THINKING SKILLS   **9694/01**

Paper 1 Problem Solving and Critical Thinking   **For Examination from 2009**

SPECIMEN PAPER

1 hour and 30 minutes

Additional Materials: Multiple Choice Answer Sheet
                          Soft clean eraser
                          Soft pencil (type B or HB is recommended)

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.

There are **30** questions on this paper. Answer **all** the questions.

For each question there are five possible answers **A**, **B**, **C**, **D** and **E**. Choose the **one** you consider correct and record your choice in pencil on the separate Answer Sheet.

Read the instructions on the answer sheet. Ignore responses 31–50 on the answer sheet.

INFORMATION FOR CANDIDATES

Each correct answer will score one mark. A mark will not be deducted for a wrong answer.

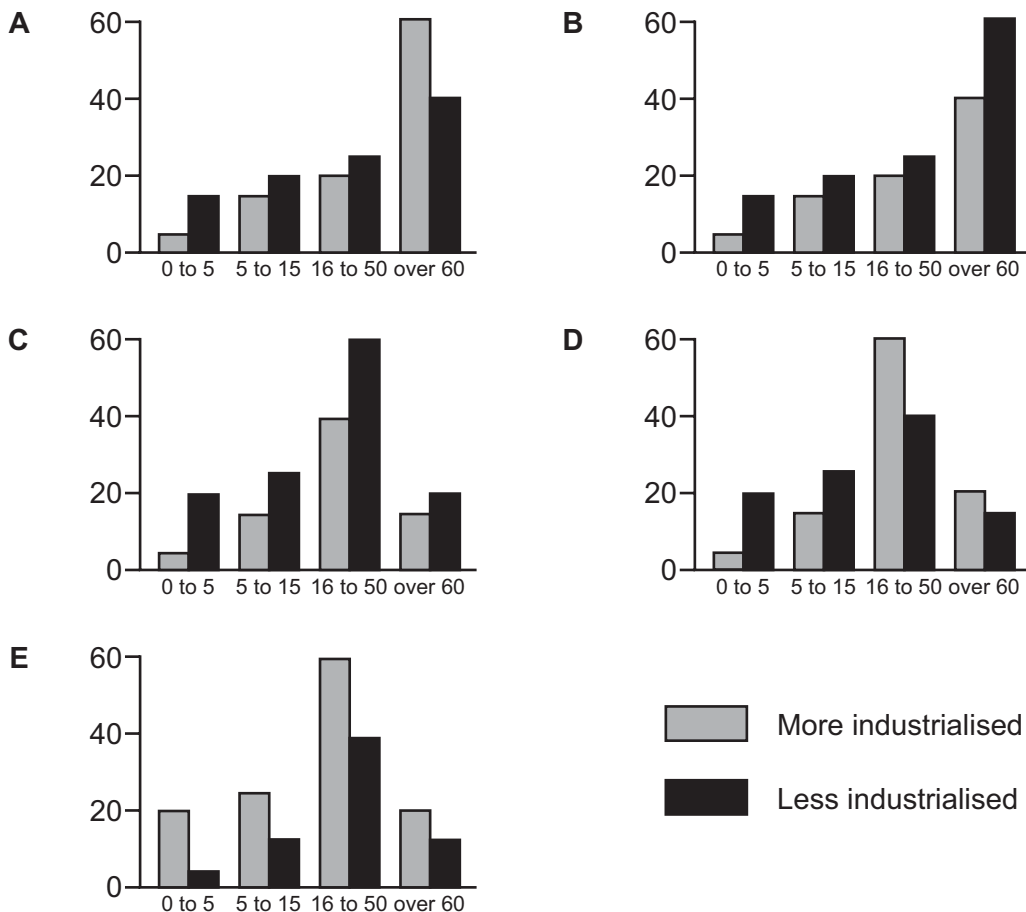This document consists of **16** printed pages and **2** blank pages.

1 A set of children's bricks contains bricks each 10 cm long, 5 cm wide and 2 cm high. What is the maximum number of bricks that can be fitted into a box with internal dimensions (that is, dimensions measured inside the box) 25 cm wide, 20 cm long and 4 cm high?

A 8

B 10

C 16

D 20

E 100

2 The table below shows the age distribution of people in more and less industrialised countries in a particular year expressed as a percentage:

age	below 5	5–15	16–59	Over 60
in more industrialised countries	5%	15%	60%	20%
in less industrialised countries	20%	25%	40%	15%

Which of the following graphs could represent these data?

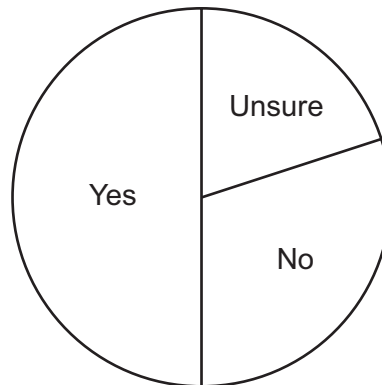**3** In a village 80% of householders own a car and 40% own a dishwasher.

Which of the following statements must be true?

A At least half of the car-owning households also own a dishwasher.

B All households have either a car or a dishwasher.

C The majority of households with a dishwasher also own a car.

D 1 in 5 households own neither a dishwasher nor a car.

E At least 1 in 5 households own both a car and a dishwasher.

4 A holiday company wishes to send copies of small leaflets to each of the travel agents it deals with. The company wants to send as many leaflets as possible in each envelope. All of the envelopes will be stamped for second class mail at 18p for which the permissible weight is 60 g. The envelopes weigh 10 g each with no measurable variation. The leaflets weigh about 2·5 g each but vary between 2 and 3 g. Each envelope will be packed and separately weighed to fit in the greatest number of leaflets.

What is the greatest number of leaflets that could possibly be put into an envelope?

A 16

B 20

C 24

D 25

E 30

5 A soft drinks manufacturer is considering the introduction of a new gooseberry flavoured drink. Before making a decision, a market research firm is commissioned to ask people whether they think they would buy the new drink. The pie chart below shows the results of this market research.

Which of the following might have been the numbers of people responding in each way?

A Yes 600 No 300 Unsure 200

B Yes 1000 No 600 Unsure 200

C Yes 100 No 60 Unsure 40

D Yes 800 No 410 Unsure 390

E Yes 30 No 15 Unsure 15

6 People being interviewed for promotion at work have been conditioned to think they should be judged solely on their qualifications. They tend to think that if theirs are the best credentials it is an injustice if some other, less qualified person gets the job. This is narrow and self-centred approach to the selection procedure. What should be the guiding principle is the equal representation of different social and/or ethnic groups. This will create an atmosphere of social harmony in the workplace that the present competitive rat-race can never achieve. So, for example, if women are under-represented at management level in some organisation, the next vacancy should automatically go to a woman, even if the strongest candidate is a man.

Which of the following, if true, most strongly supports the above argument?

A The most qualified applicant may not be the one who will get the best from the workforce.

B There are many jobs for which women can be just as well qualified as men.

C Anyone appointed to a high level position wants to feel he or she got there on merit.

D There will always be some groups that consider themselves under-represented.

E The prospect of gaining promotion is what gives people the incentive to work hard at their jobs.

7 If the police on this island are as incompetent as everyone says they are, and the local people are the compulsive criminals they are reputed to be, you would expect there to be many instances of crime against unsuspecting tourists. Actually, there hasn't been a single crime committed in the three weeks we've been here, so it has to be concluded that the criminal reputation of the locals is wildly exaggerated.

Which of the following is an assumption on which the above argument relies?

A Not all the crimes that are committed on the island are reported.

B Tourists are not the only victims of crime on the island.

C The police are as incompetent as everyone says they are.

D Stories that circulate among tourists are often exaggerated.

E The three weeks in question were an exception to the norm.

8 Wearing glasses makes people look more capable and more self-assured. They also provide a useful tool to public speakers, especially in debates or when responding to difficult questions. Adjusting or wiping glasses can give the speaker a vital extra moment to think, without appearing to lose composure. Opinion polls clearly indicate that the public pays a lot of attention to personal appearance and body language. They are quick to notice when a prominent figure looks hesitant or flustered. Politicians in particular, have a lot to gain from projecting an image of confidence and composure.

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

A Politicians could have something to gain from wearing glasses.

B People need their leaders to be capable and self-assured.

C Politicians who wear glasses are more popular than those who do not.

D Public speakers who wear glasses have more time to think.

E Politicians who do not wear glasses often appear to lack composure.

9   If I throw a glass at a brick wall with sufficient force, it will break and fall to the ground in pieces. I can predict this outcome with near certainty, because the cause and its almost invariable effect are well known. But no-one can predict with any kind of certainty the number or shape of the fragments into which the glass will break, or explain afterwards why it shattered in the particular way that it did. So whereas the fact that the glass breaks has a clear and obvious cause, the particular way in which it shatters has no cause at all: it is completely random.

Which of the following is the best expression of the flaw in the reasoning?

A   Being able to predict something does not mean that I know what caused it to happen.

B   Knowing the cause of something does not mean that it is certain to happen.

C   Being able to predict something if I know its cause, does not mean that if I can't predict it it has no cause.

D   Knowing what has always happened in the past does not mean I can predict what will happen in the future.

E   Not being able to explain something does not mean that it can't happen.

10   Recently there have been several incidents of violence against judges. These are happening not only in court during criminal trials, but even during divorce and bankruptcy hearings which take place in the judge's office. In the court, the police and court officials may offer some protection to the judge, but in their offices they have no protection at all, except for a panic button. It is to the credit of many judges that they are often able to calm people down and avoid dangerous situations.
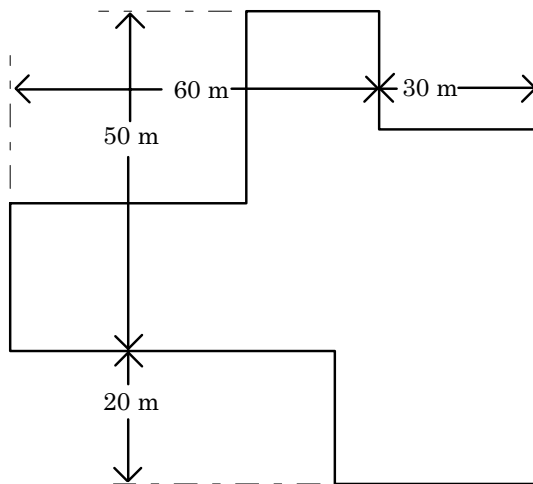
Which one of the following is a conclusion that can be drawn from the above passage?

A   People on trial should be shown more understanding and compassion.

B   The police's main role is to offer protection to the general public.

C   It is understandable for people to grow violent during a legal hearing.

D   Judges often provoke violence by their pompous manner.

E   Judges should be given more protection, particularly in their private offices.

11 Lucy leaves Avonhill and travels 6 km north to Boxhill and then 8 km east to Dagenhill. Fred leaves Avonhill and travels 4 km east then 3 km north to Crownhill. There is a straight road from Crownhill to Dagenhill.

How far has Fred to travel to meet with Lucy?

A Less than 3 km.

B At least 3 km but less than 4 km.

C At least 4 km but less than 7 km.

D Exactly 7 km.

E More than 7 km.

12 The following is a diagram of a paved area in a public park:

If a jogger runs one circuit around the edge of the paved area, how far has he covered?

A 160 m

B 240 m

C 260 m

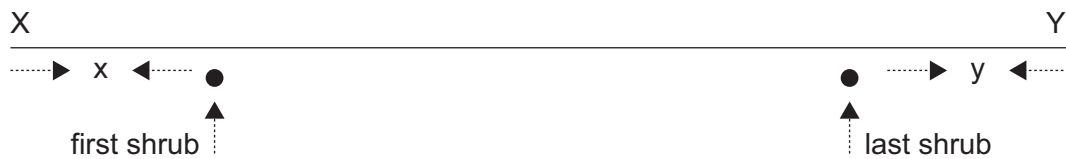**D** 320 m

E 400 m

 [Turn over

13 Suppose you wish to photocopy pages 86 to 123 of a book. You can photocopy a "double spread" of left-hand and right-hand pages onto one sheet of paper. Left-hand pages always have even page numbers; right-hand pages always have odd page numbers.

How many sheets of paper will you need to do this photocopying if you cannot tear any pages out of the book?

A 17

B 18

C 19

D 20

E 21

14 The time in the Netherlands is 1 hour ahead of Britain on 14 March. The British put their clocks forward by 1 hour on 15 March and the Dutch put their clocks forward by one hour on 31 March.

What is the time in the UK when it is 9 o'clock on 1 April in the Netherlands?

A 7 o'clock.

B 8 o'clock.

C 9 o'clock.

D 10 o'clock.

E 11 o'clock.

15 A garden has a frontage, X to Y, of 11 m. If shrubs are to be planted 1.6 m apart, how far in from the end of the frontage (X) should the first shrub be planted if there is to be an equal space at each end (x and y)?

A 0.1 m

B 0.7 m

C 0.8 m

D 1.4 m

E 1.5 m

16 'Queuing' is a remarkable and uniquely human form of behaviour. It involves cooperation with total strangers: people in queues are often people we have never met before, and who we are unlikely ever to meet again. Yet we cooperate with them, presumably because there are long-term benefits which outweigh the selfish, short-term benefits of 'pushing in'. Among other animals, no comparable behaviour is found. Some animals cooperate with other members of their family groups, but with strangers they are either hostile or defensive. They never queue.

Which of the following offers an explanation for the distinction made in the above passage?

A Various forms of cooperative behaviour are found among the higher animals.

B 'Pushing in' is a meaningless concept in communities that do not practise queuing.

C Consideration towards total strangers is behaviour characteristic of humans.

D Only humans are sufficiently rational to recognise long term benefits.

E There is short term as well as long term benefit to be gained from cooperation.

17 It would be wrong to wipe out mosquitoes, for example by saturating malarial areas with pesticide. Any scheme to destroy a species just because it is an enemy must be resisted. There are many species of animals and insects which have the capacity to harm or kill humans – for example, spiders, scorpions, sharks, crocodiles, lions, tigers, piranhas. If we destroy all of them, we will forever damage the ecosystem upon which we all rely.

Which of the following is an expression of the conclusion of the above argument?

A We should not try to wipe out mosquitoes.

B Any scheme to destroy a species should be opposed.

C Many species have the capacity to harm or kill humans.

D We should not act in ways which will damage the ecosystem.

E We should not regard mosquitoes as the natural enemies of mankind.

18 There was some suspicion that Sam had stolen the money which disappeared from someone's bag in the locker room, but she has denied it. If she had spent a lot of money on clothes last weekend, then we would have reason to think that she stole the money, because normally she could not have afforded them. But since she did not buy any clothes when we went shopping last weekend, she is not the thief.

Which of the following identifies the flaw in the above argument?

A It assumes that Sam had no need to steal the money.

B It assumes that Sam's denial of her guilt proves that she is innocent.

C It assumes that Sam could not have bought new clothes without stealing.

D It assumes that being extravagant with money is evidence that someone is guilty of stealing.

E It assumes that the lack of evidence of Sam's guilt proves that she is innocent.

19 Asha had her handbag and some jewellery snatched by four youths whilst her car was stationary at traffic lights. Her insurance company at first refused to pay out because Asha's policy excludes any theft from a car. It made no difference, they said, that she was in the car and the engine was running, and suggested that in future she should keep the doors locked. But, as Asha pointed out in her appeal, the bag was snatched out of her hands during a struggle and she was wearing the jewellery, which meant that both items were taken from her person. Therefore the insurance company will have to pay up.

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

A The insurers would have paid if the car doors had been locked.

B Thefts from the person are covered by Asha's insurance policy.

C Thefts from unattended vehicles are excluded from insurance cover.

D The insurers were wrong to exclude thefts from an occupied car.

E Asha did not read the small print in her insurance policy.

20 Concern about the effects of chemicals upon the environment has led to calls for more research. But we should not wait for further research before we ban some of the chemicals used by industry. If anyone has a good reason to think something is harmful, it should not be used until or unless the risk has been fully assessed and the results published, whatever the cost. We know enough about past mistakes to be forewarned. Much of the harm to wildlife and humans is long-term, and the disturbing results we see today reflect the chemical environment of up to 40 years ago. Thousands more chemicals have been released into the environment since then.

Which of the following is most in need of clarification before accepting the argument and its conclusion?

A What is meant by 'further research'.

B Exactly how many thousands of chemicals have been released.

C What is meant by a 'good reason'.

D Who should carry out the 'further research'.

E Which industries are being referred to.

21 The table below shows the price of various ladders. I need a ladder at least 8 m long to reach the gutter of my house. I want to store it in my garage which is only 4.2 m long.

What is the lowest price I must pay to satisfy these conditions?

Length closed (m)	Length extended (m)	Lightweight (DIY use)	Heavyweight (Trade use)
Triple section ladders:			
2.6	6.0	£82	£100
3.0	7.5	£104	£120
3.5	9.0	£133	£150
4.0	10.0	--	£169
Double section ladders:			
3.0	5.3	£52	£64
3.5	6.2	£67	£82
4.0	7.2	£78	£95
4.5	8.3	£98	£115
5.0	9.0	--	£140
5.5	10.0	--	£155

A £78

B £98

C £133

D £150

E £169

22 Sue makes hand-painted cards and sells them at craft fairs.

Her materials cost 20p per card and each takes 5 minutes to make. She considers that her time is worth £6 per hour.

To take into account her selling time and the cost of hiring her stall, she charges 50% more that it costs to make the cards (including her labour).

How much will she sell each card for?

A 30p

B 70p

C 95p

D £1.05

E £1.80

23 There are 10 boxes of chocolate chip ice creams in stock in a shop.

Each box contains 36 ice creams. It takes two weeks from the placement of an order to the receipt of the stock from the manufacturer. 75 chocolate chip ice creams are sold each week.
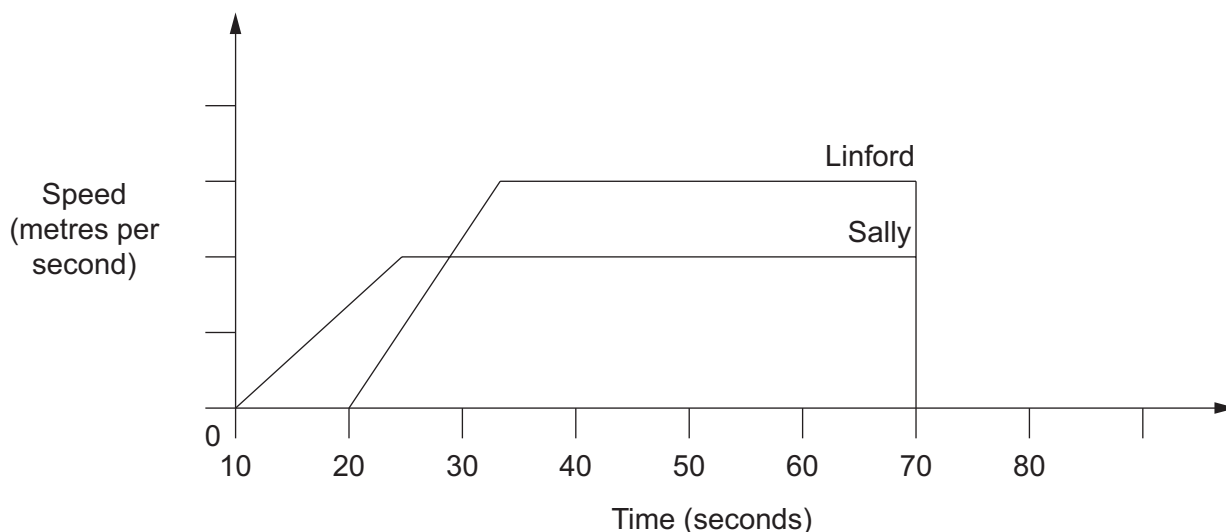
How many whole weeks remain until the chocolate chip ice cream must be reordered without running out of stock?

A 2

B 3

C 4

D 5

E 6

24 Sally and Linford ran a race against each other recently under the following conditions:

(a) They both started side by side.

(b) When the starting pistol was fired, Sally began to run immediately, but Linford had to perform 10 press-ups before setting off.

(c) The winner was the person in the lead exactly one minute after the starting pistol has been fired.

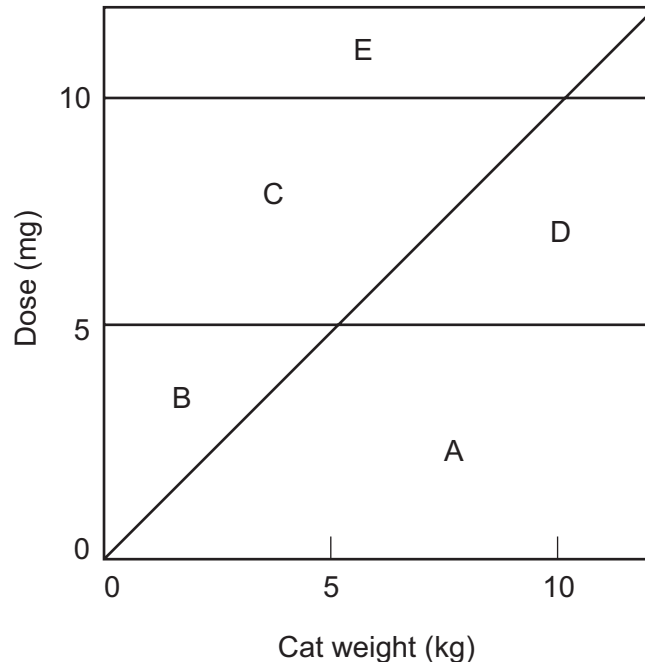This graph shows the speeds of the two competitors during the course of the race.

Which of these conclusions may be drawn from the information in this graph?

A   Linford ran for 50 seconds.

B   Linford overtook Sally after 20 seconds.

C   Linford was 10 metres behind Sally when he began to run.

D   Linford made a bad start.

E   Linford stayed the same distance ahead of Sally during the second half of the race.

25 The dosage of a drug for adult cats is defined as follows:

1. The minimum dose is 5 mg per day.
2. The dose should not exceed 1mg per kg of the cat's weight.
3. The maximum dose is 10 mg per day.

Which area of the graph below represents these conditions?

26 An argument consists of a conclusion supported by one or more reasons.

Under this definition, which of the following is an argument?

A Most shops and checkouts nowadays are equipped with sophisticated forgery-detection devices. At the same time bank-notes are becoming more and more complicated and difficult to copy. Yet the forgers still find ways to stay ahead of the game.

B Someone has just come into the shop and paid me with four banknotes that all have the same serial number. They must be forgeries. Genuine banknotes would all have different serial numbers.

C There are a lot of forged banknotes around these days. If you are unlucky enough to be passed a forged note you should take it to the police. There are machines that can detect counterfeit money.

D I was once shown two banknotes, one of which, I was told, was a forgery. If it was a forgery, it was a very good one. With modern technology it is possible to make forgeries which are almost indistinguishable from the real thing.

E It is not only money that forgers are interested in. Fake ID cards and passports are big business. So are pirate videos, CDs and computer software. (adapted from CIE tutor support pack)

27 Polar bears in captivity frequently engage in obsessive patterns of behaviour, pacing back and forth on the same spot, swinging their heads from side to side and other signs of stress. They do this even when their living areas are quite spacious. What this shows is that conditions of captivity are not a satisfactory substitute for the natural environment of the polar bear species.

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

A Polar bears are especially ill-suited to a life in captivity.

B Many polar bears in the wild engage in obsessive patterns of behaviour.

C Polar bears in captivity are much better fed than those living in the wild.

D Polar bears in the wild cover many miles a day when they are hunting for food.

E Polar bears which have been reared in captivity are incapable of surviving in the wild.

28 The ability of infants to learn language with considerable ease has encouraged some linguists to argue that it is not just a product of learning but also an inborn feature of the human brain. Evidence for this position has come from a group of very young deaf children in Nicaragua. Though they were put in a school whose teachers knew no sign language, and though they had not been taught a language, the children developed their own sign language, which over time produced its own structure and grammar. This evidence shows that, even without the normal learning process, …..…………………. The ability to use language must, therefore, be something which we are born with.

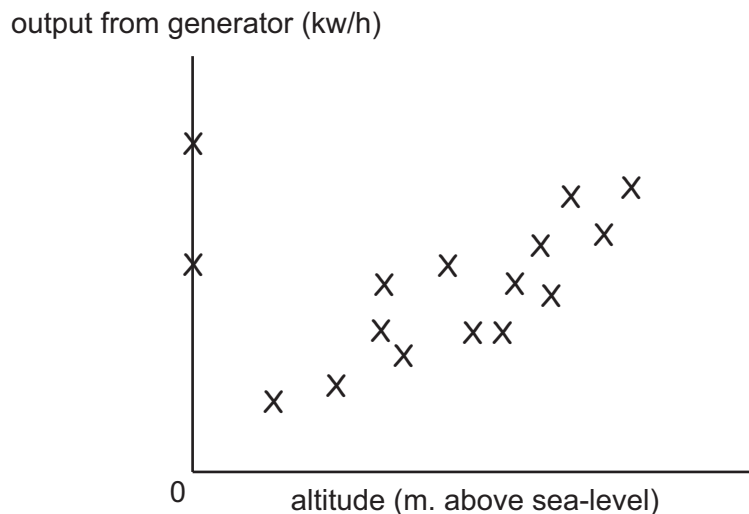Which of the following, if inserted in the space (…), most logically completes the passage?

A deaf children should be taught sign language.

B linguists have underestimated the language skills of infants

C deaf children can learn as quickly as hearing children.

D sign language can be easily acquired.

E language can be acquired and developed.

29 Only shareholders are eligible to vote on the proposed take-over of the company by a large multi-national corporation. They can either vote for or against, or abstain by not voting at all; and the side with the more votes wins. So, if the majority vote in favour, the take-over will be approved. However, less than half of the eligible voters are in favour of the proposal, which means that the take-over will definitely not be approved.

Comment: A number of the shareholders are intending to abstain.

If true, the comment:

A severely weakens the argument.

B weakens the argument, but only slightly.

C has no impact on the argument.

D offers some support to the argument.

E offers strong support to the argument

30 The average daily output of energy from 16 wind generators placed at different altitudes was compared, and the data recorded as follows. The two that were at sea level were situated offshore.

Which of the following can reliably be inferred from the above data?

A The best place for a wind generator is offshore.

B The output from inland wind generators tends to increase with altitude.

C The higher above sea-level a wind generator is placed the more energy it produces.

D Most wind generators are placed in hilly areas.

E There is no significant correlation between the altitude of a wind generator and its energy output.

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