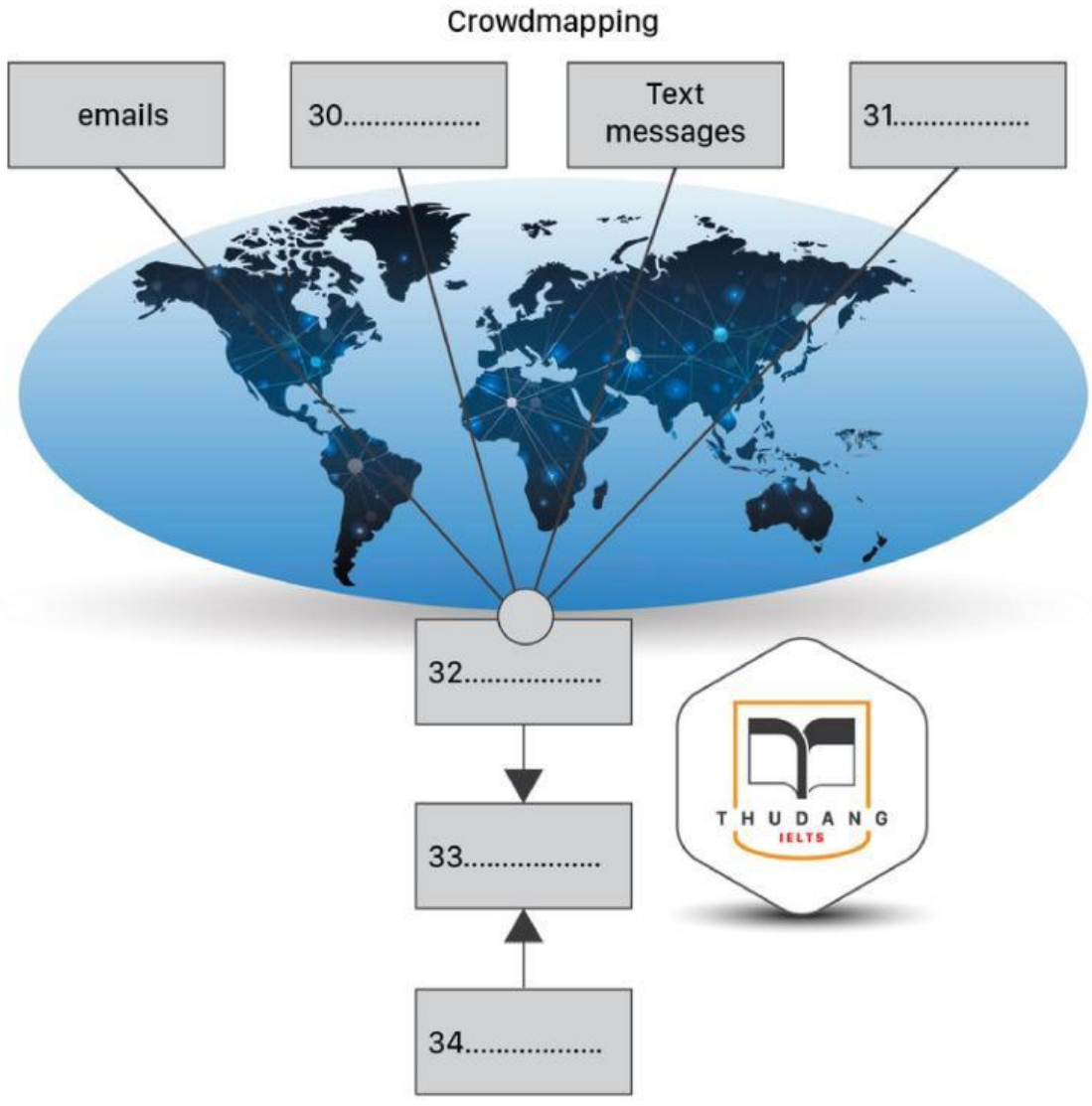
LIVEWORKSHEETS

Questions 30-34

Label the diagram below using words from the box.

Write the correct letter, A-E, in spaces 30-34.

Crowdmapping actions	
A	interactive map
B	social media feeds
C	emergency services
D	volunteers collect and translate
E	official sources



LIVEWORKSHEETS

Questions 35-40

Choose the correct letter, A, B, c or D.

35 Crowdmapping aims to produce data on

A historical and future patterns of behaviour.

B political events.

C interactive maps.

D events after earthquakes only.

36 Crowdmapping allows emergency services to

A contact journalists.

B help everyone who needs it.

C check information online.

D act quickly in specific areas.

37 The operation relies heavily on

A a project in Kenya.

B a small team.

C people translating messages.

D emergency response teams.

38 The fourth paragraph contains examples of crowdmapping in

A countries with no internet access.

B natural disasters.

C areas of conflict.

D a country with a lot of traffic cameras.

39 Which is NOT a disadvantage of crowdmapping?

A the inability of some organisations to handle the data effectively

B unreliable information

C security being compromised

D computer crashes

40 What is the best way to deal with the problems associated with this new technology?

A wait for problems to be resolved

B arrest people using it incorrectly

C agree common practices to make crowdmapping secure

D change the process when new problems arise

LIVEWORKSHEETS