



Thinking Skills Assessment

Sample Paper

1 hour 30 minutes

SECTION 1 Thinking Skills Assessment

Instructions to Candidates

Please read this page carefully, but do not open this question paper until you are told that you may do so.

A separate answer sheet is provided for this section. Please check you have one. You also require a soft pencil and an eraser.

Please complete the answer sheet with your personal details.

Speed as well as accuracy is important in this section.

Work quickly, or you may not finish the paper.

There are no penalties for incorrect responses, only points for correct answers, so you should attempt all 50 questions. All questions are worth one mark.

Answer on the sheet provided. Questions ask you to show your choice between five options. Choose the **one** option you consider correct and record your choice on the separate answer sheet. If you make a mistake, erase thoroughly and try again.

Any rough work should be done on this question paper.

Dictionaries and calculators may NOT be used.

Developed and administered

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Please wait to be told you may begin before turning this page.

This paper consists of 33 printed pages and 3 blank pages.

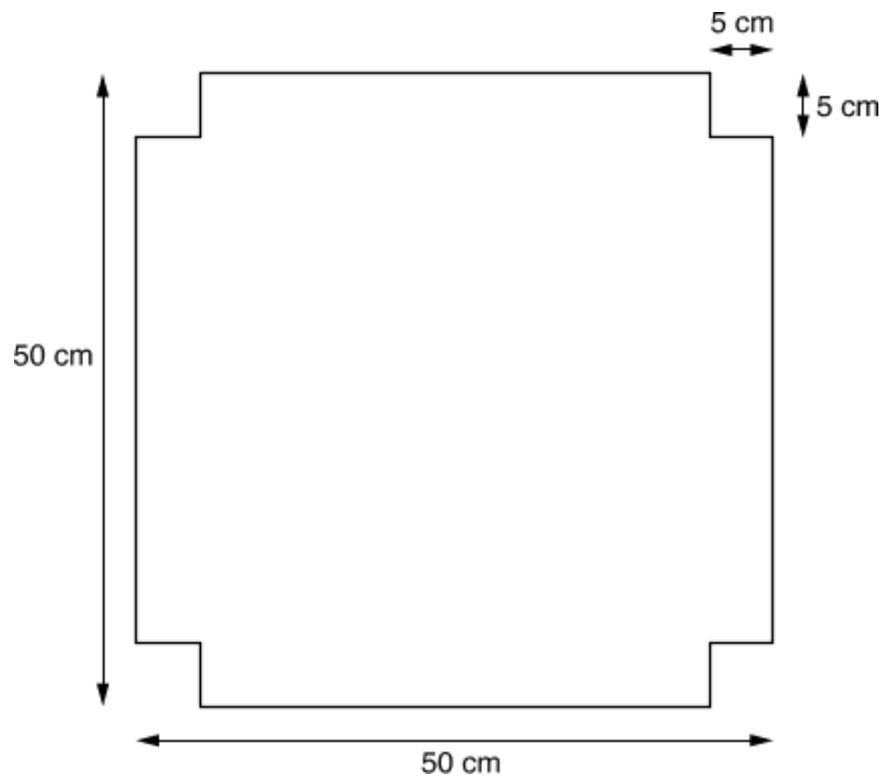
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- 1 If people go to a foreign country, they should try to learn at least some of the language of that country because, while it is difficult to pick up a foreign language in a short time, learning just a little of a foreign language helps you to find 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.
- B You will find out more about a country if you learn the language of that country.
- C 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.
- E Speaking a foreign language is easier than having to use sign language.

- 2 A manufacturer wishes to make an open-topped box out of the piece of cardboard shown below by folding up its sides.



What is the volume of this box in cubic centimetres?

- A 1600
- B 2400
- C 8000
- D 10125
- E 12500

- 3** The government blames schools and teachers for boys underperforming. However, science tells a different story. Evolutionary biology shows that females have evolved to have better verbal and emotional skills than males because of the need in prehistoric times for women to take the lead in bringing up children. By contrast, the need for males in prehistoric times to hunt in packs for food has made males more prone to violence and also skilled at calculating and planning. Neurologists have added to this insight by showing that the male hormone testosterone has an adverse impact on language skills. So clearly differences in educational performance between boys and girls cannot be explained in terms of failing teachers.

Which one of the following is the best statement of the flaw in the above argument?

- A** It assumes that scientific explanations apply to the average male or female ignoring exceptions.
- B** 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 educational performance.
- D** It assumes that the differences in performance between the sexes are due solely to biological differences.
- E** It assumes that teachers are not trying to improve the performance of failing boys.
- 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?

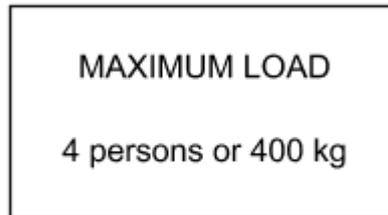
- A** Good piercers give their clients advice about how to care for a piercing and minimise the risk of infection.
- B** No one should ever get a body piercing because the risk outweighs the benefit.
- C** Nothing can reliably be concluded because the survey sample was too small to be representative.
- D** People who want a body piercing would be well advised to go to a reputable piercer.
- E** The Government should regulate body piercers more strictly to reduce complications.

- 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.
- 6 I have been asked to move 120 boxes weighing 25kg each and 90 boxes weighing 20kg each from the ground floor to the fifth floor of the office block in which I work. Unfortunately, nobody is available to give me any help.

There is a sign in the lift which reads:

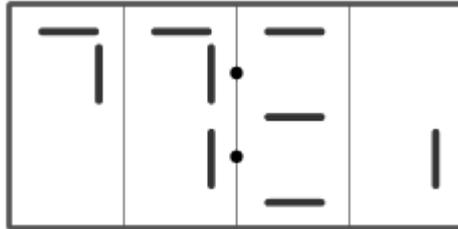


I weigh 80kg.

What is the minimum number of journeys I will have to make from the ground floor to the fifth floor?

- A 10
- B 12
- C 13
- D 15
- E 16

- 7 A woman has to get up for work at seven o'clock in the morning. She wakes up and looks over at her digital clock. Unfortunately, the batteries are low and the figures on the display, showing hours and minutes, aren't showing up properly. All she can see is the display below:



It is light outside, so she cannot be more than twelve hours late.
What is the greatest amount of time that she could be late waking up?

- A 1h 39min
B 1h 59min
C 2h 25min
D 2h 35min
E 2h 59min
- 8 The Richter Scale is used to measure the strength of earthquakes. It has the property 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?

- A X is one-tenth the strength of Y and one-twentieth the strength of Z.
B X is one-tenth the strength of Y and one-hundredth the strength of Z.
C 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.
E Z is one-tenth stronger than Y which is one-tenth stronger than X.

- 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 are 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.
- C** 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.
- E** The worldwide demand for ivory has been falling consistently for the last twenty years and many ivory poachers have found alternative sources of income.
- 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.

- 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 will be dishonest in others.
- B** A child who cheats does so for very complex reasons.
- C** A child whose motive is generosity towards someone else should not be blamed for stealing.
- D** Underlying all dishonest acts is hostility towards others.
- E** Children who are neither exhibitionist nor aggressive nor acquisitive are unlikely to steal money.
- 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:

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

- A** €2
- B** €6
- C** €10
- D** €12
- E** €16

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

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

Which country's percentage growth per year remained consistently greater than half of its Period 1 level throughout the following periods?

- A** France
- B** United Kingdom
- C** Germany
- D** Denmark
- E** Belgium
- 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.
- E** Three large and ten small chickens will need 450 pellets of food for a day.

- 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 two years.
 - D** Students should oppose moves by universities to shorten degree courses.
 - E** Universities should adopt more 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?

- A** Patients accept that a doctor has a responsibility to decide what will be in their best interests.
- B** Doctors have a duty to conceal the truth if they believe it will frighten the patient.
- C** 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.

- 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.
- 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
- B** From 5 to 11
- C** From 5 to 13
- D** From 6 to 12
- E** From 10 to 22

- 19** It is 12 noon and I have just arrived in the centre of town for a meeting that is due to last for at least three and a half hours.

After this meeting, I have an important appointment at 6.00pm which requires me to leave before 5.30pm.

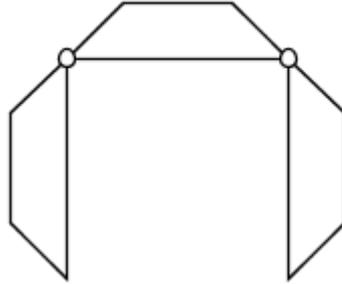
There are 5 car parks in the town centre that charge as follows:

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.

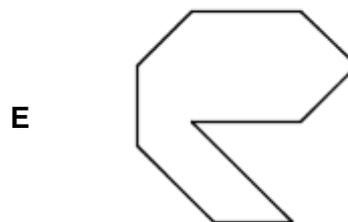
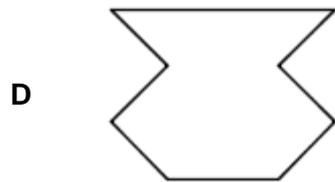
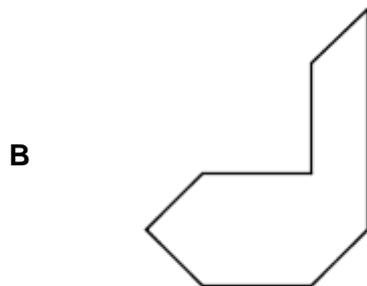
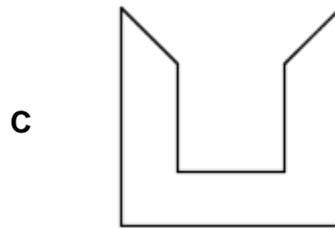
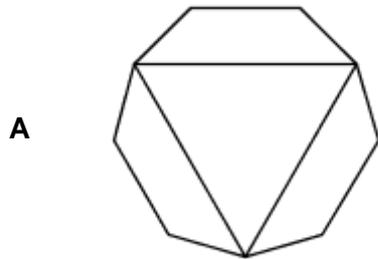
In which car park should I leave my car in order to pay as little as possible in parking fees?

- A** Grove Street
- B** Victoria Square
- C** Central Park
- D** Bonningtons
- E** Grange Road

- 20 The diagram below shows a rather unusual conference table which may take up a range of configurations. The three pieces are hinged together at the points shown by the circles:



Which of the following shapes could **NOT** be made from this table?



- 21** Observations of the brains of adult human subjects before and after periods of intense memory recall (for instance preparing for the exams taken by London taxi drivers testing their knowledge of London) have shown surprising results. When comparisons were made between brain scans taken at the start of their preparations and at the end, it was found that the parts of the brain responsible for memory had actually increased in size. This would seem to suggest that, just like a muscle, the brain increases in size and power the more it is used. People who want to improve their overall IQ (Intelligence Quotient), therefore, should simply take a very large number of IQ tests!

Which one of the following is the best expression of the flaw in the above argument?

- A** London taxi drivers are not necessarily representative of the population as a whole.
 - B** It assumes that there is a single part of the brain that is responsible for one's IQ.
 - C** 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.
- 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.
- B** It is too far for Amrik to walk to the garden centre. The shops are closer, so he will go there instead.
- C** Amrik cannot sleep at night if he drinks a cup of tea after 9pm, because tea contains caffeine. Coffee contains more caffeine than tea, so Amrik won't drink that after 9pm either.
- D** Amrik didn't have enough patience to complete the 1000 piece jigsaw he got for his birthday. The Times crossword also requires patience, so he won't complete that either.
- E** Amrik's hair is shorter, and Callum's hair is longer, than Bill's. So Amrik's hair is shorter than Callum's.

- 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.
- 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?

- A** 1
- B** 2
- C** 3
- D** 5
- E** 6

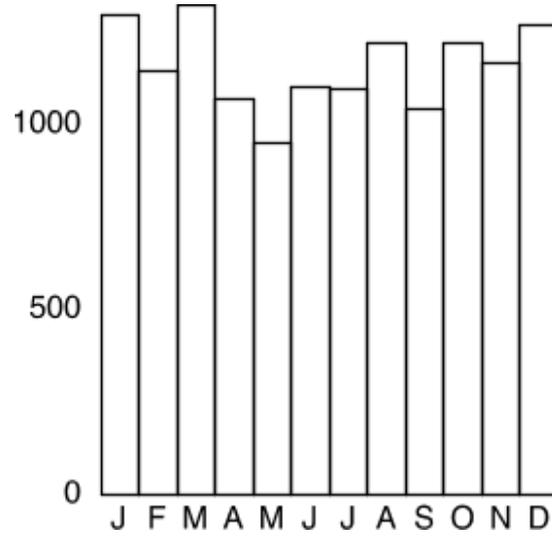
- 25 The table below shows the cumulative percentage distribution of salt consumption in England in 2004.

	<i>Percentage distribution of estimated salt intake (g/day)</i>	
	Men	Women
<i>3 g or less</i>	1	3
<i>6 g or less</i>	11	30
<i>9 g or less</i>	44	73
<i>12 g or less</i>	68	93
<i>15 g or less</i>	92	99
<i>18 g or less</i>	96	100

Assuming equal numbers of men and women in the population, what percentage of all people consumed above the recommended level of 6g per day? (Give your answer to the nearest 1%)

- A** 20 %
- B** 59 %
- C** 70 %
- D** 80 %
- E** 89 %

- 26 The graph below shows Mr Evans' bank balance at the end of each month in a year.



Which one of the following graphs could show the actual change in his bank balance each month?

- 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 recently.
 - C** 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.
- 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.
- B** There is a serious risk to health if asbestos found in the home is in bad condition.
- C** The dangers of using asbestos as a building material have been greatly exaggerated.
- D** There is normally no reason to be concerned about asbestos in the home, if it is in good condition.
- E** Removing asbestos from a building where it has been used is much more of a health hazard than leaving it in place.

29

<i>Statement</i>	<i>Young smokers' perceptions of parents' attitudes to their smoking</i>	<i>Parents' actual attitude to their children smoking</i>
<i>Don't mind</i>	56 %	13 %
<i>Rather they didn't</i>	22 %	15 %
<i>Do not like it</i>	19 %	63 %
<i>Don't know that they smoke</i>	3 %	9 %

Which one of the following conclusions is best supported by the data given above?

- A** Young people are likely to be more tolerant of smoking than their parents.
 - B** Young people tend to underestimate their parents' disapproval of their smoking.
 - C** More than half of young people's parents are tolerant of smoking.
 - D** Smoking in a young person can lead to a deterioration in relations with their parents.
 - E** Parents are unlikely to express strong disapproval of their children's habits.
- 30** In a particular year the month of January (which has 31 days) contains five Fridays.

Which one of the following could **NOT** 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.
- E** The 31st of January is a Monday.

- 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):

<i>Rome - London</i>		<i>London - Rome</i>	
<i>Depart</i>	<i>Arrive</i>	<i>Depart</i>	<i>Arrive</i>
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?

- A** 4h 40min
- B** 7h 40min
- C** 8h 10min
- D** 10h 40min
- E** 13h 40min

- 33** 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.

Which one of the following, if true, most weakens the above argument?

- A** It is not possible to legislate against aggressive behaviour of parents towards their children.
 - B** In many cases children who are treated violently by their parents make sure 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.
- 34** The most common excuse for the poor performance of English school children at learning foreign languages is the fact that English is so widely spoken in the world. Thus, when the English travel to another country, they feel little need to become proficient in the local language. But that cannot explain why, amongst children who have never travelled outside their own country, the English are still out-performed by their overseas counterparts in foreign language acquisition. One is led to the inevitable conclusion that English schools are deficient in the teaching of languages.

Which one of 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.
- D** It reaches its conclusion without considering other possible explanations for poor performance in languages.
- E** It fails to offer any proof that the English are poor at learning foreign languages.

- 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?

- A** Environmental changes will have devastating effects on world agriculture.
 - B** Market forces cannot prevent global famine.
 - C** A planned response to current environmental changes is necessary.
 - D** The recent environmental changes cannot be reversed.
 - E** Market forces have limited the adverse effects of the environment on food production.
- 36** The fuel consumption of Ted's new car is given in the manufacturer's data sheet as follows:

<i>Speed</i>	<i>50km/h</i>	<i>90km/h</i>	<i>110km/h</i>
<i>Consumption l/100km</i>	7.5	6.0	6.5

The cost of fuel is 80c per litre. Ted's journey to work consists of 20km on country roads normally at 90km/h, 40km on motorway at 110km/h and 20km in town at 50km/h.

How much does his drive to work cost him?

- A** \$4.16
- B** \$4.24
- C** \$4.26
- D** \$4.40
- E** \$5.30

- 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:

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

Which of the trees above would be her best choice?

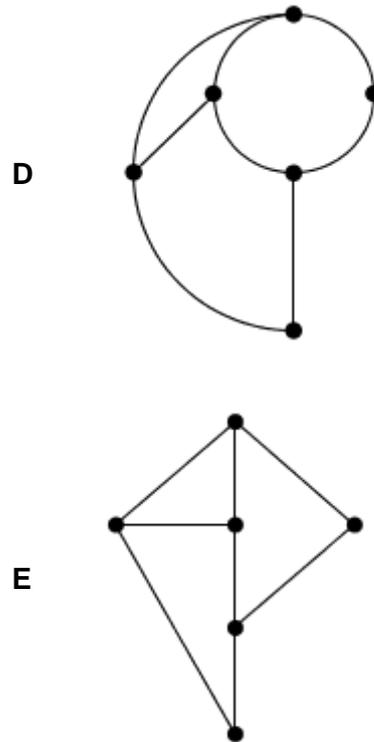
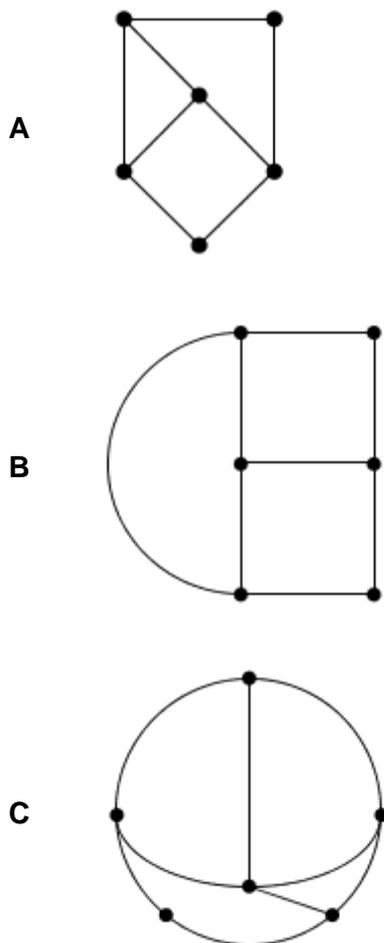
- A** Copper Beech
- B** Hawthorn
- C** Holly
- D** Hornbeam
- E** Mountain Ash

- 38** Boland City has just installed a new tram system. Several artists have been asked to come up with a map of the system which, whilst it may not show the exact relative positions of the stations, shows the connections between them correctly.

The five maps are shown below (the names of the stations are not marked).

Four of the artists drew possible maps, but the fifth got the connections wrong.

Which map below is based on incorrect connections?



- 39** Scientists are now developing genetically modified crop plants that produce their own pesticide. But pesticides are only effective if they are not overused; if they are applied continuously for long periods, then the pests that they are supposed to kill develop resistance to them. Pesticides only remain effective against pests, therefore, if periods are left during which they are not used. The genetically modified crop plants will produce pesticides continuously.

Which one of the following is a conclusion that can reliably be drawn from the above 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 they will be contaminated with pesticide.
 - C** The genetically modified crop plants will help to prevent the overuse of pesticides.
 - D** The development of genetically modified crop plants will enable more effective use of pesticides, since periods may be left when they are not used.
 - E** The development of genetically modified crop plants will mean that pesticides need no longer be sprayed onto fields.
- 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.
- D** It is not possible to train and have a part-time job.
- E** Top athletes deserve the large rewards they receive in return for their efforts.

- 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?

- A** 'Control' subjects often change their diet in response to health information in the media.
 - B** Diets that are low in fat and high in fruit are known to be beneficial to health.
 - C** '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.
- 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?

- A** 15
- B** 16
- C** 22
- D** 25
- E** 31

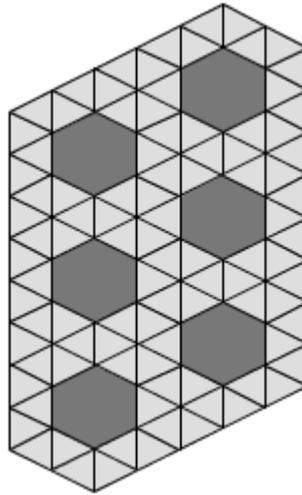
- 43** The table below shows the times of sunrise and sunset and moonrise and moonset for certain UK towns on the same day (in hours:minutes).

	<i>Sunrise</i>	<i>Sunset</i>	<i>Moonrise</i>	<i>Moonset</i>
<i>Avonmouth</i>	06:57	19:09	16:25	00:56
<i>Dun Laoghaire</i>	07:10	19:22	16:45	01:02
<i>Greenock</i>	07:05	19:18	16:49	00:46
<i>Hull</i>	06:47	18:59	16:22	00:36
<i>Leith</i>	06:58	19:11	16:43	00:39
<i>Liverpool</i>	06:58	19:10	16:32	00:49
<i>London</i>	06:45	18:56	16:12	00:42

In which of the towns are the sun and moon in the sky together for the shortest time?

- A** Avonmouth
- B** Dun Laoghaire
- C** Greenock
- D** Leith
- E** London

- 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.



For a sufficiently large expanse of flooring, approximately what proportion of the two types of tile will be required?

- A** 1 hexagon to 6 triangles
- B** 1 hexagon to 9 triangles
- C** 1 hexagon to 12 triangles
- D** 1 hexagon to 15 triangles
- E** 1 hexagon to 18 triangles
- 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.
- B** Everyone has a right to do what they want with their own private property.
- C** 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.

- 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?

- A** If I eat that cake it will taste really good. But if I do not eat that cake I will lose weight. I don't care about losing weight anymore! So I'm going to eat that cake.
- B** 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.
- C** 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.
- E** 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.
- 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.

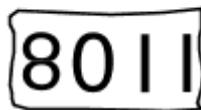
Which one of the following applies the principle used in the above argument?

- A** Not informing air passengers during turbulence of the small risk of damage to the plane.
- B** Not informing patients that they are suffering from a terminal disease.
- C** 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.

- 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?

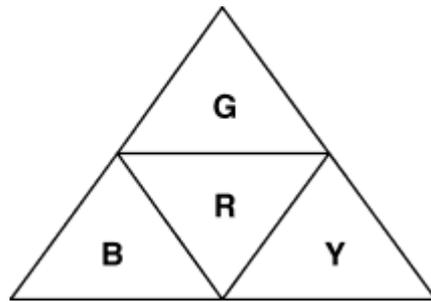
- A** 09:45
B 12:45
C 14:45
D 15:00
E 18:00
- 49** All the telephone numbers in my village have six digits and begin with 58. I have accidentally torn up and thrown away a piece of paper on which I had written the telephone number of a friend who lives nearby. The only piece I can find is the scrap shown below:



How many different phone numbers in my village could be consistent with this extract?

- A** 2
B 10
C 11
D 12
E 22

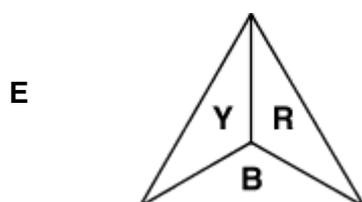
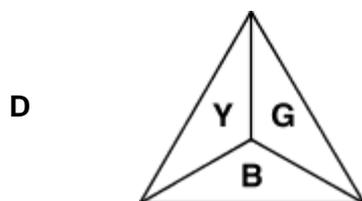
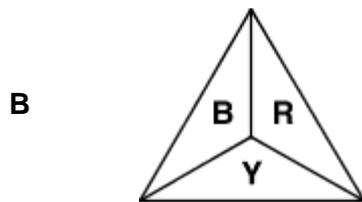
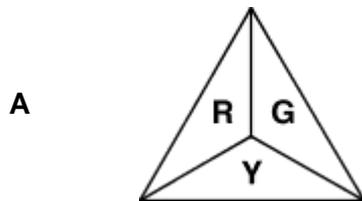
50 Four triangles of card coloured on one side are joined as shown.



G = Green
R = Red
B = Blue
Y = Yellow

The joined triangles are then folded and joined to make a pyramid.

Which of the following could **not** be a view from above?



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END OF TEST