

## THINKING SKILLS ASSESSMENT (TSA)

Specimen paper explained answers

1	If people go to a foreign country, they should try to learn at least some of the language of that country because, while it is difficult to pick up a foreign language in a short time, learning just a little of a foreign language helps you to find out more about the country itself and its people's customs. As well as this, it means that you can do things much more easily by being able to ask for directions or just by being able to order what you want at a restaurant, which is much less embarrassing than pointing and arm-waving. Which one of the following is an expression of the main conclusion of the above argument?		
	A	It is easier to do things in a country if you have learnt the language of that country.	
	в	You will find out more about a country if you learn the language of that country.	
	С	It is difficult to learn a foreign language in a short time.	
	D	When people visit a foreign country they should try to learn some of the language.	
	Е	Speaking a foreign language is easier than having to use sign language.	

The argument starts with the recommendation that if people go to a foreign country, they should try to learn at least some of the language of the country. This is followed by three reasons for acting upon this recommendation. They are:

- Learning a little of a foreign language helps you to find out more about the country itself and its people's customs.
- You can do things (for example, asking for directions or ordering a meal) much more easily.
- Using the language of the country is less embarrassing than pointing and arm-waving.

Thus the conclusion of the argument is the recommendation with which it starts, and this is best expressed in  $\mathbf{D}$ .

A is the second reason for the conclusion. **B** is the first reason for the conclusion. **C** points out a possible objection to the argument, which is then disregarded. **E** is a combination of the second and third reasons.



Looking at the image, it can be determined that folding up the sides of this piece of cardboard creates a box with a depth of 5 cm and that the base will be  $40 \text{ cm} \times 40 \text{ cm}$ .

So the volume of the box is  $40 \times 40 \times 5 = 8000 \text{ cm}^3$ .

Therefore the correct answer is C.

3 The government blames schools and teachers for boys underperforming. science tells a different story. Evolutionary biology shows that females ha have better verbal and emotional skills than males because of the need in times for women to take the lead in bringing up children. By contrast, the males in prehistoric times to hunt in packs for food has made males more violence and also skilled at calculating and planning. Neurologists have a insight by showing that the male hormone testosterone has an adverse in language skills. So clearly differences in educational performance betwee girls cannot be explained in terms of failing teachers.		vernment blames schools and teachers for boys underperforming. However, tells a different story. Evolutionary biology shows that females have evolved to etter verbal and emotional skills than males because of the need in prehistoric r women to take the lead in bringing up children. By contrast, the need for n prehistoric times to hunt in packs for food has made males more prone to e and also skilled at calculating and planning. Neurologists have added to this by showing that the male hormone testosterone has an adverse impact on le skills. So clearly differences in educational performance between boys and mot be explained in terms of failing teachers.
Which one of the following is the best statement of the flaw in the above argumer		
A It assumes that scientific explanations apply to the average male or ignoring exceptions.		It assumes that scientific explanations apply to the average male or female ignoring exceptions.
	в	It assumes that biological differences come in degrees and are not absolute.
C It assumes that skills in calculating and planning have a role in edu performance.		It assumes that skills in calculating and planning have a role in educational performance.
	D	It assumes that the differences in performance between the sexes are due solely to biological differences.
	Е	It assumes that teachers are not trying to improve the performance of failing boys.

The conclusion of the argument is in the final sentence: differences in educational performance between boys and girls cannot be explained in terms of failing teachers. The evidence given is that evolutionary biology shows that females and males have evolved to have different skills, such that females have better verbal and emotional skills, and males are skilled in calculating and planning. Further evidence is offered, that the male hormone testosterone has an adverse impact on language skills. The argument thus aims to explain the difference in educational performance in terms of the different inherited biological characteristics of girls and boys. To conclude that teachers cannot be to blame for differences in performance, it must be assumed that these characteristics are the sole determinant of the differences in performance.

**D** best expresses the flaw in the argument, because from the fact that females and males have inherited different biological characteristics, it cannot be concluded that these differences are the only factors that can affect educational performance.

A does not identify a flaw because referring to differences between males and females in general does not imply that there are no exceptions.

**B** does not identify a flaw because the argument does not assume that biological differences come in degrees.

The argument does make the assumption expressed in **C**, but **C** does not express the flaw, which is not that biological differences cannot have a role in educational performance, but that differences in performance are due solely to biological differences.

**E** does not identify a flaw because it is consistent with the argument that teachers are trying to improve the performance of boys relative to girls, but cannot succeed because of biological differences.

4 One in ten adults in the UK has had a body piercing somewhere other than the ear lobe. 28% of these experienced complications and 1% were admitted to hospital, according to a survey of 10,000 adults. Body piercing is three times more common in women than men. Navel piercings are most common amongst women, whereas men are more likely to have a nipple piercing. Swelling, infection and bleeding are common side effects and tongue piercings are the most risky. Serious complications resulting in hospital admission mostly occur with piercings performed by non-specialists rather than those carried out in a tattoo parlour or specialist piercing shop. In other countries, people have been infected with hepatitis B and C and HIV. Which one of the following can reliably be concluded from the information above? Good piercers give their clients advice about how to care for a piercing and Α minimise the risk of infection. No one should ever get a body piercing because the risk outweighs the в benefit. Nothing can reliably be concluded because the survey sample was too small С to be representative. People who want a body piercing would be well advised to go to a reputable D piercer. The Government should regulate body piercers more strictly to reduce Е complications.

The passage refers to a survey of 10,000 people with body piercings, 28% of whom experienced complications as a result. We are told that swelling, infection and bleeding are common side effects of body piercing, and that serious complications that require hospital admission occur mostly with piercings performed by non-specialists. It follows that it would be sensible for those who want a body piercing to have it done by someone who is a specialist. Thus **D** is the correct answer.

A cannot be concluded. If A is true, this may explain why those who go to 'good' piercers are less likely to have serious complications, but it is possible that the explanation is that the specialists are more experienced and more careful about carrying out the piercing.

**B** does not follow from the passage, because the benefits of piercing are not mentioned, so no comparison can be made between risks and benefits.

**C** is not the correct answer because if 2,800 people among 10,000 surveyed had complications, and if complications are more likely with non-specialists, we can conclude that it is better to go to a reputable piercer.

**E** cannot be concluded without a general claim that the Government has a responsibility to minimise harm to consumers, and no such claim is made in the passage.

5	Many people suffer from depression in modern society. This can be treated through drugs such as Prozac, which alter the chemical balance of the brain. However, the individual can undergo psychotherapy, which involves talking through problems with a sympathetic and skilled fellow human being with a view to putting the subject in a more positive frame of mind. Depressed individuals who do not like the idea of their brain chemistry being altered should therefore choose psychotherapy. Which one of the following is an underlying assumption of the above argument?		
	A Psychotherapy is more effective than drugs in treating depression.		
	B Alternative medicine is preferable to conventional medicine.		
	C Psychotherapy cannot be combined with drug treatments.		
	D Depression is caused by the pace of modern life.		
	E Psychotherapy does not alter the individual's brain chemistry.		

The argument compares two treatments for depression: drugs such as Prozac which alter the chemical balance of the brain, and psychotherapy, which involves talking through problems with a sympathetic and skilled person. It concludes that those depressed individuals who do not want to have their brain chemistry altered should choose psychotherapy instead of drug treatment. If psychotherapy also changed brain chemistry, this conclusion would not follow, so the argument must assume that psychotherapy does not alter the brain chemistry of the depressed person. Thus **E** is the correct response.

A is not assumed because the argument does not compare the effectiveness of the two treatments.

**B** is not assumed because neither of the two treatments is described as either alternative or conventional medicine.

The argument does not have to assume that the two treatments cannot be combined. It suggests one of the treatments on the grounds of the supposedly bad side effects of the other, not on the grounds that it is not possible to combine the treatments. So C is not an assumption of this argument.

The argument asserts that many people suffer from depression in modern society, but this neither implies nor assumes that modern society is the cause of depression. So **D** is not a necessary assumption.

6	l have be 20kg eac Unfortun	een asked to move 1 ch from the ground flo ately, nobody is avai	20 boxes weighing 25kg each oor to the fifth floor of the offic lable to give me any help.	n and 90 boxes weighing se block in which I work.
	There is	a sign in the lift whic	h reads:	
			MAXIMUM LOAD	
			4 persons or 400 kg	
	I weigh 8	l0kg.		
	What is t the fifth f	he minimum number loor?	r of journeys I will have to mal	ke from the ground floor to
	А	10		
	в	12		
	С	13		
	D	15		
	Е	16		

As the question says that nobody else is available to help, we can ignore the reference to 4 persons on the sign in the lift. It is not relevant to this situation.

The sign does tell me that the maximum load allowed in the lift is 400 kg. As I must travel with the boxes and I weigh 80 kg, then I can only take boxes with a total weight of (400 - 80), which is 320 kg each time.

The total weight of all the boxes is  $(120 \times 25) + (90 \times 20) = 4800$  kg, so they must require at least  $4800 \div 320 = 15$  journeys.

You can confirm that 15 journeys will be enough to move all of the boxes by considering (for instance) 10 journeys with 12 of the 25 kg boxes and 1 of the 20 kg boxes and 5 journeys with 16 of the 20 kg boxes.

The correct answer is **D**.

7	A womar looks ove the displa the displa	h has to get up for work at seven o'clock in the morning. She wakes up and er at her digital clock. Unfortunately, the batteries are low and the figures on ay, showing hours and minutes, aren't showing up properly. All she can see is ay below:
	It is light What is t	outside, so she cannot be more than twelve hours late. he greatest amount of time that she could be late waking up?
	Α	1h 39min
	в	1h 59min
	С	2h 25min
	D	2h 35min
	Е	2h 59min

You are told that the time cannot be more than twelve hours later than seven o'clock in the morning, so you can know that the first digit must be 0 (as it has the top element showing).

The visible elements of the other digits allow for the possibility that the time is the latest it can be before the first digit changes to 1. That would be at 10:00 so this means that the time could be as late as 09:59.

The woman could therefore be up to 2 h 59 min late waking up.

The correct answer is **E**.

The Richter Scale is used to measure the strength of earthquakes. It has the property 8 that an increase of one unit on the scale represents a tenfold increase in the strength of the quake. Three earthquakes have the following values on the Richter Scale: X:2.0 Y:3.0 Z:4.0 Which one of the following statements about their relative strengths is true? X is one-tenth the strength of Y and one-twentieth the strength of Z. A в X is one-tenth the strength of Y and one-hundredth the strength of Z. С X is one-tenth the strength of Y and one-thousandth the strength of Z. D Z is twice as strong as X and Y is one-and-a-half times as strong as X. Е Z is one-tenth stronger than Y which is one-tenth stronger than X.

An increase of one unit on the Richter Scale represents a tenfold increase in the strength of an earthquake. This means that 3.0 must be ten times the strength of 2.0 and 4.0 must be ten times the strength of 3.0 and therefore one hundred times the strength of 2.0.

Conversely, 2.0 (X) is one-tenth the strength of 3.0 (Y) and one-hundredth the strength of 4.0 (Z).

The correct answer is **B**.

9	A two-month study of major producers of ivory products showed that worldwide demand for elephant tusks for ivory had fallen sharply. Therefore, it is safe to assume that there will be a general decline in elephant poaching. Which one of the following, if true, would most weaken the above argument?	
	A There are far fewer elephants than there were ten years ago, so poachers a finding it increasingly difficult to make a living from the ivory trade.	
	B Poachers now use high-powered rifles which make it easier for them to kill larger numbers of elephants than was possible in the past.	
	<b>c</b> The worldwide demand for ivory fluctuates considerably at certain times of the year, so poachers store up ivory to sell when the market improves.	
	D More and more synthetic materials are being used as substitutes for ivory in the construction of such things as piano keys and billiard balls.	
	<ul> <li>The worldwide demand for ivory has been falling consistently for the last twenty years and many ivory poachers have found alternative sources of income.</li> </ul>	

Based on evidence that worldwide demand for elephant tusks for ivory fell sharply over a period of two months, the argument concludes that there will be a decline in elephant poaching. However, if demand for ivory fluctuates at certain times of year, the outcome of the study cannot be taken as evidence that demand for ivory will not increase again. Moreover, if poachers store up ivory to sell when the market improves, they may continue poaching during a spell of falling demand. Thus the correct answer is C, because if C is true, it is not safe to assume that there will be a general decline in elephant poaching.

If **A** is true, there may be a decline in the supply of ivory, but **A** does not weaken the argument because poachers may continue to try to make a living in this way, until no more elephants can be found.

**B** suggests that poaching is now easier than it was in the past, but this does not weaken the argument, because it has no implications for the claim that a fall in demand for ivory will lead to a decline in elephant poaching.

**D**, if true, may explain why there is a fall in demand for elephant tusks, and thus strengthens the argument a little, because if substitutes for ivory are being increasingly used, the fall in demand for elephant tusks may continue.

**E** suggests that the fall in demand for ivory is a continuing trend which has led to a decline in the number of elephant poachers. So **E**, if true, supports the argument.

10	Alcohol is largely to blame for a rise in the incidence of breast cancer. Research from St. George's hospital shows the number of women with breast cancer rose significantly over a 10 year period. Researchers also found the average amount of alcohol women drank rose by more than 40% over the same period. The study used figures from a number of regional hospitals and compared drinking habits between 1997 and 2007.		
	Which one of the following best identifies the flaw in the above reasoning?		
	A It confuses actual amounts drunk by some women with average consumption.		
	B It gives a causal explanation when only a correlation is given.		
	C It makes a sweeping generalisation on the strength of a very local sample.		
	D It assumes that all serious illnesses are related to lifestyle.		
	E It fails to specify the amount by which breast cancer has increased.		

On the basis of evidence of an increase in the incidence of breast cancer together with an increase in the average amount of alcohol consumed by women over a ten year period, the argument concludes that alcohol is largely to blame for the rise in breast cancer cases. But the results of the research show only that the two factors are correlated, in that they occurred over the same period. This cannot tell us conclusively that one of the factors, i.e. an increase in average alcohol consumption, is the cause of the other, i.e. an increase in the incidence of breast cancer. **B** identifies this flaw.

A does not identify the flaw since the argument does not confuse average consumption with actual amounts of alcohol drunk. It mentions only average consumption.

**C** does not identify a flaw. The argument does make a generalisation, but not on the basis of only one local example. The figures came from a number of regional hospitals.

The argument assumes that a serious illness, i.e. breast cancer, is related to lifestyle, but it neither suggests nor assumes that this is true of all serious illnesses. So **D** does not identify a flaw.

The argument does not specify the amount by which breast cancer has increased, but this is not the reason why it is flawed. The argument would be flawed in the way described in **B** even if it had given the percentage increase in the incidence of breast cancer. So **E** does not identify a flaw.

11	A dishonest act, such as stealing money from a handbag or cheating in school, may arise for one of many different reasons. But the reasons may be consistent with the personality of the individual involved. One child may steal, for example, in order to show off; another, to get money to support a hobby (or to get a birthday present for a younger sister); another, to express aggression or hatred against the person from whom he or she steals. One child may cheat in order to avoid punishment for academic failure; another, because of personal ambition; another to express contempt for the system.		
	Which one of the following is a conclusion that can be drawn from the passage above?		
	A It is wrong to assume that a child who is dishonest in one kind of situation we be dishonest in others.		
	B A child who cheats does so for very complex reasons.		
	<ul> <li>A child whose motive is generosity towards someone else should not be blamed for stealing.</li> <li>D Underlying all dishonest acts is hostility towards others.</li> </ul>		
E Children who are neither exhibitionist nor aggressive nor acquisitive are unlikely to steal money.		Children who are neither exhibitionist nor aggressive nor acquisitive are unlikely to steal money.	

The passage tells us that there are various possible motives for dishonest acts, and that these motives are related to the personality of the individual. Examples of such personality traits are given, e.g. a desire to show off, generosity, aggression towards others, personal ambition. It follows that someone who commits a dishonest act in one situation may not do so in others. For example, a child who steals in order to harm someone he or she hates may not steal in order to impress others; a child who steals to buy a birthday present may not steal in order to get something for himself or herself. Thus **A** is a conclusion that can be drawn from the passage.

**B** does not follow from the passage. Three examples of motives for cheating are given, but there is no suggestion that a child who cheats will have all of these motives.

There is nothing in the passage to suggest that those who are dishonest for altruistic motives should not be blamed for their dishonesty, so **C** cannot be drawn as a conclusion.

**D** does not follow from the passage because the passage gives examples of motives for dishonesty that do not involve hostility to others, e.g. wanting to buy a birthday present or fearing academic failure.

Although the passage gives examples of exhibitionist, acquisitive and aggressive motives for stealing, it does not say that these are the only possible motives. In fact, it mentions a generous motive also, i.e. wanting to buy a birthday present. So **E** cannot be drawn as a conclusion.

12 Sue and Ben are buying some kitchen goods at a shop which is having a sale. The terms of the sale are as follows:

Total marked price of purchases (before discount)	Reduction (%)
Up to €50	25
<i>Up to €100</i>	33
€100 or more	50

The marked prices of the goods they have chosen come to €96.

How much less would they actually spend, to the nearest €1, if they chose extra goods to the value of €6?

А	€2
в	€6
С	€10
D	€13
E	€16

As the total marked price is above €50, we know that we do not have to apply the 25% reduction, so that information can be ignored.

If Sue and Ben did not choose extra goods, they would pay 67% of €96. This is effectively <sup>2</sup>/<sub>3</sub> of €96, which is €64. (67% of €96 is actually €64.32, which is €64 to the nearest €1.)

By choosing extra goods to the value of €6, they would pay 50% of €102, which is €51.

To the nearest €1, the extra goods would result in them spending €64 - €51 = €13 less.

The correct answer is **D**.

	Period 1	Period 2	Period 3
Japan	8.5	3.0	3.2
France	5.4	3.0	2.6
United Kingdom	3.6	1.5	2.4
Belgium	3.3	2.8	2.3
Sweden	4.1	1.5	1.8
Denmark	4.3	2.6	1.7
Italy	6.3	3.0	1.6
Netherlands	4.8	2.7	1.6
Germany	4.5	3.1	1.6
United States	2.2	0.0	0.8

The following table gives figures for the percentage growth per year of labour 13 productivity per person per year in various countries during three periods.

Which country's eater than half of its Period 1 level throughout the following periods?

- Α France
- в United Kingdom
- С Germany
- D Denmark
- Е Belgium

Comparing the Period 2 column to the Period 1 column, France, Belgium, Denmark, Netherlands and Germany all had a percentage growth per year during Period 2 that was greater than half of their Period 1 level.

Comparing the Period 3 column to the Period 1 column, only the United Kingdom and Belgium had a percentage growth per year during Period 3 that was greater than half of their Period 1 level.

So, only Belgium's percentage growth per year remained consistently greater than half of its Period 1 level throughout both of the following periods.

The correct answer is E.

14	100 pellets of chicken food will feed one large chicken and two small chickens for a day. 175 pellets of food will feed two large and three small chickens for a day.		
	Which one of the following statements is not true?		
	A A small chicken can be fed for longer than a day with 30 pellets of food.		
	B 70 pellets of food are sufficient to feed a large chicken for a day.		
	C A large chicken needs twice as many pellets as a small chicken.		
	D Two large and four small chickens will need 200 pellets of food for a day.		
	Е	E Three large and ten small chickens will need 450 pellets of food for a day.	

The most efficient way of approaching this question is to work out how many pellets a large chicken needs and how many pellets a small chicken needs per day.

100 pellets will feed one large chicken and two small chickens for a day, so 200 pellets will feed two large chickens and four small chickens for a day.

175 pellets will feed two large chickens and three small chickens for a day, so 25 pellets (the difference between 200 and 175) will feed one small chicken for a day and therefore a large chicken needs 50 pellets per day.

The following should now be clear:

- A small chicken can be fed for longer than a day with 30 pellets of food.
- 70 pellets of food are sufficient to feed a large chicken for a day.
- A large chicken needs twice as many pellets as a small chicken.
- Two large chickens and four small chickens will need 200 pellets of food for a day.

Three large and ten small chickens, however, will only need  $(3 \times 50) + (10 \times 25) = 400$  pellets of food for a day.

The correct answer is E.

15	The effect of shortening degree courses at universities from three years to two would be that students would have two-thirds as much time to think about their subject. The result would be graduates whose understanding of their subject was shallower and whose intellectual development was much less extended. Any measure that leads to a lowering of the quality of graduates should be resisted by universities. Which one of the following conclusions can reliably be drawn from the above passage?			
	A University graduates at present have an in-depth understanding of their subject.			
	B Universities should oppose the shortening of degree courses to two years			
	c Universities are not proposing to reduce the length of degree courses to years.			
	D	Students should oppose moves by universities to shorten degree courses.		
	E	Universities should adopt more rigorous standards for the award of degrees.		

The passage describes the adverse effects of shortening degree courses to two years: that graduates would have a shallower understanding of their subject and their intellectual development would be less extended. In other words, the quality of graduates would be lower in the sense that their understanding and intellectual development would be inferior. It recommends that universities should resist any measure that leads to a lowering of the quality of graduates, so we can conclude that universities should resist the shortening of degree courses to two years. Thus **B** is the correct answer.

A makes a claim that goes further than what the passage can support. The passage implies that those who have studied at university for three years will have a deeper understanding of their subject than they would have had if they had studied for only two years, but this does not imply that they will all have an in-depth understanding of their subject.

**C** does not follow from the passage because we are told only what universities should do, not what they are proposing to do.

We cannot draw a conclusion about what students should do, because there may be advantages to students in being able to obtain a degree in two years instead of three. So **D** cannot be drawn as a conclusion from the passage.

**E** does not follow from the passage because there is no suggestion that the present three-year degree courses do not adhere to rigorous standards for the award of degrees.

16 It is not always clear whether a doctor should tell the truth to a patient or not. On the one hand, patients have a right to know what is the matter with them and what the future holds, so that they can make their own informed decisions, however upsetting the truth may be. It is a simple issue of human rights. But on the other hand, a patient's health may sometimes be better served by not knowing a frightening truth. For instance, a doctor may believe that a patient's medical condition will actually worsen if they realise how serious it is. Therefore, there are cases in which doctors have no choice: they must decide in favour of not telling the patient the truth.

Which one of the following is an underlying assumption of the above argument?

Α	Patients accept that a doctor has a responsibility to decide what will be in their best interests.
в	Doctors have a duty to conceal the truth if they believe it will frighten the patient.
С	Doctors have a duty to tell their patients the truth even when the truth would upset them.
D	Doctors have a greater responsibility for a patient's well-being than for their right to know the truth.
E	It is the responsibility of doctors to respect a patient's human rights whatever their medical condition.

The argument acknowledges that there is a conflict between a patient's human right to know the truth about their medical condition and the doctor's duty to care for the patient's health. It also claims that there are cases in which the doctor believes that the patient's health will deteriorate if they are told the truth. The argument concludes that there are some cases in which doctors must withhold the truth from patients about their medical condition. In drawing this conclusion, the argument must assume that the doctor's duty not to cause the patient's health to deteriorate overrides the patient's right to know the truth. This assumption is expressed in **D**.

A is not assumed by the argument because there is no mention of patients' views about what a doctor's responsibilities are.

**B** is not an underlying assumption because the condition that must be satisfied in order for doctors to withhold the truth is that they believe that telling the truth will be harmful to the patient's health, not merely that it will frighten the patient.

**C** goes against the conclusion that there are cases in which doctors must withhold the truth from patients, so it is not an assumption underlying this argument.

Since the argument concludes that there are cases in which doctors must withhold the truth despite the fact that patients have a human right to know the truth, and since E is incompatible with this conclusion, E cannot be an assumption of this argument.

17	Zoos are entirely unsuitable places for animals. People visit zoos to learn about animal behaviour but the animals they see are likely to be behaving in abnormal and neurotic ways because of the crowded and unnatural conditions in which they are kept. Zoos should be closed down and the money saved should be reallocated to the protection of natural habitats.			
	Which one of the following, if true, would most weaken the above argument?			
	A Humans living in crowded conditions can also become neurotic.			
	B Schoolchildren can learn a great deal about animals from visiting zoos.			
	c Many of the animals at present in zoos would not be capable of living in the wild.			
	D The protection of wildlife habitats is very costly.			
	E	Zoos enable endangered species to survive by breeding them in captivity and then re-introducing them to the wild.		

The argument recommends closing down zoos and reallocating the money saved to the protection of natural habitats on the grounds that zoos are unsuitable places for animals, because the crowded and unnatural conditions cause animals to behave in abnormal and neurotic ways. If **E** is true, then zoos have a valuable function in relation to endangered species, enabling them to breed safely in captivity then be re-introduced to the wild, where they will be able to live in their natural environment. So **E** weakens the argument that all zoos should be closed down because of their unsuitability for animals.

A does not weaken the argument because the fact that living in crowded conditions can make humans neurotic is not a good reason for keeping animals in unnatural and crowded conditions in zoos.

**B** does not provide a strong reason for retaining zoos, since children who visit zoos may be learning what different animals look like (which they could also learn from books and television), but they are not learning about how animals behave in their natural environment. So **B** does not substantially weaken the argument.

**C** provides a reason for managing closure of zoos in such a way that those animals which would be unable survive would not be released into the wild. But it does not weaken the argument because it does not provide a good reason for not closing down zoos eventually.

Assuming that it is a good thing to protect habitats, **D** is a good reason for seeking new sources of funding for habitat protection. However, it neither weakens nor strengthens the argument, because the high cost of habitat protection implies neither that habitat protection is too costly to be worth doing, nor that zoos should be closed in order to meet the cost.

18	A boy is given €1,00 by his grandparents to buy sweets. He decides to spend at least half his money on liquorice sticks at 5c each, at least a quarter of his money on toffees at 3c each and at least one tenth of his money on pieces of bubble gum at 2c each. He will decide how to spend the rest of the money when he gets to the shop. What is the possible range of number of pieces of bubble gum he can buy?			
	A From 5 to 9			
	в	From 5 to 11		
	С	From 5 to 13		
	D	From 6 to 12		
	E From 10 to 22			

The boy has decided to spend at least 50 c ( $\frac{1}{2}$  of  $\leq 1$ ) on liquorice sticks and at least 25 c ( $\frac{1}{4}$  of  $\leq 1$ ) on toffees. Liquorice sticks cost 5 c each, so he could spend exactly 50 c on liquorice sticks, but toffees cost 3 c each, so he will spend at least 27 c on toffees. As a result, he will spend from 10 c ( $\frac{1}{10}$  of  $\leq 1$ ) to 23 c ( $\leq 1 - 77$  c) on bubble gum pieces. Bubble gum pieces cost 2 c each, so he can decide to buy from 5 to 11 pieces.

The correct answer is **B**.

It is 1. last fo	2 noon and I have or at least three a	e just arrived in the centre of town for a meeting that is due to nd a half hours.
After f	this meeting, I ha before 5.30pm.	ve an important appointment at 6.00pm which requires me to
There	e are 5 car parks i	n the town centre that charge as follows:
	Grove Street	€6,00 per day, flat rate.
	Victoria Square	€1,00 per hour or part of an hour.
	Central Park	Free for 2 hours, then €2,00 per hour or part of an hour.
	Bonningtons	Free for 1 hour, then €1,50 per hour or part of an hour.
	Grange Road	€2,50 for 3 hours, then €1,50 per hour or part of an hour.
In whi fees?	ich car park shou Grove Street	ld I leave my car in order to pay as little as possible in parking
In whi fees? A B	ich car park shou Grove Street Victoria Squa	ld I leave my car in order to pay as little as possible in parking
In whi fees? A B C	ich car park shou Grove Street Victoria Squa Central Park	ld I leave my car in order to pay as little as possible in parking re
In whi fees? A B C D	ich car park shou Grove Street Victoria Squa Central Park Bonningtons	ld I leave my car in order to pay as little as possible in parking re

Parking is required for at least 3½ hours but no longer than 5½ hours, so you need to compare the cost at each car park for 4 hours, 5 hours and 6 hours, as follows:

	4 hours	5 hours	6 hours
Grove Street	€6,00	€6,00	€6,00
Victoria Square	€4,00	€5,00	€6,00
Central Park	€4,00	€6,00	€8,00
Bonningtons	€4,50	€6,00	€7,50
Grange Road	€4,00	€5,50	€7,00

Victoria Square is the cheapest for 5 hours, equal cheapest (with Central Park and Grange Road) for 4 hours, and equal cheapest (with Grove Street) for 6 hours.

The correct answer is **B**.



In this question you need to visualise the effect of rotating the pieces of the table around the hinges.

A can be achieved by rotating the right piece 45° clockwise and the left piece 45° anticlockwise.

**B** can be achieved by rotating the right piece 180° anticlockwise and the left piece 90° anticlockwise.

C can be achieved by rotating the right piece 180° anticlockwise and the left piece 180° clockwise.

E can be achieved by rotating the right piece 90° clockwise and the left piece 45° anticlockwise.

**D** would require either the right piece to be rotated 90° clockwise or the left piece to be rotated 90° anticlockwise and the other piece to be detached from its hinge before it could be put in place.

So, the correct answer is  $\mathbf{D}$ .

21 Observations of the brains of adult human subjects before and after period memory recall (for instance preparing for the exams taken by London tax testing their knowledge of London) have shown surprising results. When were made between brain scans taken at the start of their preparations a it was found that the parts of the brain responsible for memory had actua in size. This would seem to suggest that, just like a muscle, the brain incr and power the more it is used. People who want to improve their overall I (Intelligence Quotient), therefore, should simply take a very large number Which one of the following is the best expression of the flaw in the above A London taxi drivers are not necessarily representative of the power whole.		ations of the brains of adult human subjects before and after periods of intense recall (for instance preparing for the exams taken by London taxi drivers heir knowledge of London) have shown surprising results. When comparisons ade between brain scans taken at the start of their preparations and at the end, bund that the parts of the brain responsible for memory had actually increased This would seem to suggest that, just like a muscle, the brain increases in size ver the more it is used. People who want to improve their overall IQ ence Quotient), therefore, should simply take a very large number of IQ tests!
		London taxi drivers are not necessarily representative of the population as a whole.
	в	It assumes that there is a single part of the brain that is responsible for one's IQ.
	С	It draws a general conclusion about intelligence from the particular example of memory.
	D	It does not state how many IQ tests constitute a very large number.
	E	Brain size is not necessarily dependent on the extent of mental activity undertaken.

The argument describes a study which compared the brains of adult humans before and after periods of intense memory recall. The argument suggests that because the parts of the brain responsible for memory had increased in size at the end of the task of memorising, the brain must increase in size and power the more it is used. From this it draws the conclusion that those who want to improve their IQ should take a large number of IQ tests.

But the study shows only that tasks of memorising can increase the size of the brain, and that, if such tasks do increase the power of the brain, we can only be certain that it is memory power that is increased. So the general conclusion that assumes that IQ would be improved by taking a large number of IQ tests is not supported by the evidence. C is the option which expresses this flaw.

A does not express a flaw because the argument does not say that London taxi drivers were the only people studied. Taxi drivers are mentioned merely as an example.

**B** does not express a flaw because the argument does not refer to different parts of the brain.

The argument does not say how many IQ tests constitute a large number, but **D** does not express a flaw because this point is not relevant to the way in which the conclusion does not follow from the evidence.

The argument does assume that the increase in brain size is an indication of increase in brain power, but the flaw in the argument lies in the move from 'increase in memory power' to 'increase in general intelligence'. **E** does not identify this flaw.

22	Amrik cannot afford to buy the Advanced version of the software. The Professional version is even more expensive, so Amrik cannot afford that either.		
	Which one of the following most closely parallels the reasoning used in the above argument?		
	A Amrik does not like foods containing garlic. This pizza contains garlic and anchovies, so Amrik won't like it either.		
	<ul> <li>B It is too far for Amrik to walk to the garden centre. The shops are closer he will go there instead.</li> <li>C Amrik cannot sleep at night if he drinks a cup of tea after 9pm, because contains caffeine. Coffee contains more caffeine than tea, so Amrik wor drink that after 9pm either.</li> <li>D Amrik didn't have enough patience to complete the 1000 piece jigsaw h for his birthday. The Times crossword also requires patience, so he wor complete that either.</li> </ul>		
	E	Amrik's hair is shorter, and Callum's hair is longer, than Bill's. So Amrik's hair is shorter than Callum's.	

**C** is the correct answer. The structure of the original passage, and of response **C**, can be expressed in the following way:

Amrik cannot X because X is too Y. Z is more Y. So Amrik cannot Z.

In the original passage X = buy(ing) the Advanced version, Y = expensive, Z = buy(ing) the Professional version.

In response **C**,  $\mathbf{X} = drink(ing)$  tea after 9pm,  $\mathbf{Y} = contains caffeine$ ,  $\mathbf{Z} = drink(ing)$  coffee after 9pm.

In **A**, the structure is: Amrik does not like foods with **X** (garlic). **Y** (pizza) contains **X**, so Amrik does not like **Y**.

In **B**, the structure is: Amrik cannot **X** (walk to the garden centre) because **X** is too **Y** (far), **Z** (walking to the shops) is not too **Y**, so Amrik will do **Z**.

In **D**, the structure is: Amrik had too little **X** (patience) to do **Y** (a jigsaw). **Z** (doing a crossword) requires **X**, so Amrik will not do **Z**.

In E, the structure is: X (Amrik's hair) is shorter than Y (Bill's hair) and Y is shorter than Z Callum's hair), so X is shorter than Z.

23	Buttons which are on the right hand side of clothes are easier to fasten and unfasten for a right-handed person than for a left-handed person. Buttons are on the right-hand side of clothes for men, but on the left side for women. This arose because buttons used to be very expensive and were only worn by women who were rich enough to have a servant who helped them to dress. But almost everyone buttons their own clothes now, so manufacturers of women's clothes should now place the buttons on the right-hand side. Which one of the following identifies the principle underlying the above argument?		
	A No one needs a servant in order to dress.		
	B Wealth should not determine fashions in clothing.		
	C Cost effectiveness should determine clothing design.		
	D It is a good thing to break with tradition.		
	E	The needs of the majority should come first.	

From the fact that buttons on the right side of clothing are easier to fasten for a right-handed person than for a left-handed person, the argument recommends that manufacturers should place the buttons on women's clothes on the right-hand side, instead of the left-hand side as they do now. However, this would make it more difficult for left-handed women to fasten and unfasten buttons. There are more right-handed than left-handed people, so the argument must be assuming the general principle that the needs of the right-handed should come first, because they are the majority. Thus **E** is the correct response.

**A** is not the correct answer, firstly because it is not a general principle and secondly because, given that we have already been told that almost everyone buttons their own clothes, it is not necessary to the conclusion that buttons should be placed on the right side of clothes.

A principle as general as **B** is not necessary to this argument, which is specifically about the location of buttons, not about fashions in general.

**C** is not an underlying principle of this argument because the issue of cost effectiveness is not relevant to the question as to where on a garment the buttons should be placed.

**D** is too general to be a necessary principle of this argument, which concerns just one tradition, i.e. placing buttons on the left side of women's clothes. The recommendation to change this tradition is made on practical grounds, not on the desirability of breaking with tradition per se.

24	A secretary is in a bad mood with her boss and has to write three letters intended for three different people. She makes sure that each of the recipients of the letters will receive one written to someone else.		
	In how many different ways can she send three different letters to achieve this?		
	Α	1	
	в	2	
	С	3	
	D	5	
	E	6	

If the three recipients of the letters are X, Y and Z, then X must receive either the letter intended for Y or the letter intended for Z.

If X receives the letter intended for Y, then Y must receive the letter intended for Z, and Z must receive the letter intended for X.

If X receives the letter intended for Z, then Y must receive the letter intended for X, and Z must receive the letter intended for Y.

The correct answer is **B**.

25	The table England	e below show in 2004.	s the cumulative perc	entage distribution of salt consump	tion in
			Percentage distributi	ion of estimated salt intake (g/day)	
			Men	Women	
		3 g or less	1	3	
		6 g or less	11	30	
		9 g or less	44	73	
		12 g or less	68	93	
		15 g or less	92	99	
		18 g or less	96	100	
	Assumin people c the neare	g equal numb onsumed abo est 1%)	pers of men and wome ove the recommended	en in the population, what percenta I level of 6g per day? (Give your an	ge of all swer to
	Α	20 %			
	В	59 %			
	С	70 %			
	D	80 %			
	E	89 %			

The only information given in the table that is relevant to this question is that 11% of the men and 30% of the women consume no more than the recommended level of 6 g of salt per day.

If you assume, as you are told to, that there are equal numbers of men and women in the population, then, on average, 89 + 70 = 159 out of every 200 people consumed above the recommended level. This is 79.5%, or 80% to the nearest 1%.

The correct answer is **D**.



This question requires you to identify the graph of monthly changes to the balance that is consistent with the balances shown for the end of each month.

There is no balance shown for the end of December, so you must ignore the bar for January in each of the options.

There are a number of ways you can make the identification. For instance, his balance increases in March, June, August, October and December; only **D** shows this.

The correct answer is **D**.

27	The demand for blood donors is increasing all over the world. In Western countries, in particular, demand has been rising so rapidly that shortages have begun to appear. In all such countries, demand is growing much faster than rates of growth in populations aged 18-65 from whom donors are drawn. And, despite a massive research effort to find alternatives, it remains true that in medicine there is no substitute for human blood. Which one of the following conclusions can be drawn from the passage?			
	A As the demand for blood has increased, so has the supply fallen.			
	B The rate of growth of the blood-donor population has been slowing rece			
	С	The increase in the rate of demand for blood is mainly due to population growth.		
	D If more blood donors could be found, there would be no need to find a substitute for human blood.			
	E	The problem of the increase in demand for blood shows no sign of disappearing.		

We are told that in Western countries, the rise in the demand for blood has led to shortages; that demand for blood is growing faster than the size of the age group 18-65, which provides the donors; and that despite research seeking alternatives, there is no substitute in medicine for human blood. So, unless the trend in increasing demand reverses or the size of the blood donor population grows much faster, the problem will continue. We can therefore conclude, as expressed in **E**, that the problem of the increase in demand for blood shows no sign of disappearing.

Neither **A** nor **B** follows from the passage. The fact that demand is growing much faster than the rate of growth in the population of donors neither implies that the supply of blood is falling nor that the blood donor population is growing more slowly than previously. It merely implies that the supply is not growing as fast as demand.

**C** cannot be drawn as a conclusion because there is nothing in the passage that relates the growth in demand for blood to population growth.

**D** does not follow from the passage because it is possible that the growth in demand for blood would still outstrip supply, even if more donors could be found.

28	Everyone is exposed to low background levels of asbestos and other mineral fibres in the environment, without any evident risk to health. There is absolutely no reason to be concerned about it. Exposure to asbestos fibres in homes and other buildings where asbestos is present and in good condition is not normally significantly different from the background exposure. Which one of the following is a conclusion which can be drawn from the above passage?	
	A Asbestos is harmless whether you encounter it in the home or in the environment.	
	<ul> <li>B There is a serious risk to health if asbestos found in the home is in bad condition.</li> <li>C The dangers of using asbestos as a building material have been greatly exaggerated.</li> <li>D There is normally no reason to be concerned about asbestos in the home, it is in good condition.</li> <li>E Removing asbestos from a building where it has been used is much more or a health hazard than leaving it in place.</li> </ul>	

The passage claims that there is no reason to be concerned about background exposure to asbestos in the environment, because everyone is exposed to it without evident risk to health. It also says that exposure to asbestos that is in good condition in homes and other buildings is at roughly the same level as background exposure. It follows that there is no reason to be concerned about exposure to asbestos that is in good condition in the home, as expressed in **D**.

A cannot be drawn as a conclusion because the claims in the passage do not rule out the possibility that exposure to asbestos that is in bad condition in buildings is harmful.

**B** is not supported by the passage, because the seriousness of risks to health from asbestos is not mentioned.

There is no information in the passage about claims that have been made about the dangers of using asbestos as a building material, so we cannot conclude that such claims have been exaggerated. Thus C is not a conclusion that can be drawn.

**E** does not follow from the passage because the passage gives no information about the risk of removing asbestos from a building.

Statement		Young smokers' perceptions of parents' attitudes to their smoking	Parents' actual attitude to their children smoking
Don't	t mind	56 %	13 %
Rath	er they didn't	22 %	15 %
Do n	ot like it	19 %	63 %
Don't know that they smoke		3 %	9 %
Which A	n one of the fo Young pe	Ilowing conclusions is best supported ople are likely to be more tolerant of	d by the data given above? smoking than their parents.
Which A B	n one of the fo Young pe Young pe smoking.	llowing conclusions is best supported ople are likely to be more tolerant of ople tend to underestimate their pare	d by the data given above? smoking than their parents. ents' disapproval of their
Which A B C	n one of the fo Young pe Young pe smoking. More thar	Ilowing conclusions is best supported ople are likely to be more tolerant of ople tend to underestimate their pare	d by the data given above? smoking than their parents. ents' disapproval of their plerant of smoking.
Which A B C D	n one of the fo Young pe Young pe smoking. More than Smoking i parents.	llowing conclusions is best supported ople are likely to be more tolerant of ople tend to underestimate their pare half of young people's parents are to in a young person can lead to a deter	d by the data given above? smoking than their parents. ents' disapproval of their olerant of smoking. rioration in relations with thei

The correct response is **B**. Disapproval by parents is indicated in the second and third rows of the table, which show percentages of parents who would rather their children didn't smoke and parents who dislike their children smoking. Taken together, these show that 78% of parents disapprove, whereas only 41% of children think that their parents disapprove. The first row of the table reinforces this, showing that only 13% of parents don't mind their children smoking, whereas 56% of children think that their parents don't mind their smoking. These mismatches show that there is a tendency for children to underestimate their parents' disapproval of their smoking.

**A** is not supported by the data, because the data is about attitudes of parents to their children's smoking, not about attitudes to smoking in general.

C is not supported because there are no data about attitudes to smoking in general.

**D** goes beyond what can be concluded, because the data give no information about the effect of parents' attitudes on the relationship between parents and children.

**E** is not supported by the data because from the percentages of parents who disapprove of their children's smoking, we cannot draw conclusions about whether those parents express their disapproval to their children.

30	In a particular year the month of January (which has 31 days) contains five Fridays.		
	Which one of the following could <b>NOT</b> be true?		
	A The first Friday in the month occurs before the 4th.		
	B The 1st of January is a Wednesday.		
	C There are only 4 Tuesdays.		
	D There are also 5 Sundays.		
	Е	E The 31st of January is a Monday.	

To answer this question, you need to appreciate that a month with 31 days will have the 29th, 30th and 31st on the same days of the week as the 1st, 2nd and 3rd respectively, and there will be five of each of these three days in the month.

If this particular January contains five Fridays, then:

- either the 1st, 2nd or 3rd must be on a Friday, so **A** must be true.
- if the 3rd of January is on a Friday, the 1st of January is a Wednesday, so **B** could be true.
- the latest the 3rd can be is a Sunday, so there can only be 4 Tuesdays, and **C** must be true.
- if the 1st of January is on a Friday, the 3rd of January is a Sunday, so **D** could be true.
- the latest the 3rd can be is a Sunday and therefore the latest the 31st can be is also a Sunday, so **E** cannot be true.

The correct answer is **E**.

**31** An aeroplane flight crew starts its day in Rome and does two round trips to London in the day. On each arrival at an airport they take the next scheduled flight back. The timetable is shown below (all times are local):

		M		
Rome -	London	London - Rome		
Depart	Arrive	Depart	Arrive	
09:05	09:55	10:30	13:45	
12:05	12:55	13:30	16:45	
15:05	15:55	16:30	19:45	
18:05	18:55	19:30	22:45	

How long is it from take-off on their first flight to landing on their last flight of the day?

Α	4h 40min
в	7h 40min
С	8h 10min
D	10h 40min
Е	13h 40min

The London arrival and departure times are not relevant to this question, except to confirm that the departure time from London on each row of the timetable is later than the time of arrival into London.

You need to appreciate that when, for instance, the crew for the first flight of the day returns to Rome at 13:45, they are too late for the 12:05 departure, so they become the crew for the 15:05 departure.

A crew takes off first at either 09:05 or 12:05 and lands finally at 19:45 or 22:45, 10 h 40 min later in both cases.

The correct answer is **D**.



The most efficient approach to this question is as follows:

The only distance in the chart that is 12 km is between Gold and Lead and the only distance that is 23 km is between Lead and Tin. This means that on the map V must be Lead, S must be Gold and U must be Tin. Nickel is 28 km from Gold, so T must be Nickel.

(For information only: A full analysis would reveal that P is Iron, Q is Copper, R is Zinc, and that town W is Silver.)

The correct answer is **D**.

33	<ul> <li>Undoubtedly, early upbringing affects your social adjustment in later life. A recent study demonstrated that many children of parents who act aggressively towards their offspring grow up to be violent as adults. Consequently, if we could stop parents behaving aggressively towards their children, we would be able to eliminate a significant proportion of violence from our society.</li> <li>Which one of the following, if true, most weakens the above argument?</li> </ul>		
	A It is not possible to legislate against aggressive behaviour of parents toward their children.		
	B In many cases children who are treated violently by their parents mak that their own children do not suffer in the same way.		
	C What were considered reasonable methods of discipline in previous generations are considered to be assault today.		
	D Continuing poverty and deprivation are the major causes of aggressive behaviour in both adults and their children.		
	E Many parents become violent when they are unable to control their children's behaviour.		

The answer is **D**. The argument draws the conclusion that if parents could be stopped from being aggressive towards their children, much of the violence in our society could be eliminated. The evidence is a study showing that many children who have been treated in an aggressive manner by their parents behave violently when they become adults. The argument thus assumes that the explanation of the finding of the study is that the aggressive acts of parents can cause their children to grow up to be violent. **D** offers an alternative explanation of the finding: that in many cases, the aggressive behaviour of both parents and their offspring is caused by poverty and deprivation. So if **D** is true, stopping parents' aggression towards their children may not eliminate the violence of those children when they become adults.

A does not weaken the argument because the argument does not recommend legislation in order to deal with aggressive parents.

**B** points out that not all children of aggressive parents will behave violently towards their own children. This does not weaken the argument because the argument does not claim that in all cases the children of aggressive parents will grow up to be violent.

**C** has no impact on the argument because the change in attitudes to harsh methods of discipline does not imply that the argument is mistaken in its claim that changing parents' behaviour would eliminate some of the violence in society.

**E** explains what leads some parents to be violent, but this has no effect on the assumption that if parents did not act aggressively towards their children, the children would be less likely to grow up to be violent.

34 The most common excuse for the poor performance of English school learning foreign languages is the fact that English is so widely spoken is Thus, when the English travel to another country, they feel little need to proficient in the local language. But that cannot explain why, amongst of have never travelled outside their own country, the English are still out their overseas counterparts in foreign language acquisition. One is led conclusion that English schools are deficient in the teaching of language. Which one of the following is the best statement of the flaw in this argument.		st common excuse for the poor performance of English school children at foreign languages is the fact that English is so widely spoken in the world. hen the English travel to another country, they feel little need to become at in the local language. But that cannot explain why, amongst children who ver travelled outside their own country, the English are still out-performed by erseas counterparts in foreign language acquisition. One is led to the inevitable ion that English schools are deficient in the teaching of languages. The following is the best statement of the flaw in this argument?		
	A It does not take into account the low levels of funding in English schools.			
	B It overlooks the fact that other languages, for example Spanish, are also widely spoken in the world.			
	c It is based upon evidence taken from an unrepresentative sample: those children who have not travelled abroad.			
	<ul> <li>D It reaches its conclusion without considering other possible explanations for poor performance in languages.</li> <li>E It fails to offer any proof that the English are poor at learning foreign languages.</li> </ul>			

The argument concludes that the reason why English school children perform relatively poorly in foreign language acquisition is that English schools are deficient in the teaching of languages. The basis for this is the rejection of another commonly accepted explanation, i.e. that the English feel little need to acquire other languages given that English is so widely spoken. However, it is a flaw in reasoning to conclude that because explanation X is mistaken, the correct explanation must be Y, without offering any further justification for Y. This flaw is expressed in **D**, which points out that there may be other possible explanations for the poor performance of English school children in foreign language acquisition.

A mentions another factor that may affect language acquisition, but does not state the flaw as precisely as **D**, because the problem with the argument is not that it ignores the correct explanation, but that it ignores all other possible explanations.

**B** mentions a reason for thinking that the common explanation, i.e. that English is so widely spoken, is not correct, so **B** does not identify a flaw, but gives an additional reason in support of the argument's assumption that the common explanation is mistaken.

**C** does not identify a flaw because the argument does not rely solely on evidence from those children who have not travelled abroad. The first sentence of the passage refers to 'the poor performance of English school children' in general.

The argument takes for granted that the English are poor at learning languages, but **E** does not identify a flaw, because the mistake in reasoning occurs in moving from this assumed fact to the supposedly correct explanation for it.

35 The quantity of food produced has always fluctuated according to environmental conditions: gluts and shortages have been with us for five hundred years or more. In the past, the free operation of market forces limited the adverse effects of these fluctuations, usually with far more success than any attempts at planned responses. But now we are changing the environment irreversibly. These changes will not only be permanent, but will have such devastating effects on world agriculture that market forces alone will be unable to prevent a global famine. So it is now vital to seek some sort of planned response. Which one of the following summarises the main conclusion of the argument above? Environmental changes will have devastating effects on world agriculture. А в Market forces cannot prevent global famine. С A planned response to current environmental changes is necessary. D The recent environmental changes cannot be reversed. Market forces have limited the adverse effects of the environment on food Е production.

The conclusion of the argument, which is summarised in **C**, is:

• It is now vital to seek some sort of planned response.

The reasons which, taken together support this conclusion, are:

- The quantity of food produced has always fluctuated according to environmental conditions.
- In the past, the free operation of market forces limited the adverse effects of these fluctuations, usually with far more success than any attempts at planned responses.
- But now we are changing the environment irreversibly.
- These changes will not only be permanent, but will have such devastating effects on world agriculture that market forces alone will be unable to prevent a global famine.

Both **A** and **B** are parts of the fourth reason.

**D** is an expression of the third reason.

E expresses part of the second reason.

36	The fuel of follows:	consump	tion of Ted's new car is	given in	the man	ufacturer's	data sheet as
			Speed	50km/h	90km/h	110km/h	
			Consumption I/100km	7.5	6.0	6.5	
	The cost roads nor 50km/h.	of fuel is rmally at	80c per litre. Ted's jour 90km/h, 40km on moto	mey to w rway at 1	ork consi 10km/h a	sts of 20kr and 20km	m on country in town at
	How muc	h does h	is drive to work cost hir	n?			
	Α	\$4.16					
	в	\$4.24					
	С	\$4.26					
	D	\$4.40					
	E	\$5.30					

The three sections of Ted's journey to work use fuel as follows:

- 20 km at 90 km/h with fuel consumption 6.0 l/100 km uses  $0.2 \times 6.0 = 1.2$  l.
- 40 km at 110 km/h with fuel consumption 6.5 l/100 km uses  $0.4 \times 6.5 = 2.6$  l.
- 20 km at 50 km/h with a fuel consumption 7.5 l/100 km uses  $0.2 \times 7.5 = 1.5$  l.

He therefore uses a total of 1.2 + 2.6 + 1.5 = 5.3 l at a cost of  $5.3 \times 80$  c = \$4.24.

The correct answer is **B**.

37 When Mrs Brown looks out of her back room window, a bungalow 7m high and 30m beyond her garden fence is just obscured by a bush in her hedge which is 1.6m high. She wants to choose a tree to plant beside the bush which, when fully grown, will have the same effect on a small block of flats 20m high beside the bungalow. However, she does not want it to be much bigger than necessary or it will block out her light. The characteristics of some trees are shown below:

	Characteristics			
Tree	Features	Growth	Height (m)	Width (m)
Copper Beech	Copper red leaves	average	20.0	13.0
Flowering cherry	Beautiful blossom	vigorous	10.0	8.0
Hawthorn	Rugged and sturdy	average	8.0	5.2
Holly	Shiny green leaves	slow	7.0	3.2
Hornbeam	Silvery leaves	average	4.8	3.8
Japanese Maple	Red autumn leaves	slow	4.0	4.2
Mountain Ash	Bright red berries	average	4.5	2.5
Sycamore	Dense foliage	vigorous	13.5	9.5

Which of the trees above would be her best choice?

Α	Copper Beech
в	Hawthorn
С	Holly
D	Hornbeam
Е	Mountain Ash

In this question you are told that the block of flats is beside the bungalow, so the distance of 30 m beyond the garden fence is irrelevant and must be ignored. Similarly, in the table of characteristics of the various trees, you must ignore the widths; only the heights are relevant.

The block of flats is 20/7 times the height of the bungalow, so, to just obscure the block of flats, the appropriate tree needs to be at least  $20/7 \times 1.6 \text{ m} = 32/7 \text{ m}$ , which is just over 4.5 m. At 4.8 m, the hornbeam would be the best choice.

The correct answer is **D**.



The most efficient way to approach this question is to establish how many other stations each station is directly connected to in each of the options.

In A, B, D, and E, four of the stations are directly connected to three others, and two are only connected to two others. In C, however, five of the stations are directly connected to three others and one is only connected to two others.

The correct answer is **C**.

39	39 Scientists are now developing genetically modified crop plants that produce the pesticide. But pesticides are only effective if they are not overused; if they are continuously for long periods, then the pests that they are supposed to kill de resistance to them. Pesticides only remain effective against pests, therefore, are left during which they are not used. The genetically modified crop plants we produce pesticides continuously. Which one of the following is a conclusion that can reliably be drawn from the passage?	
	A The pesticides produced by the genetically modified crop plants become ineffective against pests.	
	B The genetic modification of crop plants will make the crops unusable, as will be contaminated with pesticide.	
	c The genetically modified crop plants will help to prevent the overuse of pesticides.	
	<ul> <li>D The development of genetically modified crop plants will enable more effective use of pesticides, since periods may be left when they are not u</li> <li>E The development of genetically modified crop plants will mean that pestineed no longer be sprayed onto fields.</li> </ul>	

We are told that the genetically modified plants will produce their own pesticides continuously, and that if pesticides are applied to plants continuously, then the pests they are supposed to kill develop resistance to them. The conclusion that can be drawn from these two facts is **A**, that the pesticides produced by the genetically modified crop plants will become ineffective against pests.

**B** cannot be drawn as a conclusion, because we are not given information that suggests that genetically modified plants will be any more contaminated by the pesticide they themselves produce than non-modified crop plants would be by pesticides sprayed onto them.

We cannot conclude **C** because there is no information in the passage to allow a comparison between amounts of pesticide used when crops are sprayed and amounts produced by the genetically modified crops.

**D** does not follow from the passage, since the pesticides produced by the genetically modified plants will become ineffective against pests, and periods cannot be left when they are not used.

**E** may be true, but it does not follow from the passage, because we are not told whether it will be possible to genetically modify all crop plants to produce their own pesticide.

40	Athletes who have huge potential to draw both live and television audiences expect to be rewarded financially for their skill and hours of dedication in training. However, large prize money at televised meetings does nothing to help future generations of athletes who need time off work and good facilities to achieve their potential. The only fair solution is to take a tax from top athletes' pay to ensure money is available to help the up-and-coming participants. Otherwise the burden will fall on the general taxpayer, or on the future athletes and their families, with the result that some will inevitably fail simply through lack of money.			
	Which one of the following is an assumption on which the argument depends?			
	A The majority of top athletes come from poor backgrounds.			
	B Countries which give financial help to young athletes produce more winners.			
	C It is not fair for the general taxpayer to have to subsidise athletics.			
	<ul><li>D It is not possible to train and have a part-time job.</li><li>E Top athletes deserve the large rewards they receive in return for their efforts.</li></ul>			

The argument concludes that the only fair solution to provide the necessary finance for the training of up-and-coming athletes is to take a tax from top athletes' pay. This is justified by the claim that otherwise the burden will fall on the general taxpayer, or the future athletes and their families. Thus the argument is assuming that it would not be fair to finance the training of future athletes from general taxation. This is expressed in **C**.

It is not necessary for the argument to assume that most top athletes come from poor backgrounds. The idea that future athletes' training should be financed by their families is rejected on the grounds that it would be unfair, not that families could not afford it. So **A** is not assumed.

The argument is concerned with the unfairness of financing athletes' training from general taxation, not with the results of such subsidising. So **B** is not assumed.

**D** is not assumed because in saying that future athletes need time off work, the argument is acknowledging that it is possible for an aspiring athlete to train and have a part-time job.

**E** is not assumed because the argument says only that top athletes expect to be rewarded highly, not that they deserve to be.

- 41 Researchers studying the effects of diet on health sometimes use 'randomised intervention trials'. One group - the intervention group - is asked to change some aspect of diet, for example eat less fat or more fruit, while the other group - the control group - is told to eat as normal. At the end of the trial the number of cases of, say, colon cancer, in the two groups can be compared. Such results could be misleading, because as the study progresses, the 'intervention' subjects do not stick so well to their supposedly healthy diet, so the longer the study goes on, the less the diets of the two groups differ. Yet to get results that are statistically significant, the study must go on as long as possible. Which one of the following, if true, most strengthens the above argument? 'Control' subjects often change their diet in response to health information in Α the media. в Diets that are low in fat and high in fruit are known to be beneficial to health. С 'Intervention' subjects know that the changes in diet could benefit their health.
  - D Some people have an inherited tendency to suffer from colon cancer.
  - E Statisticians who interpret the results take account of the effects of exercise and smoking.

The argument concludes that the result of the kind of research described could be misleading. The reasons for this are that the study must go on for a long time, and that the longer it goes on, the less likely it is that the group who have been told to change their diet will stick to the supposedly healthy diet, so that the diets of the two groups differ less and less. If **A** is true, the difference between the diets of the two groups could become even smaller, as the 'control' subjects move towards a healthier diet in response to information in the media. So **A** strengthens the argument.

The argument concerns the unreliability of research into the effects of diet on health when subjects do not stick to the instructions. Researchers already accept the truth of **B**, and seek to discover the extent to which changes in diet can affect susceptibility to specific illnesses. So **B** does not add anything to the argument, and thus does not strengthen it.

**C** does not strengthen the argument. If 'intervention' subjects know that the change in diet could benefit their health, they may be more likely to stick to the diet throughout the study.

**D** does not affect the argument, partly because the argument is not simply about research into colon cancer, and partly because changes in diet may have an impact on inherited tendencies.

**E** confirms that if each group sticks to their diet, the results can show the effect of diet on health, since other possible factors have been eliminated. But this does not strengthen the argument that the results can be misleading because the groups are unlikely to stick to their diet.

42	To take part in the Lottery, entrants must select six different numbers between 1 and 49 inclusive.		
	My mother asked me to buy a Lottery ticket for her. She said "Choose any six numbers you like, but make sure that each one is a multiple of 3, or contains a 3, or 6 or 9."		
	How many numbers can I choose from?		
	Α	15	
	в	16	
	С	22	
	D	25	
	E	31	

There are a number of ways that this question can be approached, including the following:

There are 16 multiples of 3 in the numbers 1 - 49. There are 10 numbers 30 - 39, but these include 30, 33, 36, and 39, which are multiples of 3 as well. Also available are 13, 16, 19, 23, 26, 29, 43, 46 and 49.

There are therefore 16 + 10 - 4 + 9 = 31 numbers available to choose from.

The correct answer is **E**.

		Sunrise	Sunset	Moonrise	Moonset
	Avonmouth	06:57	19:09	16:25	00:56
	Dun Laoghaire	07:10	19:22	16:45	01:02
	Greenock	07:05	19:18	16:49	00:46
	Hull	06:47	18:59	16:22	00:36
	Leith	06:58	19:11	16:43	00:39
	Liverpool	06:58	19:10	16:32	00:49
	London	06:45	18:56	16:12	00:42
In which	of the towns are the sur	n and mo	on in the	sky togeth	er for the
A	Avonmouth				
В	Dun Laoghaire				
С	Greenock				
D	Leith				
E	London				

**43** The table below shows the times of sunrise and sunset and moonrise and moonset for certain UK towns on the same day (in hours:minutes).

It should be clear here that the relevant times are those of moonrise and sunset, so the other two columns of the table are to be ignored.

It can be immediately seen that Avonmouth will have the sun and moon in the sky together for the longest period. So it is not necessary to calculate the exact time periods (though it is not difficult to do so if you wish). It is sufficient to appreciate that compared with Avonmouth:

- At Dun Laoghaire moonrise is 20 minutes later and sunset is 13 minutes later, so the time period is 7 minutes less.
- At Greenock moonrise is 24 minutes later and sunset is 9 minutes later, so the time period is 15 minutes less.
- At Hull moonrise is 3 minutes earlier and sunset is 10 minutes earlier, so the time period is 7 minutes less.
- At Leith moonrise is 18 minutes later and sunset is 2 minutes later, so the time period is 16 minutes less.
- At Liverpool moonrise is 7 minutes later and sunset is 1 minute later, so the time period is 6 minutes less.
- At London moonrise is 13 minutes earlier and sunset is 13 minutes earlier, so the time period is the same.

The correct answer is **D**.

44 The pattern below shows part of the tiling of a large floor in a shopping centre. It is made up of two types of tile: a hexagon and a triangle.

 Image: Control of two types of tile: a hexagon and a triangle.

 Image: Control of two types of tile: a hexagon and a triangle.

 Image: Control of two types of tile: a hexagon and a triangle.

 Image: Control of two types of tile: a hexagon and a triangle.

 Image: Control of the types of tile: a hexagon and a triangle.

 Image: Control of the types of tile: a hexagon to 6 triangles

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This question requires you to establish a basic pattern within the tiling that will tessellate over a larger area of flooring. The larger the expanse of flooring, the closer the ratio of hexagons to triangles over the whole floor will be to the ratio of hexagons to triangles within the basic pattern.

The basic pattern within the tiling that will tessellate is a diamond consisting of 1 hexagon and 12 triangles.

The correct answer is C.

45	Surveys of public opinion reveal that many people object to the idea of selling bodily organs for transplant. Some object on religious grounds claiming that the body is a sacred and holy thing which must not be violated. Others object on aesthetic grounds simply finding the idea of selling human livers for transplant somehow unpleasant or distasteful. But the sale of bodily organs cannot be morally wrong. Everyone has the right to do what they want with their own private property and each person owns their own bodily organs.		
	Which one of the following best expresses the main conclusion of the above argument?		
	A The body is a sacred and holy thing which must not be violated.		
	в	Everyone has a right to do what they want with their own private property.	
	С	Public opinion is strongly opposed to the sale of bodily organs for transplant.	
	D	The sale of bodily organs cannot be morally wrong.	
	E	Surveys of public opinion reveal many people are opposed to the sale of bodily organs for transplant.	

The first sentence introduces the topic for the argument – the sale of bodily organs for transplant – and the next two sentences describe the reasoning or feelings behind some of the objections to the practice. Then the conclusion of the argument is presented, that the sale of bodily organs cannot be morally wrong. Two reasons are given for this conclusion:

- Everyone has the right to do what they want with their own private property.
- Each person owns their own bodily organs.

Thus **D** is the correct answer because it expresses the conclusion in the fourth sentence.

A is an expression of the objection on religious grounds.

**B** is the first of the reasons for the conclusion.

**C** is an overstatement of the introductory sentence of the passage. From the claim that many people object to an idea, we cannot conclude that public opinion is strongly opposed to it.

**E** is a restatement of the introductory sentence.

46	If I do more work tonight, I will earn more money. However, if I go for a bike ride, I will get fitter. I need to get fitter more than I need more money. So, I will go for a bike ride.		
	Which one of the following most closely parallels the reasoning in the above argument?		
	<ul> <li>If I eat that cake it will taste really good. But if I do not eat that cake I will weight. I don't care about losing weight anymore! So I'm going to eat that cake.</li> </ul>		
	в	If I learn to drive I will have a useful skill. If I save my money I will be able to travel round the world. I need to be able to drive, but I can learn that later. So I will travel the world while I am young.	
	с	If I work every evening in a bar, I will be able to buy my own clothes. But, if I stay in and do my homework, I will get better grades. Right now it is more important to me to earn my own money, but I know I will regret it if I get bad grades. So I will only work two evenings a week.	
	D	If I do the housework, the house will be clean and pleasant. If I go to the pub, I will be relaxed and pleasant. I prefer a pleasant me to a pleasant house, so I will go to the pub.	
	Е	If I go out now, I will have fun with my friends. However, if I go out, I will not do my homework, and if I don't do my homework my teacher shout at me in front of my friends. So I had better not go out.	

The answer is **D**. The original argument and **D** both have the following structure: If **P** then **Q**, and if **R** then **S**, and **S** is better than **Q**. So **R**.

In the original argument,  $\mathbf{P}$  = do more work,  $\mathbf{Q}$  = earn more money,  $\mathbf{R}$  = go for a bike ride,  $\mathbf{S}$  = get fitter.

In D, P = do the housework, Q = house will be pleasant, R = go to the pub, S = I will be pleasant.

The structure of A is:

If **P** then **Q**, if not **P** then **R**, and don't care about **R**. So **P**.

The structure of **B** is:

If P then Q, and if R then S, and P is not important now. So S.

The structure of **C** is:

If P then Q, and if R then S, and both Q and R are important. So T.

The structure of E is:

If P then Q, and if P then R, and if R then S, so not P.

47	There has recently been concern about people who have had blood transfusions. Some blood donors have gone on to develop CJD, the human form of BSE i.e. 'mad cow disease'. There is a small chance that people who have received this blood may also go on to develop CJD. However the risk is small, there is nothing that can be done about this disease, and informing the patient will cause anxiety. For all these reasons, the NHS should not take steps to inform those people who may be at risk. Which one of the following applies the principle used in the above argument?		
	Α	Not informing air passengers during turbulence of the small risk of damage to the plane.	
	в	Not informing patients that they are suffering from a terminal disease.	
	С	Not informing passengers of the reason for a train being unavoidably delayed.	
	D	Not informing adopted children as to the identity of their biological parents.	
	E	Not informing young children of poor results in diagnostic educational tests.	

The principle is that one should not inform people of the risk of harmful events when the risk is small, there is nothing that can be done about the event, and telling people will cause anxiety. In the passage the principle is applied to the risk of developing CJD to those who have had blood transfusions. The principle also applies to the situation described in **A**, because telling passengers about the small risk of damage to the plane during turbulence would be likely to cause anxiety, and the passengers would be unable to do anything about the damage.

The principle cannot be applied in relation to **B**, because for someone suffering from a terminal disease, death is not a small risk, but a certainty.

The situation described in C does not include an element of risk, because the delay of the train has already occurred, and informing passengers of the reason for this is unlikely to cause anxiety. So the principle does not apply to C.

**D** does not fall under this principle because adopted children could act, possibly with pleasant results, upon information about their biological parents.

The principle does not apply to **E** because only one of the conditions of the principle applies. Telling the child may cause anxiety, but there is no risk of poor results. They have already happened, and there is something that can be done to try to improve such results in future.

48	The ferry from Harport to Selmer is at sea for 1 hour 15 minutes and at its berth at either end for 30 minutes. The hovercraft service between the same ports takes only 45 minutes and is berthed for 15 minutes before returning.		
	If both leave Harport at 08:00 what is the next time they will both be at the same port together?		
	Α	09:45	
	в	12:45	
	С	14:45	
	D	15:00	
	Е	18:00	

There is exactly one hour between successive departures of the hovercraft, so it arrives at Selmer at 08:45 and every two hours later, and it arrives back at Harport at 09:45 and every two hours later. The ferry arrives at Selmer at 09:15, then back at Harport at 11:00. Its next arrival at Selmer is at 12:45, at the same time that the hovercraft arrives at Selmer for the third time.

The correct answer is **B**.

49	All the telephone numbers in my village have six digits and begin with 58. I have accidentally torn up and thrown away a piece of paper on which I had written the telephone number of a friend who lives nearby. The only piece I can find is the scrap shown below:		
		8011	
	How ma	ny different phone numbers in my village could be consistent with this extract?	
	А	2	
	в	10	
	С	11	
	D	12	
	Е	22	

You have been told that all the numbers in the village have six digits and begin with 58, so as the scrap of paper appears, 58 could be placed before the four digits to produce the number 588011 or 5 could be placed before the four digits and a digit placed after them to produce any of the ten numbers from 580110 to 580119.

You also need to appreciate that the scrap of paper could be upside down, in which case the number could be 581108.

The correct answer is **D**.



To answer this question, you need to visualise the pyramid after the triangles have been folded and joined together, with each of the different coloured faces in turn as its base.

When viewed from above:

- If the green triangle is the base, the other faces, in order, clockwise, are red, yellow, blue this is **B**.
- If the red triangle is the base, the other faces, in order, clockwise, are blue, yellow, green this is **D**.
- If the blue triangle is the base, the other faces, in order, clockwise, are red, green, yellow this is **A**.
- If the yellow triangle is the base, the other faces, in order, clockwise, are red, blue, green this is **C**.

The correct answer is **E**.



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