



CAMBRIDGE ASSESSMENT

Thinking Skills Assessment Oxford

4502/11

Wednesday 7 November 2012

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 TSA candidate number, centre number, date of birth and name.

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.



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

This paper consists of 30 printed pages and 2 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, whilst it is difficult to pick up a good command of 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, its people's customs and mannerisms. As well as this, it means that you can function 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 function 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** Stewart and Michael have arranged to meet. Michael is about to set off on his bicycle, and at the same time Stewart is going to run to meet him.

Michael can cycle at a steady 20 kilometres per hour and Stewart can run at a steady 12 kilometres per hour. They live 8 kilometres from each other.

How long will it be before they meet?

- A** 15 minutes
- B** 16 minutes
- C** 20 minutes
- D** 30 minutes
- E** 32 minutes

- 3** When the government issued its guidelines to the public to improve health by eating five portions of fruit and vegetables per day, it underestimated the possible negative consequences for farmers and the landscape. The reduction in the demand for meat and dairy products would impact on farmers' livelihoods from raising cattle, and without cattle grazing, the countryside would become overgrown with weeds and gorse. The government should stop telling people what to eat!

Which of the following expresses the flaw in the argument?

- A** Farmers' profits and the landscape are not necessarily less important than public health.
- B** Eating five portions of fruit and vegetables per day is not necessarily beneficial to health.
- C** The consumption of meat and dairy products is not necessarily bad for one's health.
- D** Livestock and dairy farmers could not necessarily switch to production of fruit and vegetables.
- E** The increased consumption of fruit and vegetables will not necessarily result in the decreased consumption of meat and dairy products.

- 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** In the UK 45% of the workforce is female, but the percentage of women in senior positions, both in the professions and in business, is considerably lower. This is unfair to women, and also bad for the economy, in that those who are promoted to senior positions may not be the most able. Women may be discouraged from seeking promotion because employers require senior employees to work long and inflexible hours. Women may also be perceived as being unwilling to subordinate the demands of family to the demands of the job. So employers must be urged to offer flexibility in working hours, and to seek to move away from the UK's culture of long working hours.

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

- A** Most women are not interested in seeking promotion to senior positions.
 - B** Men would not object to the promotion of a higher percentage of women.
 - C** Women would be better leaders than men if they were promoted to senior positions.
 - D** Women are no less likely than men to have the abilities required for working in senior positions.
 - E** Working hours would be more flexible if employers promoted more women to senior positions.
- 6** Over the course of a year, Mr and Mrs Jones and their two sons spend an average of £120 a week at the local supermarket. 70% of this spending is the weekly family food bill, 20% goes on household goods and the final 10% on store-cupboard ingredients. When their daughter returns from her gap year to live at home, the weekly food bill increases by 20% and their spending on household goods goes up 5%, whilst they continue to spend the same on store-cupboard ingredients.

How much is their new average weekly supermarket spend when their daughter returns home?

- A** £136.80
- B** £138.00
- C** £144.00
- D** £145.00
- E** £150.00

7 Kingsbury School Examination Schedule for the first week of June

Monday	Tuesday	Wednesday	Thursday	Friday
History 3hrs	English Lit 3hrs	Maths 2hrs	Economics 2hrs	Maths 2hrs
English Lit 2 hrs	Physics 3hrs	Latin 2hrs	History 2hrs	Latin 2hrs
<i>lunch</i>	<i>lunch</i>	<i>lunch</i>	<i>lunch</i>	<i>lunch</i>
Geography 2hrs 30mins	Chemistry 3hrs	English Lang 2hrs 30mins	Economics 2hrs 30mins	-
Biology 1hr 30mins	French 2hrs	Spanish 2hrs	German 2hrs	-

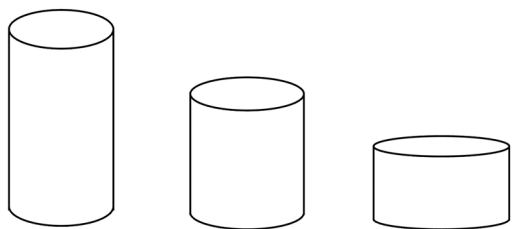
All exams take place in the school hall. All morning exams start at 9am, all afternoon exams start at 2pm. Each session (morning or afternoon) must have at least one male and one female invigilator. Each examination must be invigilated by one teacher of that subject. Each person can only invigilate once a day.

Of the male teachers, Ian teaches Economics and German, Mike teaches French and German, and Keith teaches French and Spanish. Of the female teachers, Marjorie teaches Maths and English, Susan teaches Spanish and Latin, and Jenny teaches English and History,

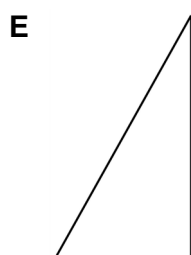
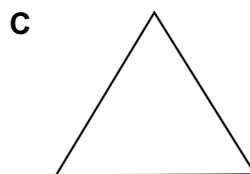
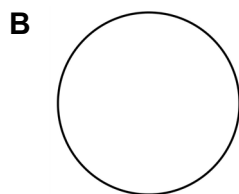
Who will invigilate on Wednesday afternoon?

- A** Ian and Marjorie
- B** Jenny and Mike
- C** Keith and Jenny
- D** Marjorie and Keith
- E** Mike and Susan

8 Below are pictures of three cylinders.



If a cylinder is cut into two equal halves with one straight cut, which one of the following could **not** be a view of one of the halves from any direction?



- 9** In some countries hunting clubs can arrange for members to hunt and kill just about anything that moves around on land. Despite the high costs of these hunts the clubs have grown in popularity as rich businessmen look for new ways to entertain their clients. Rare and endangered species of bears are often the target of the hunts and so there is a risk that these species will become extinct. The growth of these hunting clubs should be opposed.

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

- A** Other popular activities such as motor sports also do considerable damage to the environment, but are not opposed.
- B** The high costs of the hunts mean that only a small number of people are taking part in this activity.
- C** The population of endangered bears has not changed significantly since the hunting clubs were formed.
- D** There are plenty of alternative ways for the rich businessmen to entertain their clients.
- E** Many hunters kill animals other than their target during the course of a hunt.

- 10** The battery life of laptop computers means that they cannot be used for the duration of a long haul flight without needing to be recharged from an onboard power point. Not all aeroplanes have this facility. Therefore, laptop computers should not be allowed as carry on items for long haul flights on planes that do not have onboard power points, regardless of whether they are intended for personal or business use, as they will be of limited use to their owners and take up a disproportionate amount of space in the cabin.

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

- A** Some companies expect their employees to work on long haul flights.
- B** There is no chance of a laptop becoming damaged if it is stored in a suitcase in the hold.
- C** A laptop may run out of battery on a short haul flight, too.
- D** The passenger cannot choose whether or not they book a flight with an onboard power point.
- E** Passengers could make some use of their laptop even if the battery does run out.

- 11** How long will it be before we realise that force feeding our children with junk TV is just as bad as allowing them to eat nothing but junk food? Children are impressionable, we know that, so why do parents allow them to gain their insights into life through a TV screen? I've heard so many 'concerned' mothers and fathers complaining about playground violence, petty crime and early sexual awareness in their children, yet they allow them to watch all sorts of rubbish on TV. Rather than blame outside influences over which they have no control, they should recognise they have answers closer to home - they're called common sense and a remote control.

Which one of the following best expresses the main conclusion of the above argument?

- A** Some parents should do more to regulate what their children watch on TV.
 - B** Some parents are not concerned by what their children watch on TV.
 - C** Some parents are not genuinely concerned about the way their children behave.
 - D** Some parents do not have any influence over the way their children behave.
 - E** Some parents do not believe that what their children watch on TV is causing them to behave badly.
- 12** A merchant bank recently advertised for new graduates to fill positions as trainee analysts; 230 people applied. Of these, 127 had maths as a component of their degree and 89 had economics as a component of their degree. Only 45 had neither maths nor economics as a component of their degree.

How many must have had both maths and economics as a component of their degree?

- A** 14
- B** 31
- C** 59
- D** 83
- E** 171

13 A boxed up board game consists of the following components:

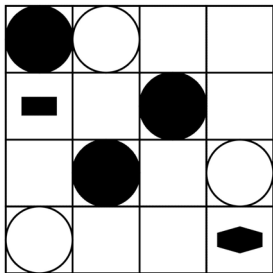
- 1 playing board
- 50 question cards
- 6 playing pieces
- 40 money tokens
- 12 bonus tokens
- 2 dice

The producers of the board game have all the component parts manufactured separately and sent to their warehouse, where they box them up and send them to retailers in cartons of 8 complete games. In their warehouse they have: 98 playing boards; 5,000 question cards; 1,000 playing pieces; 5,000 money tokens; 1,000 bonus tokens and 300 dice.

What is the maximum number of cartons of eight games they can dispatch from their warehouse?

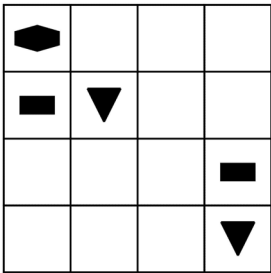
- A** 10
- B** 11
- C** 12
- D** 20
- E** 83

- 14 In a game, circular counters are moved around a board which is a 4 x 4 grid. There are symbols on some of the squares on the board. At one point in the game, the board looks like this (all the circles represent counters which completely cover any symbol on the square that they occupy):



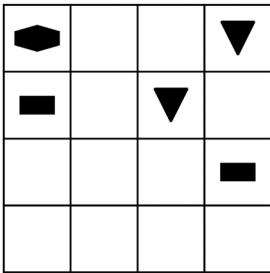
Which one of the following diagrams could show the layout of the board (not necessarily viewed in the same direction as above)?

A



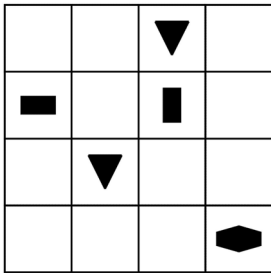
Option A grid symbols (row by row):
 Row 1: Black hexagon, Empty, Empty, Empty
 Row 2: Black rectangle, Black triangle, Empty, Empty
 Row 3: Empty, Empty, Empty, Black rectangle
 Row 4: Empty, Empty, Empty, Black triangle

B



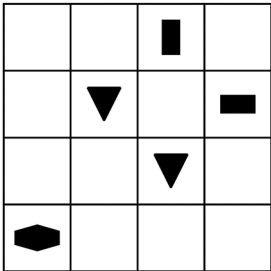
Option B grid symbols (row by row):
 Row 1: Black hexagon, Empty, Empty, Black triangle
 Row 2: Black rectangle, Empty, Black triangle, Empty
 Row 3: Empty, Empty, Empty, Black rectangle
 Row 4: Empty, Empty, Empty, Empty

C



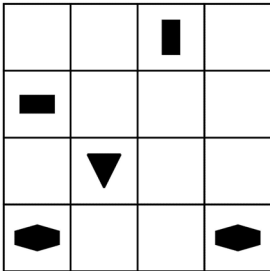
Option C grid symbols (row by row):
 Row 1: Empty, Empty, Black triangle, Empty
 Row 2: Black rectangle, Empty, Black rectangle, Empty
 Row 3: Empty, Black triangle, Empty, Empty
 Row 4: Empty, Empty, Empty, Black hexagon

D



Option D grid symbols (row by row):
 Row 1: Empty, Empty, Black rectangle, Empty
 Row 2: Empty, Black triangle, Empty, Black rectangle
 Row 3: Empty, Empty, Black triangle, Empty
 Row 4: Black hexagon, Empty, Empty, Empty

E



Option E grid symbols (row by row):
 Row 1: Empty, Empty, Black rectangle, Empty
 Row 2: Black rectangle, Empty, Empty, Empty
 Row 3: Empty, Black triangle, Empty, Empty
 Row 4: Black hexagon, Empty, Empty, Black hexagon

- 15** When serious accidents such as train and plane crashes occur there are demands to identify and punish those responsible. Companies found guilty of corporate killing ("corporate killing" means the company as a whole is held responsible for deaths) in these accidents could be given huge financial penalties. But the point of punishment should be to ensure that safety systems are excellent and safety procedures are carefully followed. Financial penalties for the company do not have a great impact on individuals within the company, hence they do not make them feel a sharp sense of personal responsibility for safety. If the law allowed for jail sentences for the directors of these companies, this would provide the incentive to ensure the best safety systems and procedures.

Which one of the following can be drawn as a conclusion from the above passage?

- A** Financial penalties should be imposed on companies found guilty of corporate killing.
 - B** Train drivers and airline pilots should not be held responsible for serious accidents.
 - C** The law should allow for jail sentences for directors of companies which are found guilty of corporate killing.
 - D** The point of punishing directors of companies is to achieve justice for victims of serious train and plane crashes.
 - E** Safety systems and procedures are not the direct responsibility of directors of transport companies.
- 16** 'People who see America as 'The Great Satan' often forget how, whatever the nation's faults, it is truly heaving with free debate. After his re-election in 2004 the public and media began turning against George W Bush with a ferocity which matched only their bewildering support for him previously. Every day newspapers revealed polls that were more damaging for the president. The bookshops were packed with anti-administration best-sellers. At number one was *Fiasco* by Thomas E Ricks about, obviously, the war in Iraq. Nor are the shops just small, political outlets, you could find: *100 Ways America Is Screwing Up The World*; *Losing Our Democracy*; *How GWB Misleads America*, and dozens of similar titles, even in major chain stores.'

The above argument rests on the implicit assumption that:

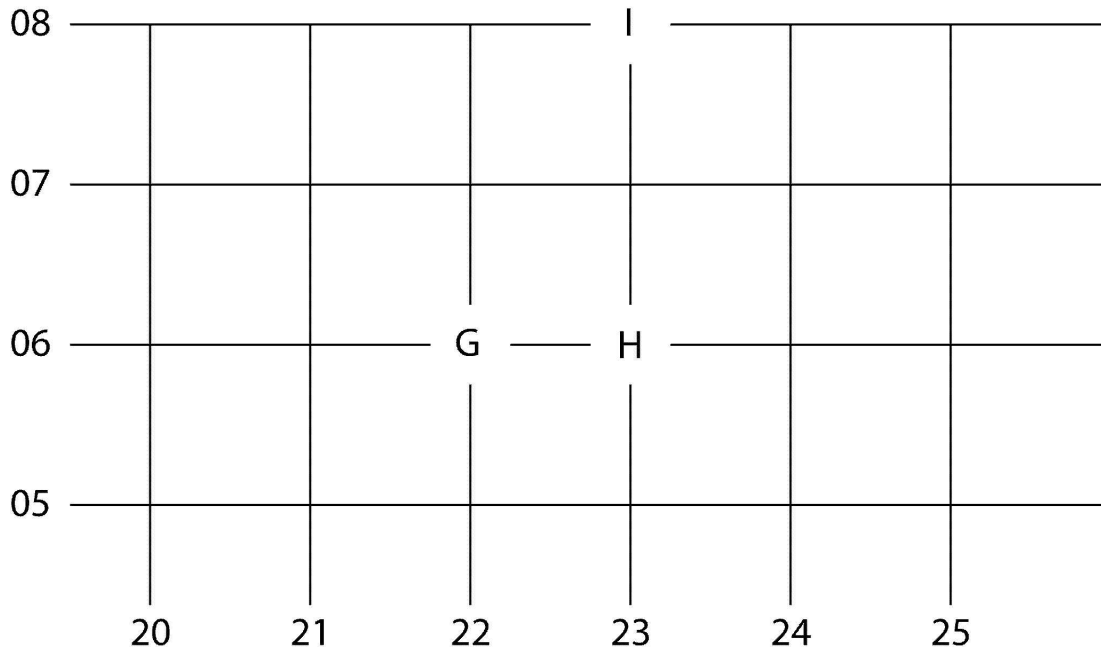
- A** if free debate is permitted, anti-administration feelings are bound to be expressed.
- B** if popular opinion and the media turn against the administration, considerable free debate must be taking place.
- C** polls are an accurate indicator of popular opinion.
- D** by rights George W Bush should not have been re-elected in 2004.
- E** the Bush administration, for all its faults, has encouraged free debate by the public and the media.

- 17** In European countries the incidence of cancer is higher than in non-European developing countries. This difference in cancer rates cannot be due to a greater genetic susceptibility to cancer amongst Europeans, because statistics show that Europeans who migrate to developing countries decrease their chances of getting cancer and that those from developing countries who migrate to Europe increase their chances of getting cancer. Since there are major differences in diet between Europe and developing countries, it is reasonable to conclude that the higher cancer rates in Europe are due to certain cancer-causing foods.

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

- A** Diet is not a major cause of cancer in developing countries.
- B** Southern European countries have far lower cancer rates than countries in Northern Europe.
- C** Stress is a contributory cause of cancer and Europeans experience higher than average stress in their daily lives.
- D** Diet is a contributory cause of many other health problems besides cancer.
- E** People who migrate from developing countries to Europe are relatively young and healthy.

- 18** This diagram shows the positions of three ornithologists on a map. The squares on the map are 1000m along each side.



The ornithologists are trying to find an injured falcon which is carrying a radio transmitter. Each ornithologist has a radio tracking device. The direction-finding part of the trackers is not working but the signal strength gives an indication of the distance to the bird.

The ornithologists have the following information about the distance from themselves to the bird.

Gordon is at position 22,06; signal strength indicates more than 500m and less than 2000m.

Helen is at position 23,06; signal strength indicates more than 100m and less than 2000m.

Ingrid is at position 23,08; signal strength indicates more than 1100m and less than 1800m.

At which one of the following grid points could the bird be located?

- A** 22,07
- B** 21,06
- C** 22,05
- D** 24,07
- E** 23,07

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

Percentage distribution 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

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 %
- 20** A software manufacturer wants to fit some computer programs on to four 2GB discs. He reorders the programs in order of decreasing size and places the next programs to be saved in the first available disc that can take that program.

Which one of the following uses the same method as that above?

- A** A plumber is using lengths of pipe 12 feet long and wishes to cut some lengths. He looks at the combination of lengths to add up to 12 feet and cuts these lengths first. For the remainder he cuts the next length from the first available pipe that is long enough.
- B** A plumber is using lengths of pipe 12 feet long and wishes to cut some lengths. He reorders the lengths in descending order and cuts the next length from the first available pipe that is long enough.
- C** A plumber is using lengths of pipe 12 feet long and wishes to cut some lengths. He takes the lengths in the order listed and cuts the next length from the first available pipe that is long enough.
- D** A plumber is using lengths of pipe 12 feet long and wishes to cut some lengths. He alternately cuts the longest and shortest pieces still needed from the first available pipe which is long enough.
- E** A plumber is using lengths of pipe 12 feet long and wishes to cut some lengths. He reorders the lengths in ascending order and cuts the next length from the first available pipe that is long enough.

- 21** The problem of insect pests on crops is a difficult one and is often solved by spraying crops with pesticides. However, there are many other insects which survive by feeding on the pests that we are trying to kill. The pesticides also kill these insects. It would be better to stop wasting money on pesticides and let other insects control the problem of pests for us.

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

- A** It ignores the fact that pesticides may be more effective at controlling the problem than these other insects.
- B** It fails to consider the other problems that are associated with pesticides.
- C** It fails to establish that there is a positive benefit offered by allowing the insects to control the problem rather than using pesticides.
- D** It does not establish that there are any problems for the crops presented by these other insects.
- E** It offers no explanation to justify the statement that pests on crops present a problem.

- 22** There was a time when the economic situation demanded that the Government either had to support the currency directly in the foreign exchange markets, or else it had to raise interest rates. However, it could not raise interest rates because that would have been political suicide. The Government therefore had to support the pound, costly though it turned out to be.

Which one of the following most closely parallels the kind of reasoning used in the passage above?

- A** If he had followed the doctor's advice and stayed at home he would have recovered completely by now. However, he couldn't take the time off, so he is still unwell.
- B** You either have an allergy or you have picked up a virus. If it is a virus there is no treatment that will help, so you may as well treat it as an allergy.
- C** She needed a painkiller and we had either paracetamol or aspirin. But, given that she was allergic to aspirin, she had to take the paracetamol.
- D** This treatment is available on a doctor's prescription or over the counter at a pharmacy. However, it is cheaper on prescription, so I need to see my GP.
- E** There are two doctors at the clinic, a male and a female. The female is always pleasant but the man can be disagreeable, so I hope I see the woman.

- 23** There is a trend in climate discussions to devalue individual solutions such as wind energy, alternative fuels or investment in public transport, because each one by itself is not going to solve the climate crisis. There is not, however, and will never be, any single solution to climate change. When there is no single solution to a problem, attempts to improve the situation should not be dismissed on the grounds that they do not work fully. We should get past the bickering and move towards promoting any single initiative which will have any positive effect on climate change, however small.

Which one of the following best illustrates the principle underlying the argument?

- A** Schools should revert to traditional methods of teaching reading as new initiatives have failed to raise standards.
 - B** Scientists, not governments, should be responsible for finding solutions to environmental problems.
 - C** World peace can only be guaranteed by world government.
 - D** Tackling the tide of obesity demands a national campaign to increase the amount of exercise people take even though this may damage their joints.
 - E** Curfews should not be rejected on the grounds that on their own they will not solve the problem of anti-social behaviour.
- 24** Alan bought a silver jug at an auction for £80. A year later, the price of antique silver had risen and he decided to sell it at auction, for which he received £100. He immediately regretted his decision and approached the buyer, who sold it back to him but he had to pay £110. Another year later, he needed some money so sold the jug to a dealer for £120.

How much profit did he make on the jug overall?

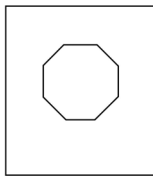
- A** £10
- B** £20
- C** £30
- D** £40
- E** £50

- 25** An airplane 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):

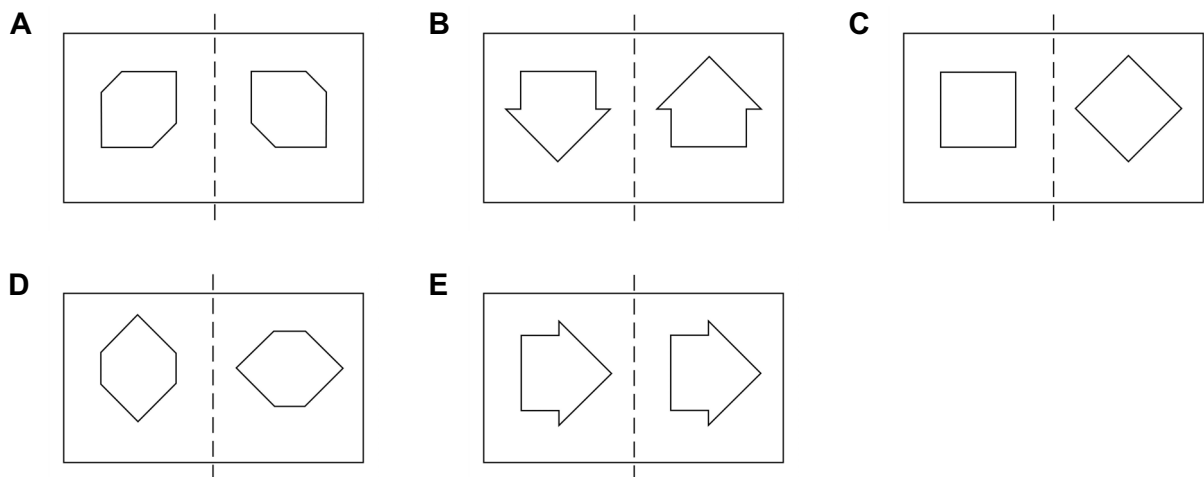
Rome – London		London - Rome	
Depart	Arrive	Depart	Arrive
09:05	09:55	10:30	13:45
12:05	12:55	13:30	16:45
15:05	15:55	16:30	19:45
18:05	18:55	19:30	22:45

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

- A** 4h 40min
B 7h 40min
C 8h 10min
D 10h 40min
E 13h 40min
- 26** A sheet of paper has two holes cut from it. When it is folded in half the hole shown in the diagram below is seen.



Which one of the following could **not** be the unfolded sheet of paper? (The dotted line indicates where it was folded.)



- 27** It is time to bury the independence issue. Our Scottish Government's prime role is to spend its £30 billion wisely, delivering effective and efficient provisions for education, health, social services and a sympathetic business environment - all in a sustainable physical environment and inside a legal framework that facilitates their development. Its job is also to seek harmony, joint policy, compromise and understanding with the UK Government in Westminster, which is certainly not what is happening at the moment. Calls for independence are seriously compromising these objectives. We need a referendum on the issue now before serious damage is done, and so that the Scottish administration can concentrate their talents on the job they are in place to do.

Which one of the following best expresses the main conclusion of the above argument?

- A** In a referendum the Scottish people would vote for independence.
- B** It is time to have a referendum about independence for Scotland.
- C** £30 billion is enough money to enable Scotland to be governed wisely.
- D** The Scottish administration should focus their talents on the job they are in place to do.
- E** Independence would be an advantage for Scotland.

- 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** Many drivers deliberately break traffic laws, both because they are convinced that there is little chance of getting caught and because, even if they are caught, the penalties do not act as a sufficient deterrent. For example, people who would never think of stealing money even when they needed it, think nothing of routinely exceeding a 30mph limit even in a street where children are playing. It is clear, then, that a substantial reduction in road accidents can be achieved only by catching more motorists who break the law and by increasing the penalties for such law-breakers.

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

- A** The number of road accidents is increasing because motorists are ignoring the traffic laws.
- B** Drivers who have been convicted of a traffic offence think nothing of continuing to break the law.
- C** People who break the traffic laws are a significant cause of road accidents.
- D** If the penalties for stealing were less severe, people would think nothing of stealing money when they needed it.
- E** If the penalties for traffic offences were increased, drivers would not break the law so frequently.

- 30** Today I am going to treat my lawn with Greatgrass liquid lawn food. The instructions on the bottle tell me to dilute 1 part Greatgrass with 15 parts water, then apply evenly. Three hours later the treatment should be repeated, but with a mixture of 1 part Greatgrass and 24 parts water. I have worked out that I need to make up a total of 12 litres of diluted liquid for each application.

How much Greatgrass will I use altogether today?

- A** 960ml
- B** 1230ml
- C** 1300ml
- D** 1500ml
- E** 2460ml

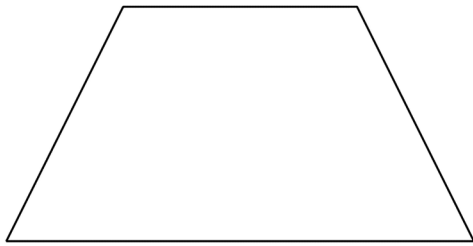
- 31** The mock examination and actual GCSE results for English in one year at Morgan College are shown below:

		Actual GCSE exams	
		Grades A-C	Other Grades
Mock GCSE exams	Grades A-C	90	25
	Other grades	25	60

What percentage of pupils had their GCSE results correctly predicted by their mock examination results?

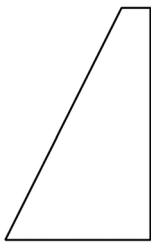
- A** 25.0 %
- B** 50.0 %
- C** 57.5 %
- D** 60.0 %
- E** 75.0 %

- 32** The trapezium below may be cut into four identical pieces.

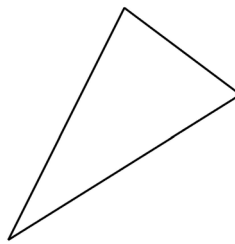


Which of the following pieces can be used four times (flips and rotations are allowed) to make up the trapezium?

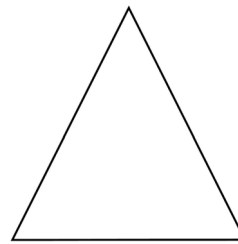
A



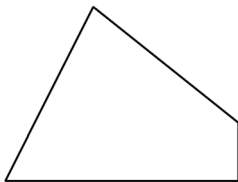
B



C



D



E



- 33** 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 become less conscientious about sticking 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 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.

- 34** When police raided a London nightclub known for selling illegal drugs, nine people were arrested. However, everybody was led outside, searched and photographed, whether or not drugs were found in their possession. Visiting a nightclub is not yet a crime, so it is a troubling breach of civil liberties that the police should keep a record of these people. Many of us are more comfortable with dealers operating in dark corners of nightclubs, rather than selling crack openly on busy daytime streets. Therefore, we should simply accept that drugs will be sold in nightclubs and hope they can be contained there.

Which one of the following best expresses a flaw in the argument?

- A** It assumes that the only alternative to excessive use of police powers and open drug dealing is acceptance of nightclubs selling drugs.
- B** It does not follow that the police abused people's civil rights by photographing them.
- C** It uses one example of a nightclub where drugs are sold to draw the conclusion that nightclubs sell drugs.
- D** It uses extreme and illogical steps to move from one nightclub raid to the unlikely prospect of crack being sold openly on the streets.
- E** Just because some people were not in possession of drugs does not mean that they were innocent of taking drugs.

- 35** 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 can not 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 can not be morally wrong.
- E** Surveys of public opinion reveal many people are opposed to the sale of bodily organs for transplant.

- 36** When Anton joined the company that he works for, 8 years ago, his salary was £29000. Each of his 8 annual salary increases has been 10% of his previous salary rounded **up** to the next multiple of £500.

What is Anton's current salary?

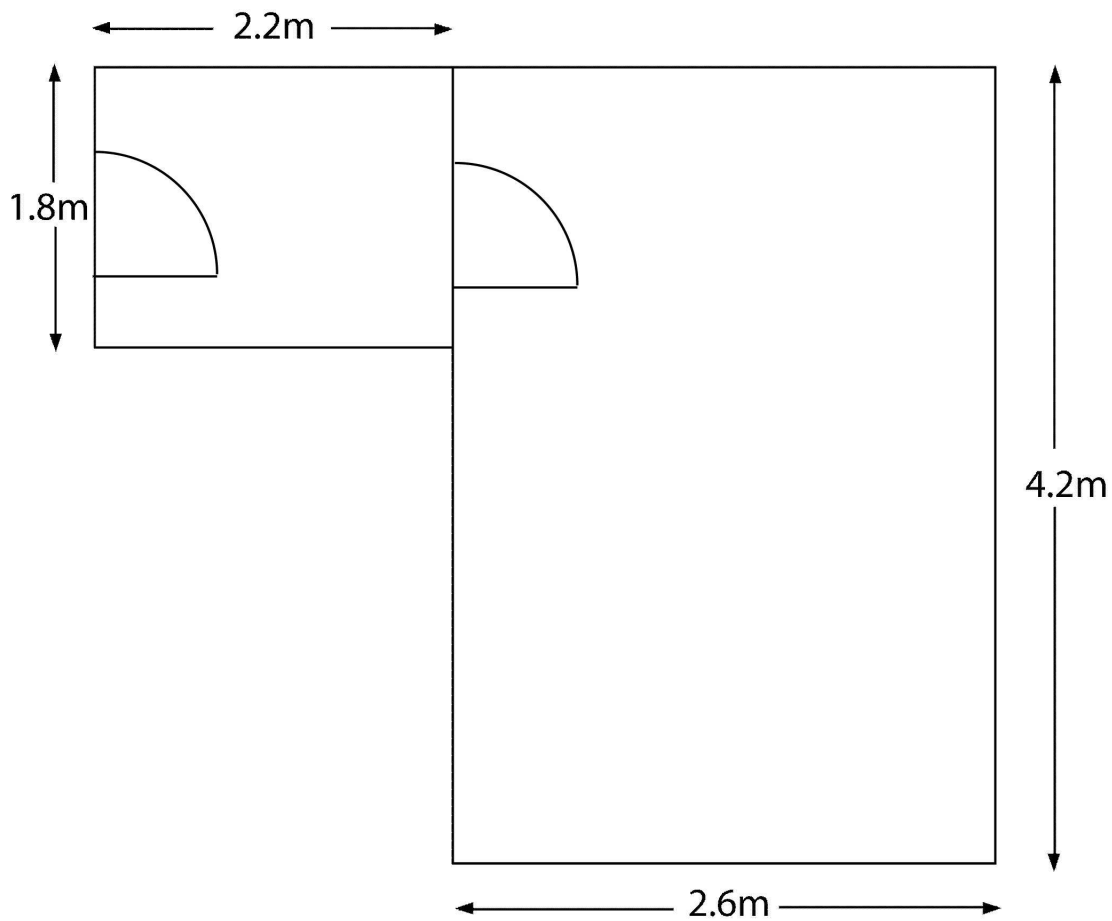
- A** £52500
- B** £58500
- C** £64500
- D** £67000
- E** £71000
- 37** The Ruritanian Go Kart Drivers' Championship is decided over a series of 9 races. For each event the winner is allocated 10 points, second gets 8 points and third gets 5 points. All other finishers are given 1 point. The championship leaders' placings are shown below and the drivers all finished in each race.

Running Points Total and Placings										
	Damon		Nigel		Michael		David		James	
Circuit	Total	Pl.	Total	Pl.	Total	Pl.	Total	Pl.	Total	Pl.
Rague	10	1	5	3	8	2	1		1	
Kolm	11		6		16	2	11	1	6	3
Ostrov	19	2	11	3	17		12		16	1
Vostok	29	1	19	2	18		13		21	3
Billard	39	1	27	2	23	3	14		22	
Menz	47	2	28		24		24	1	27	3
Fondra	48		38	1	32	2	25		32	3
Hahn	49		43	3	40	2	35	1	33	
Limberg	50		51	2	41		45	1	38	3

Which was the earliest race after which one of the leaders knew he could not win the Drivers' Championship?

- A** Billard
- B** Menz
- C** Fondra
- D** Hahn
- E** Limberg

- 38** The diagram shows the dimensions of an office and entrance lobby. I wish to carpet them. Each must have a single piece of carpet with no joins, but I can use two separate pieces for the two rooms. As I intend to do it as inexpensively as possible, I will buy an offcut.



Which of the following offcut pieces will be suitable?

- A** 4.5 x 3.7 m
- B** 5.0 x 4.0 m
- C** 4.2 x 4.4 m
- D** 2.6 x 5.8 m
- E** 4.8 x 4.0 m

- 39** Rather than dumping sewage sludge in the North Sea, it has been suggested that it could be used as fertiliser on agricultural land. However, sewage sludge often contains waste from industry which is contaminated with heavy metals, some of which, e.g. zinc and cadmium, can be absorbed by plants. Zinc is generally present in the sewage in greater amounts than other metals and is a problem for crop production because it will kill plants at concentrations which are too low to cause toxicity to animals. However, concentrations of cadmium can become high enough to make plants dangerous as food without the cadmium having any obvious effect on the growth of plants.

Which one of the following can be inferred from claims made in the passage?

- A** If cadmium and zinc were removed from sewage sludge, it could safely be used as fertiliser.
- B** The greater risk to health from sewage sludge used as fertiliser would be its contamination with zinc.
- C** If sewage sludge contains cadmium, it is unwise to use it as a fertiliser.
- D** There is no future in using sewage sludge as a fertiliser.
- E** Dumping sewage sludge in the North Sea is safer than using it as fertiliser.

- 40** We should restore capital punishment for the offence of pre-meditated murder. It is true that, in the past, occasional mistakes have been made and innocent men have been hanged. However, with the improvements in forensic science and DNA testing, the chances of a mistake have receded. Restoring capital punishment would ensure real justice is done and, incidentally, it would also save the country a considerable amount of money in housing prisoners on long life sentences.

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

- A** Forensic science is a foolproof way of determining guilt.
- B** Real justice can still be achieved even if there are occasional miscarriages.
- C** Financial considerations are the most important factors when considering criminal justice legislation.
- D** Long life sentences will not deter people from committing murder.
- E** The public would not be against the restoration of capital punishment.

- 41** Asthma has increased globally by about 160% in the last two decades. In the UK alone, 1318 people have died from asthma attacks within the last year. However new research has shown that asthma rates fall significantly in those parts of cities which have more trees and green spaces indicating that we can reduce asthma attacks by a programme of tree planting in our inner city waste lands.

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

- A** Planting more trees in inner city areas could lead to an increase in hay fever.
 - B** The cost of planting large numbers of trees in inner city areas could divert funds from other more important needs such as reducing crime in those areas.
 - C** Urban areas which have more trees and green spaces are invariably further removed from factories and congested roads which are known to trigger asthma.
 - D** There are fewer people living in areas with more green spaces so there are bound to be fewer cases of asthma.
 - E** Asthma has increased by 160% in two decades but there is no evidence that trees have been removed at the same rate from urban centres.
- 42** The Tickton town hall clock is rather a curiosity. It shows the correct time every hour on the hour, but the minute hand travels three times as fast down to 6 as it does back up to 12, though within each half of its revolution its speed is constant.

What is the correct time when the Tickton town hall clock shows quarter to the hour?

- A** 7.5 minutes to the hour
- B** 10 minutes to the hour
- C** 20 minutes to the hour
- D** 22.5 minutes to the hour
- E** 25 minutes to the hour

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

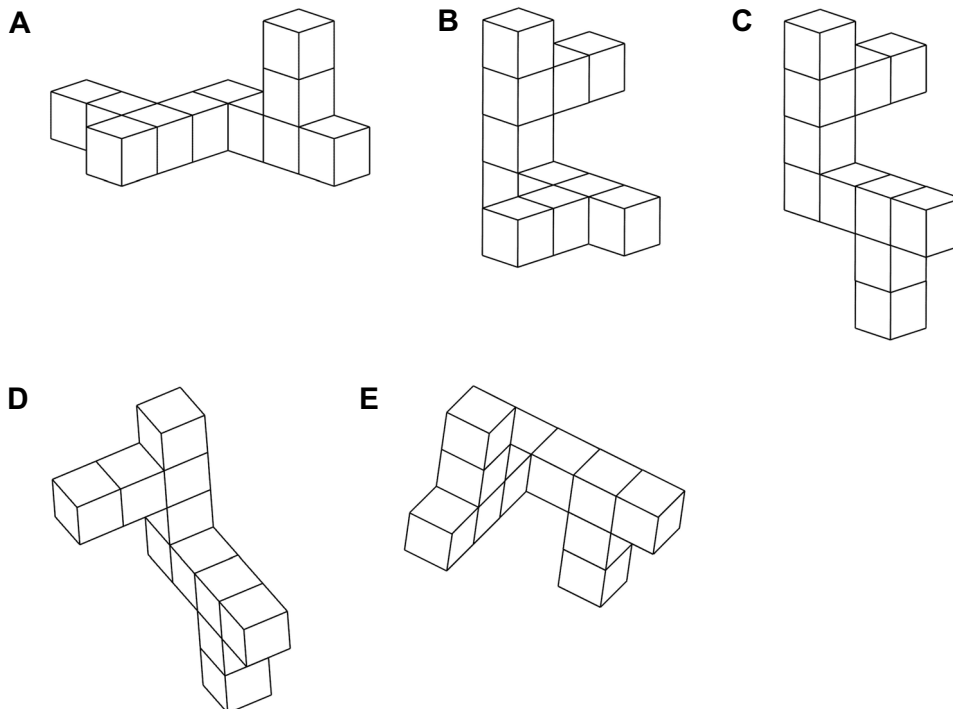
	Sunrise	Sunset	Moonrise	Moonset
Avonmouth	06:57	19:09	16:25	00:56
Dun Laoghaire	07:10	19:22	16:45	01:02
Greenock	07:05	19:18	16:49	00:46
Hull	06:47	18:59	16:22	00:36
Leith	06:58	19:11	16:43	00:39
Liverpool	06:58	19:10	16:32	00:49
London	06:45	18:56	16:12	00:42

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

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

- 44** Five pictures of solids made by sticking cubes together are shown below.

Which one of the following (A-E) is a different shape from **all** the others?



- 45** Contrary to what many people claim, Facebook cannot improve our experience of friendship. It may make it easier to increase our number of contacts, but there is a limit to the number of people we can keep in mind and with whom we can have a meaningful relationship. The number is 150, and is set by the size of our brains. Moreover, the quality of relationships depends on the amount of time we invest in them. If we increase our number of friends, the time devoted to maintaining each relationship will decrease, and our emotional connection with each person will decline. Meaningful relationships are about being able to engage in activities with others face to face. Communication via the internet is no substitute.

Which one of the following best expresses the main conclusion of the above argument?

- A** There is a limit to the number of people we can keep in mind and with whom we should have a meaningful relationship.
- B** Communication via the internet is no substitute for face to face contact.
- C** Meaningful relationships are about being able to engage in activities with others face to face.
- D** If we increase our number of friends then our emotional connection with each person will decline.
- E** Facebook cannot improve our experience of friendship.

- 46** Few tourists are likely to visit the town in the future. The Mining Museum is the only thing in the town that has ever attracted tourists in any substantial numbers. Now the Museum is closing.

Which one of the following most closely parallels the reasoning used in the above argument?

- A** I cannot eat anything with wheat gluten in it. Unfortunately pasta is made with wheat and contains gluten. So I cannot eat pasta.
- B** My skin rash may have been caused by this washing powder. The rash came when I started using this washing powder and went again when I stopped.
- C** The only reason I get headaches is that I am allergic to dairy products. I am giving up dairy products, so I will probably stop getting headaches.
- D** If Moira were stung by a bee and did not take these tablets immediately, she could die. So she will need to carry the tablets with her all the time.
- E** Every time I go into a house with a cat in it, I start sneezing. You have a cat in your house. I would start sneezing if I came in.

- 47** 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 prevail.
- 48** In the elections for the mayor of Bitton, the single transferable vote system is used. In this, each voter places a '1' beside the candidate they most want and a '2' beside their second choice. Voters may only vote for two candidates. In the first round of counting all the '1' votes are counted. If no candidate has over 50% of the votes, the bottom candidate in the poll drops out and the '2' votes of all those who voted for this candidate are added to the appropriate other candidates. This process continues until one candidate has over 50% of the vote - this person is then elected mayor.

The votes after the first round of counting were as follows:

Malcolm Green 87
Susan Johnson 63
Pedro Gonzalez 45
Ian McBride 36
Wayne Daniels 18
Reeta Mathur 17
Total votes cast 254

How many candidates can still win?

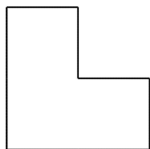
- A** 1
- B** 2
- C** 3
- D** 4
- E** 5

- 49 Standard 100W light bulbs cost 40p each and are expected to last for 2 years in average use. Low power equivalent brightness bulbs cost £10 each, are expected to last for 8 years and use only 20W. A 100W lightbulb operated for 10 hours will use 7.5p of electricity. A 20W bulb will operate for 50 hours on the same amount of electricity. I have a light in my living room which is on for about 20 hours per week. Next time the living room bulb breaks, I will buy a low wattage bulb instead of a standard one.

How long will it be before I have recovered the extra purchase cost?

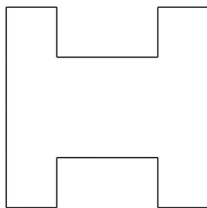
- A 70 weeks
- B 77 weeks
- C 80 weeks
- D 83 weeks
- E 96 weeks

- 50 In the committee room of my cricket club there are four tables, all identical to the one shown below.

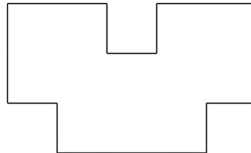


Which of the following arrangements is it **not** possible to make by putting four of these tables together?

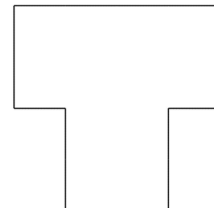
A



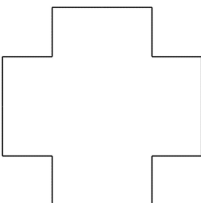
B



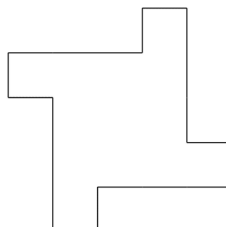
C



D



E



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