

Thinking Skills Assessment Oxford

4502/11

Wednesday 4th November

90 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 write your name, date of birth, TSA candidate number and centre number in the spaces provided on the answer sheet. Please write very clearly.

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 fifty 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.

Calculators are NOT permitted.



Developed and administered on behalf of the
University of Oxford by Cambridge Assessment.

© Copyright UCLES 2009

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

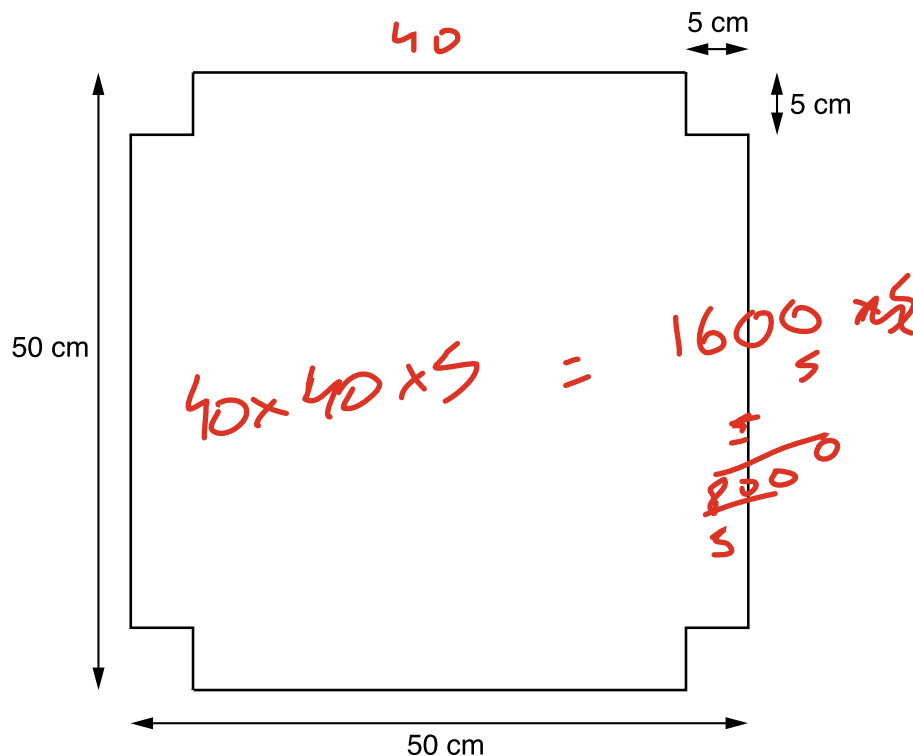
This paper consists of 29 printed pages and 3 blank pages.

* 6 7 3 6 4 3 9 6 7 2 *

- 1 In the twenty-first century, many people aged over 65 are perfectly capable of working, and also are likely to live longer than individuals did in previous times. If people work after age 65, there is more chance that they will be financially self-sufficient when they do retire. Compulsory retirement ages have long been banned in the USA, and we should get rid of them in the UK also. This would be good for individuals and for the country. We should ignore those employers who complain that they would be unable to get rid of older and inefficient employees. After all, those who are really incompetent to do a job can be dismissed on the grounds of merit, rather than of age.

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

- A** It is unfair to prevent people working after age 65. WRONG
- B People who are incompetent to do a job can be dismissed.
- C Raising the retirement age would be good for the country.
- D The UK should abolish compulsory retirement ages.
- E Those who work beyond age 65 can be financially self-sufficient.
- 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 1 600
- B 2 400
- C** 8 000
- D 10 125
- E 12 500

RIGHT

- 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 child rearing. 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.

WRONG

Which 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 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.

RIGHT

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.

- 5 Many people suffer from depression in modern society. This can be alleviated 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.

RIGHT

- 6 The petrol tank of Jenny's car holds 50 litres of petrol. A warning light comes on when only 5 litres are left. She always fills it as soon as she can after the warning light comes on. The car travels 100km on 8 litres of petrol. Last time she put petrol in, which she was able to do immediately after the light came on, she only had \$6 with her so she spent it all on fuel at 60c per litre. She then drove 50km and saw a new garage offering petrol at 50c per litre - an offer too good to miss. She filled the tank completely and paid with her credit card.

How much did it cost?

- A \$ 15.50
- B \$ 17.50
- ☒ C \$ 19.50
- D \$ 22.50
- E \$ 24.50

10 litres

15 litres
- 4

11 litres

$$39 \times 0.5 = 19.50$$

RIGHT

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

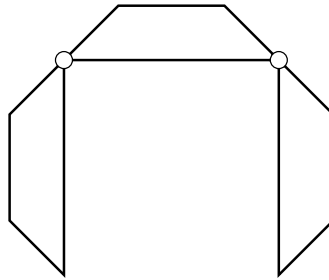
	<i>Period 1</i>	<i>Period 2</i>	<i>Period 3</i>
<i>Japan</i>	8.5	3.0	3.2
<i>France</i>	5.4	3.0	2.6
<i>United Kingdom</i>	3.6	1.5	2.4
<i>Belgium</i>	3.3	2.8	2.3
<i>Sweden</i>	4.1	1.5	1.8
<i>Denmark</i>	4.3	2.6	1.7
<i>Italy</i>	6.3	3.0	1.6
<i>Netherlands</i>	4.8	2.7	1.6
<i>Germany</i>	4.5	3.1	1.6
<i>United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

RIGHT

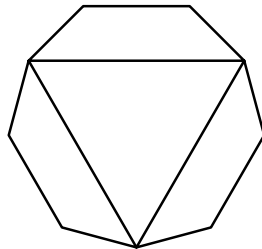
- 8 The diagram below shows a rather unusual conference table which may take up a range of configurations. The three pieces are hinged together at the points shown by the circles:



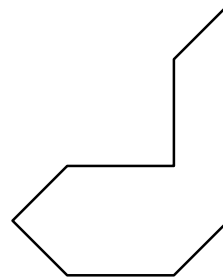
RIGHT

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

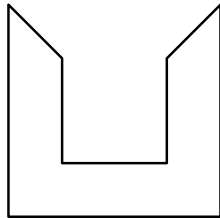
~~A~~



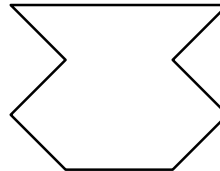
~~B~~



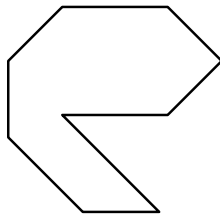
~~C~~



D



~~E~~



- 9 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 cramped 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.

WRONG

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

- A Humans living ~~in~~ cramped 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.
- 10 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!

RIGHT

Which 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 constitutes a very large number.
- E Brain size is not necessarily dependent on the extent of mental activity undertaken.

- 11 There is widespread and justified concern about the reliance on expert opinion in law court cases. Where experts disagree on an interpretation of the facts, there is always the possibility that the more charismatic and persuasive expert's opinion will prevail for this reason alone. Their reason for holding the opinions they do could be more to do with their own personal prejudices than their professional expertise. However, if we want justice to be done, we should distinguish sharply between this and expert evidence which is not reliant on interpretation. It would be a tragedy if key advances in tackling crime such as matching DNA were regarded with suspicion just because such evidence came from an expert witness.

Which of the following is a statement of the main conclusion in the above argument?

- A** The widespread concern about the use of expert opinion in legal cases is justified.
- B** It would be most regrettable if evidence such as DNA became suspect in legal cases.
- C** In the interests of justice we should distinguish between expert evidence and expert opinion.
- D** Expert opinion may arise from personal views rather than professional knowledge.
- E** Juries may be swayed by the personal characteristics of those presenting expert opinions.

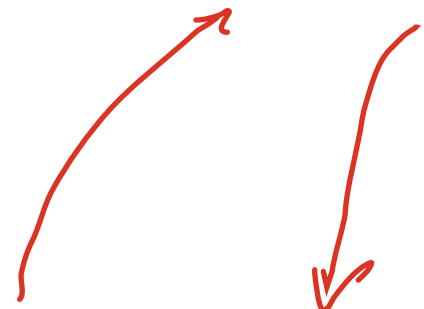
- 12 Ionnais lives at the bottom of a very steep hill. Worse than that, the post office is at the top. Every Thursday he must go there to collect his pension. He can only walk at 2 km per hour uphill but manages 4 km per hour downhill. The round trip, excluding the wait at the post office, takes him 4½ hours.

How far is it from his house to the post office?

- A** 3.00 km
- B** 6.00 km
- C** 6.75 km
- D** 12.00 km
- E** 13.50 km

2 : 4
1 : 2

RIGHT



- 13 Telephone network operators offer customers a choice of tariffs, with the tariff broken into two parts: (a) a fixed monthly rental charge regardless of use, and (b) a charge per minute of call time used. The table below shows the tariffs offered by five companies; all figures are given in £. I am considering taking a contract with one of these and estimate that I will use 100 minutes of call-time each month.

	High user tariff		Medium user tariff		Low user tariff	
	Rental	Call charge	Rental	Call charge	Rental	Call charge
Activering	50	0.05	20	0.30	0	0.60
Bellaphone	55	0.05	20	0.25	0	0.60
Canconnect	60	0.05	20	0.35	0	0.55
Dialfast	65	0.05	10	0.45	5	0.45
Engaged	70	0.05	10	0.40	0	0.70

$$0.05 \times 100 = 5$$

Which company should I use to receive the lowest telephone bill?

- A Activering
☒ B Bellaphone
 C Canconnect
 D Dialfast
 E Engaged

RIGHT

1000

- 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 of the following statements is **not** true?

RIGHT

- 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.

$$\begin{aligned}
 200 &= 2L + 4S \\
 100 &= L + 2S \\
 175 &= 2L + 3S \\
 2S &= 1S \\
 2S &= S
 \end{aligned}$$

$$\begin{aligned}
 100 &= L + 2S \\
 L &= 50 \\
 150 & \\
 250 & \\
 400 &
 \end{aligned}$$

RIGHT

- 15** 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.
- 16** Unlike motorways in many European countries, British motorways were built with hard shoulders for use in a breakdown or emergency. The proposal to use the hard shoulders to relieve congestion during peak traffic hours should not be adopted. It would be inconvenient for emergency services because when the hard shoulders are in use, it would be difficult for emergency vehicles to reach an accident. Nor would it be likely to significantly reduce congestion because it would be difficult to remove obstructions caused by broken down vehicles, and in any case the volume of traffic is increasing massively each year. But the most important reason is that we should seek to maintain Britain's relatively good record of safety on motorways. Other ways of relieving congestion must be sought.

RIGHT

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

- A** Britain's record for motorway safety is the best in Europe.
- B** Congestion on British motorways is not a major problem.
- C** Accidents are more likely to happen when motorways are congested.
- D** Changing the design of British motorways will not solve the problem of congestion.
- E** Britain's good safety record for motorways is partly attributable to the presence of hard shoulders.

- 17 "I tried a speed reading course and read 'War and Peace' in three hours. It's about Russia." Woody Allen's joke strikes a chord with many who doubt the effectiveness of speed reading techniques. These techniques usually involve moving your finger smoothly and quickly along lines of text and training your eyes to follow, so preventing your eyes going back over words you have already read, which is what we normally do. There have been reports of readers achieving incredible speeds using these techniques, but such achievements are of limited benefit to many readers, particularly students, who have to gain a deep understanding of what they read.

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

- ☒ A For many tasks a student has to do, speed reading can lead to a superficial understanding.
- B Speed reading techniques are more difficult to acquire the older you are.
- C A student, after reading the argument, commented, "I find I understand what I am reading better if I read quickly."
- D A student, after reading the argument, commented, "I use speed reading for easy texts. I have to read slowly if the content is difficult."
- E Speed readers have found they have difficulty in reading for pleasure (for example when reading novels or magazines).

WRONG

- 18 A boy is given \$1.00 by his grandparents to buy sweets. He decides to spend at least half his money on gobstoppers at 5c each, at least a quarter of his money on fruit chews 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

$$50c \rightarrow g \times 10$$

$$27c \rightarrow f \times 9$$

$$23c \rightarrow 11$$

$$100 \rightarrow 2 - 75$$

RIGHT

- 19 My friend's grandmother went on an overseas trip last year visiting several countries. When he visited her this summer she claimed she had not been able to buy him a gift as every country she visited was having a public holiday while she was there. He was very suspicious and consulted his diary to find out whether this was possible.

International Public Holidays:

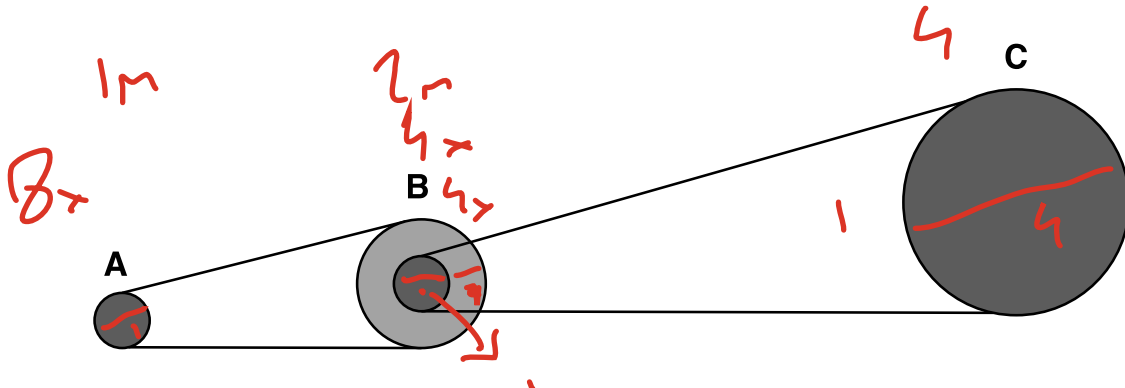
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Denmark	1			9,10,13	8,21	1,5						25,26
Finland	1,6			10,13	1,21,31	20				31		6,25,26
France	1			13	1,8,21	1	14	15			1,11	25
Germany	1,6			10,13	1,21	1,11		15		3,31	1	25,26
Greece	1,6		2,25	17,20	1	8		15		28		25,26
Hong Kong	1,28,29,30			5,10,13	30	13,15		29,31	5			25,26, 31
Israel		11	12	11,17,30	24,31			2	21,22,30	5		14
Italy	1,6			12,13,25	1			15			1	8,25,26

What was the longest time she could have been away?

- A 2 days
 B 3 days
 C 4 days
 D 5 days
 E 6 days

RIGHT

- 20 The diagram shows three pulleys driven by belts. Pulley A and the small, inner pulley at B are 1 m across, the outer pulley at B is 2 m across and pulley C is 4 m across.



Pulley A rotates at a rate of 8 complete turns every second. If the belts do not slip, then how many complete turns every second will pulley C make?

- A 1
 B 4
 C 8
 D 16
 E 64

RIGHT

- 21 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 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.

RIGHT

- 22 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 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.

RIGHT

- 23 The increasing use of mobile phones on trains and in restaurants shows a serious lack of consideration for other people. Yes, of course, it is very convenient to be able to conduct your business while travelling or waiting for your food, and, whether we like it or not, the technology is here to stay. But nobody really wants to listen to one end of someone else's boring conversations throughout a meal or a journey. The same phone user would soon object if I were to read aloud from the newspaper and disrupt his or her call. Therefore, given that people should treat others in the way they expect to be treated themselves, mobile phones should not be freely used on trains and in restaurants.

RIGHT

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

- A** You would object if your children made you listen to their music so you should not inflict your choice of music on them.
- B** No one should try to turn the clock back, especially when it comes to technology; therefore you should accept some annoyances for the sake of progress and convenience.
- C** There should be no first class accommodation on trains on the grounds that all paying customers should be treated equally.
- D** One person's annoyance is another person's convenience; therefore we should be more tolerant of each other's behaviour.
- E** Calm and relaxation are the keys to a happy life; therefore we should avoid the unnecessary stresses that the modern technological world has brought with it.

9 rotate

70/14

- 24 Hockey is an 11-a-side game, but a team may consist of up to 16 players, with unlimited substitutions allowed throughout a match of 70 minutes duration.

16 - 2 = 14

Roger captains the Buccaneers hockey team. He has 16 players for today's match. He will play the whole match himself, as will the goalkeeper. He intends to rotate all the others in such a way that each of them spends the same total amount of time on the pitch.

How much time should each player (except Roger and the goalkeeper) spend on the pitch during today's match?

- A** 39 $\frac{3}{8}$ minutes
- B** 45 minutes
- C** 46 $\frac{2}{3}$ minutes
- D** 48 $\frac{1}{8}$ minutes
- E** 55 minutes

$$\begin{array}{r} 5 \\ 14 \overline{) 70} \end{array}$$

RIGHT

- 25 Julie lives in London. She has three daughters; April, who lives in New York (where the local time is 5 hours behind London), May, who lives in Vancouver (8 hours behind London), and June, who lives in Tokyo (9 hours ahead of London). They all communicate with each other regularly.

Last week April received a text message from May that said "call me on Wednesday at 23.30 your time." Unfortunately, the message had been sent to April by mistake and was intended for June.

How much later than expected did May's phone eventually ring?

- A 12 hours
- B 13 hours
- C 14 hours**
- D 17 hours
- E 22 hours

RIGHT



20:30
weds

6:30

-

Copper							
74	Gold						
28	91	Iron					
86	12	91	Lead				
102	28	119	40	Nickel			
91	40	63	28	68	Silver		
109	35	114	23	63	51	Tin	
30	44	47	56	72	84	79	Zinc

A	Q
B	R
C	S
D	T
E	W

WRONG

- 27 Over-qualification is sometimes cited as a reason for rejecting an applicant for a job. But to qualify means to reach a certain standard regardless of the amount by which that standard is surpassed. If someone holding a first-class honours degree is rejected for a job on the grounds that academic excellence is less important than, say, a caring attitude, this is not a case of over-qualification in one direction but of under-qualification in another. For this reason, applicants should not be rejected because they are over-qualified; any explanation for failure should always be in terms of shortcomings.

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

- A There are no circumstances under which someone can be over-qualified for a job.
- B Holding the highest academic qualifications is not always as important as having the right attitudes.
- C The definition of the word 'qualify' sets no upper limits on the standard that can be achieved.
- D Employers should be honest with unsuccessful applicants when explaining why they have not been appointed.
- ☒ E Over-qualification should not be given as a reason for not appointing someone to a job.

RIGHT

- 28 The so-called 'baby-boomer' generation (people born in Britain in the late 1940's /early 1950's) will enjoy a good chance of reaching a ripe old-age. They benefited from a diet that was austere but healthy when they were children and this has influenced their adult tastes. In addition, people in this age group have given up unhealthy activities such as smoking cigarettes. In contrast, the generation represented by those currently in their 20's and early 30's are in danger of experiencing serious health problems which would decrease their life expectancy. This is the 'Big Mac' generation whose childhood diet was high in fat and sugar, which they continue to crave. They also show worrying tendencies to indulge in 'binge drinking' and other health-threatening activities.

Which of the following is a conclusion that can be drawn from the above passage?

- ~~A~~ Health is largely determined by factors which the individual can control.
- ~~B~~ Health education is becoming less effective in controlling behaviour.
- C The trend towards ever-increasing life expectancy will be reversed.
- D The 'Big Mac' generation would be wise to change their lifestyle.
- ☒ E The health service will be put under greater strain in the future.

WRONG

- 29 A kidney can be taken safely from a living person, and can save the life of a dying patient. Given that the demand for kidney transplants exceeds the supply of donated kidneys, the law in the UK that forbids people to sell one of their kidneys should be abolished, because this would result in a greater number of successful kidney transplants. People are worried that it would involve rich patients exploiting poor potential donors. But selling one's kidney to support one's family is not very much different from supporting one's family by working in a dangerous occupation. Some patients have bought kidneys and received transplants in other countries, where the risks to their life from such operations can be great.

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

- A Poor people are not able to receive kidney transplants.
- ☒ B Some people in the UK would be willing to sell a kidney. RIGHT
- C Selling one's kidney is less dangerous than some occupations.
- D Kidney transplants carried out in other countries are rarely successful.
- E Changing the law would ensure an adequate supply of kidneys for transplant.

- 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. RIGHT

M T W T F S S
 M T W T F S S
 M T W T F S S
 M T W T F S S
 M T W T F S S

- 31 A small restaurant is open for 45 weeks each year. It employs 6 people at total wages of £1200 per week (they are not paid when the restaurant is closed). It is open for lunch on Monday to Friday and dinner on Tuesday to Saturday and on average 20 people eat at each opening. The owners pay rental on the premises of £36 000 per year. Other expenses (insurance, gas electricity, water, rates etc.) come to £9000 per year. The cost of buying food works out at £5 per meal served.

How much must the owner charge for each meal to cover expenses?

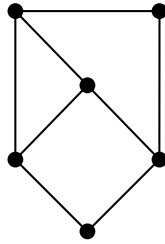
- A £ 10
- B ~~£ 11~~
- ☒ C £ 16 RIGHT
- D £ 22
- E £ 27

- 32 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).

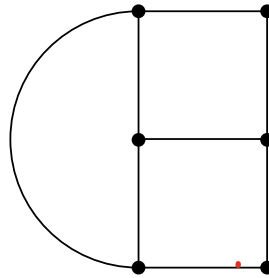
Four of the artists drew possible maps, but the fifth got the connections wrong. Which map below is based on incorrect connections?

~~A~~

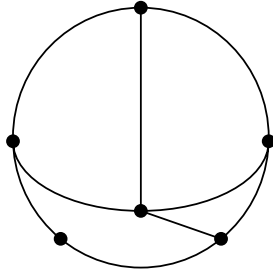


2 > 2
4 x 3

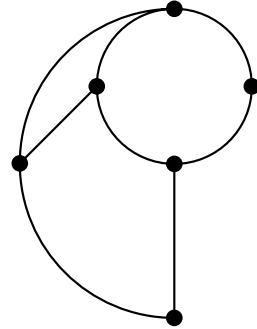
~~B~~



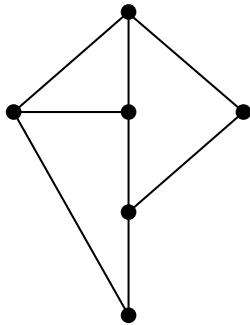
C



~~D~~



E



RIGHT

- 33** In cricket, the world's fastest bowlers bowl at speeds of over ninety miles per hour. When the bowler releases the ball he is less than twenty metres away from the batsman, which means that the batsman has less than half a second to react to the ball and select his shot. According to scientists this is impossible, as there is simply not enough time for the necessary thought processes and muscle responses to occur. And yet this is exactly what happens. This just shows how science can all too easily fail to explain things due to its own limitations.

RIGHT

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

- ☒ **A** In order to play against bowling of this pace, the batsman's response has become a learned reflex rather than a conscious decision.
 - B** It is only with the aid of high technology speed cameras that the speed of the bowler's delivery can be established.
 - C** Tennis players often have to return serves which are travelling in excess of a hundred miles per hour over similar distances.
 - D** There is much that science has yet to discover about the ways that the mind works and how it affects the body.
 - E** Batsmen can often be too slow to react to fast bowling and consequently get badly hurt.
- 34** Education in this country has entered a spiral of decline. In recent attainment tests, almost half of 11-year-olds performed at an under-average level. The government claims that standards are improving as a result of league tables and National Curriculum Strategies, but these results prove that tests are simply getting easier. We badly need to return to the teaching and assessment methods of the fifties.

Which of the following best explains a flaw in the above argument?

- A** More than 50 % of students were over-average in this test, which shows that standards have improved.
- B** League tables have increased differences between schools in middle class and deprived areas.
- C** The author appeals to parents' fears about their children's education.
- ☒ **D** No matter how hard the test, nearly 50 % of students will achieve under-average results.
- E** We need a return to the social attitudes rather than the teaching methods of the fifties.

RIGHT

- 35 It is possible to think that someone is right to do whatever serves his own ends, including murder, theft and deceit, and to admire his ruthlessness. But one cannot think that this is not morally wrong. The phrase 'morally wrong' is not meaningless. There are some things, such as those mentioned above, which would have to be so described by anyone who was not unaware of the meaning of the expression. That some things are morally wrong can be shown to be true, every bit as decisively as, for instance, it can be shown that snow is white. It is not true that every moral question is 'a matter of opinion', still less of taste, personal preference, or choice.

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

- A People are right to do whatever serves their own ends, even if it involves murder, theft and deceit.
- B The phrase 'morally wrong' is not meaningless.
- C One must accept that acts such as murder, theft and deceit are morally wrong.
- D It is always wrong to admire those who commit murder.
- ☒ E It is as true that some things are morally wrong as it is that snow is white.

WRONG

- 36 The rowing machine in our gym has a display that tells the user how much work they have done. The display shows the following information:

1	distance rowed since starting	
2	number of calories used per 500 m rowing	(an average update every 15 seconds)
3	time since starting	
4	number of rowing strokes per minute	(an average update every 30 seconds)

Today I have used the machine three times, each time as part of a circuit of training using several machines in the gym. During my third session, I re-set the counter after rowing 500 m.

	<i>distance rowed</i>	<i>number of calories used per 500 m</i>
first	400 m	50
second	600 m	55
third	800 m	60 for the first 500 m
		40 for remainder

40
66
60
24

How many calories did I use up on the rowing machine?

0.6 x 40

- A 155
- ☒ B 190
- C 205
- D 206
- E 260

RIGHT

- 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 shrub in her hedge which is 1.6m high. She wants to choose a tree to plant beside the shrub 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:

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

Which of the trees above would be her best choice?

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

1.6 | 30 | 7

WRONG

20

0 2.8 5
 7 25 0 4

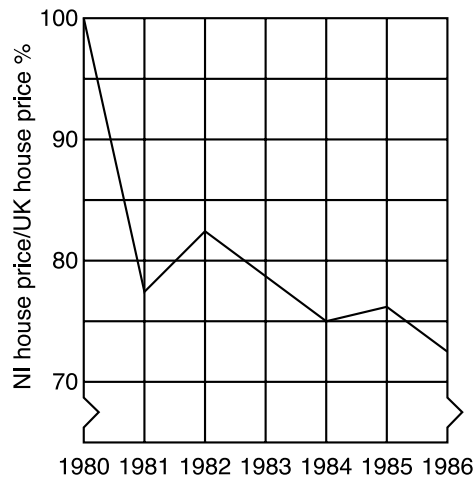
1.6 x 2.25

285
 16
 1 210
 53

4.5

2850
 4560
 1

- 38 The graph below shows Northern Ireland house prices as a percentage of the UK average (1980=100%) for the period 1980 to 1986.



RIGHT

Which one of the following pieces of information can be inferred from the graph above?

- A House prices in Northern Ireland fell by almost 30% in the period shown.
 - B House prices in Northern Ireland rose in some years and fell in others.
 - C Average house prices in the UK (outside Northern Ireland) have risen over the period shown.
 - D** In some years average prices in Northern Ireland rose compared to those in the UK as a whole.
 - E House prices in Northern Ireland had peaked in 1980
- 39 In attempting to reduce the high injury toll from road offences such as drink-driving, successive governments have tended to rely on the deterrent effect of increasingly severe penalties. However, severe penalties can act as a deterrent only if potential offenders believe that the chances of being detected are moderate or high. Recent surveys have shown that people perceive the chance of detection for the offence of drink-driving as being very small.

Which one of the following can be concluded from the passage above?

- A Severe penalties for the offence of drink-driving do not constitute an effective deterrent.
- B** Successive governments have not tackled the problem of drink-driving.
- ~~C~~ Drink-driving offenders have a misguided perception of their chances of detection.
- ~~D~~ Penalties for road offences such as drink-driving should be even more severe.
- ~~E~~ There must be better ways to tackle drink-driving, for example education.

WRONG

- 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 levy 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 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.

WRONG

- 41** 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 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.

RIGHT

- 42** To take part in the National Lottery, entrants must select six different numbers between 1 and 49 inclusive.

My mother asked me to buy a National Lottery ticket for her. "Choose any six numbers you like," she said, "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 |

WRONG

- 43** Oliver's first job is with Bubble Engineering Ltd. The company grants paid holidays each year on the following basis:

<i>Length of Employment</i>	<i>Holiday entitlement</i>
First 5 years	20 days
Sixth to tenth year	25 days
Eleventh year onwards	30 days
<p><i>All holidays are granted only at the company's discretion.</i></p> <p><i>Employees who are unable to take their entitlement may carry forward up to 5 days to the following year.</i></p>	

Oliver has decided to leave Bubble Engineering on the tenth anniversary of his starting there. Part of his reason for leaving is that he has never been able to take his full holiday entitlement:

Holiday Record

Year	1	2	3	4	5	6	7	8	9	10
<i>Holiday Granted (days)</i>	10	12	15	12	20	18	25	23	20	5 so far

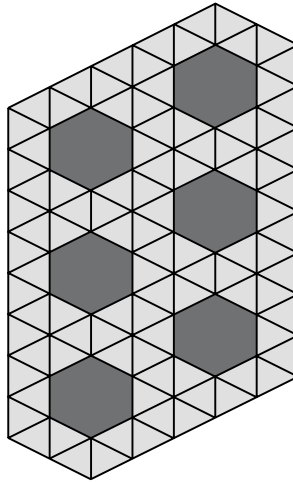
Oliver knows the company always avoids adverse publicity by giving the full entitlement once employees give notice.

How many more days holiday will he get before he leaves?

- | | |
|----------|----|
| A | 20 |
| B | 25 |
| C | 30 |
| D | 35 |
| E | 65 |

WRONG

- 44 The pattern below shows part of the tiling of a large floor in a community 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

WRONG

- 45 In Britain, wetland areas have traditionally been used for cattle farming, which requires drainage of the land to allow cattle to graze in summer. However, maintaining the marshy conditions in wetlands is vital to the survival of the varieties of wildlife and plants which are exclusive to such areas. Because the interests of agriculture and of conservation are thus in conflict in wetland areas, water levels should be regulated by an independent body to enable a balance to be achieved.

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

- A Water levels in wetlands should be regulated by an independent body.
- ☒ B A balance should be maintained between agricultural and conservation interests.
- C The interests of the different groups using wetland areas are irreconcilable.
- D Wetland areas have to fulfil the needs of agriculture and conservation.
- E Wetland areas are a rare natural resource which needs special treatment.

WRONG

- 46** The proportion of time people devote in their lives to travelling from A to B has been constant over history. So the advent of high speed forms of transport simply means that people will travel greater distances.

Which of the following most closely parallels the above reasoning?

WRONG

- A** Mortgage loans have always represented around 3 to 4 times a person's annual income. Therefore a rise in average earnings will mean an increase in mortgage lending.
- B** The ratio between mortgage repayments and total expenditure per household has always been constant. So more expensive food will mean more debt.
- C** With a fixed rate of mortgage interest, an increase in house prices will mean that inflation will rise.
- D** The increase of home ownership has been in proportion to the rise in average earnings. So the increase in house building means people are earning more.
- E** The proportion of new to old homes on the market has always been constant. So an increase in housing development means that more old houses are being renovated.

- 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 of the following applies the principle used in the above argument?

RIGHT

- 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 Starting from its depot in town X, a delivery lorry is to make deliveries to three towns A, B and C, in any order which the driver chooses and finally to return to X.

Straight roads connect each town to every other town.

Depending on the layout of the towns, which of the following could **NOT** be the shortest journey for him to take?

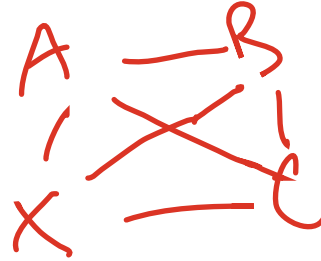
A XAXBCBX

~~B~~ XACBX

C XAXBCX

D XBABXCX

☒ E XABCBAX



WRONG

- 49 A rainwater butt in Joan's garden fills from a flat roof of an equivalent area to 25 square metres. The butt holds 200 litres and is full when Joan starts using it in the summer. During the gardening season, 160 litres falls on each square metre of roof. Only half of this is collected as the rest evaporates. Joan uses 100 litres from the butt to top up her garden pond each week for 25 weeks. If there is not enough water in the butt, she completes the job with mains water which is rather expensive. During the summer months there is never enough rain to overfill the butt.

How much mains water would she expect to use in an average summer?

A 0 litres

B 300 litres

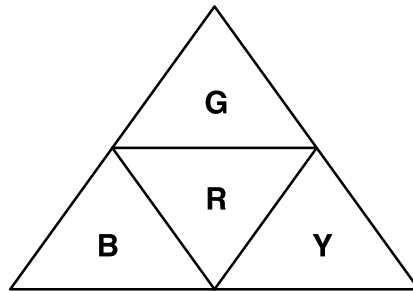
☒ C 500 litres

D 2000 litres

E 2300 litres

WRONG

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



G = Green

R = Red

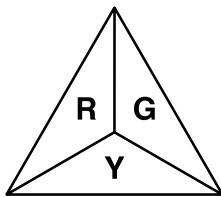
B = Blue

Y = Yellow

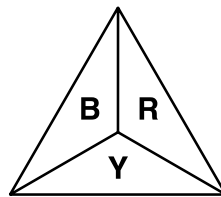
The joined triangles are then folded and joined to make a pyramid.

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

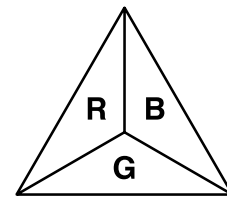
~~A~~



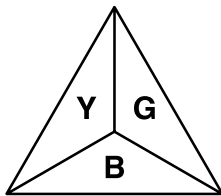
~~B~~



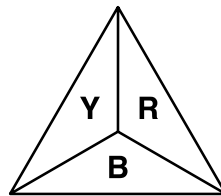
~~C~~



D



~~E~~



WRONG

BLANK PAGE

BLANK PAGE

BLANK PAGE