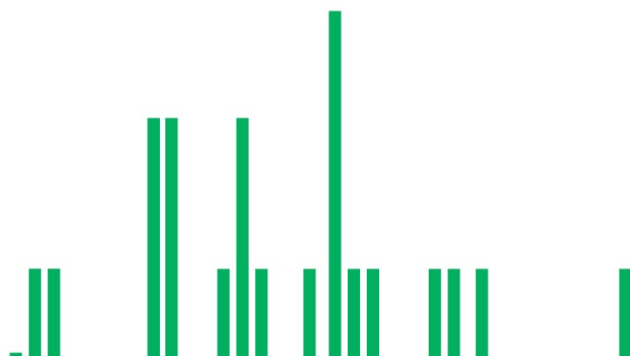




# Cambridge Assessment Admissions Testing

## THINKING SKILLS ASSESSMENT (TSA)

### Question guide



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## Introduction

Applicants for certain university courses have studied a wide range of subjects and come from different backgrounds. To assess their suitability for their chosen courses, universities may ask applicants to take the Thinking Skills Assessment (TSA). Check which universities use the test on [our website](#).

TSA is an assessment of two kinds of thinking:

### Problem Solving: reasoning using numerical skills.

Many of the problems encountered in academic and professional work are novel. No ready 'off-the-peg' solution is available. The task is to find or create a solution.

### Critical Thinking: reasoning using everyday written language.

The skill of Critical Thinking is essential for many areas of academic study and often involves considering an argument put forward to promote or defend a particular point of view. Historians put forward arguments to explain and interpret past events, while scientists use argument to evaluate evidence from their experiments. Whatever the subject of study, it is necessary to understand the arguments presented by others and to be able to assess whether the arguments establish their claims.

These are both skills which are considered to be important in higher education.

## Overview of the test

Both Problem Solving and Critical Thinking are assessed by multiple-choice questions. In each case a stimulus is presented, followed by the stem (question) and five options. One of the options is the correct answer (key) and the remaining four options (distractors) are wrong.

In the case of the Critical Thinking questions, the stimulus is a passage of text. In Problem Solving, the stimulus may include a diagram, a table of information (a railway timetable for example), or a graph. The options may also be graphs or diagrams.

TSA consists of 50 multiple-choice questions to be taken in the time allowed of 90 minutes. Marks are not deducted for incorrect answers, so candidates should attempt all questions.

The standard TSA contains 25 Problem Solving questions and 25 Critical Thinking questions. The questions are presented roughly in order of difficulty, with the different types of Problem Solving and Critical Thinking questions interspersed throughout the test.

TSA Oxford, the version of the test used for admission to the University of Oxford, includes an additional 30-minute writing task for most courses (please check the University of Oxford website to confirm their requirements). In this section, candidates must answer one from a choice of four prompts.

Calculators and dictionaries are **NOT** permitted.

## Problem Solving

There are three kinds of Problem Solving question in the test, each assessing a key aspect of insight into unfamiliar problems. The three kinds are Relevant Selection, Finding Procedures, and Identifying Similarity. Although most questions fall into one category, some questions fit into one or more of the categories.

The following examples show the three kinds of Problem Solving question you will find in the test.

### Example 1: Relevant Selection

When real-world problems are encountered, it is unusual to have only the information that is required to reach the solution. Instead, there will usually be a much larger set of information, much of which is unimportant. The first step in solving the problem is to identify those bits of the information that are relevant. Questions testing this aspect present you with information which is not important, perhaps redundant, and possibly distracting. This kind of question demands Relevant Selection, in which the task is to select and apply only that information which is necessary and helpful in finding a solution.

In order to qualify for a bonus, employees must fulfil certain criteria:

£1,000 bonus:	Absences less than 5%
	Production targets exceeded by at least 10%
	Rejects are less than 5% of output
£500 bonus:	Absences less than 10%
	Production targets met
	Rejects are less than 8% of output

Workers performed as follows:

	<i>Smith</i>	<i>Jones</i>	<i>Patel</i>	<i>Owololu</i>	<i>McKay</i>
<i>attendance (%)</i>	95	90	100	96	97
<i>over production target (%)</i>	+5	+6	+12	0	-4
<i>product accepted (%)</i>	98	96	95	93	96

Who qualifies for a bonus?

- A** Nobody
- B** Smith
- C** Patel and Smith
- D** Owololu, Patel and Smith
- E** Jones, Owololu, Patel and Smith

## Answer and explanation

The answer is **D**. Since the question asks only whether any bonus is achieved, the easier criterion can be used (that for the £500 bonus).

On the first criterion (absences less than 10%) all but Jones qualify: S P O M

On the second criterion (production targets met) all but McKay qualify: S J P O

On the third criterion (rejects less than 8%) all qualify: S J P O M

So only S P and O fulfil all three: **D**

**A** Checks against the higher targets, no one reaches all the criteria.

**B** Checks against the higher targets, but thinks Smith reaches the first and second when he is only on the border which is not successful.

**C** Fails to count O as his production was just on target.

**E** Thinks J qualifies although his absences are exactly 10%, not below.

## Example 2: Finding Procedures

Sometimes you will find that even if you have selected all of the relevant information, no solution presents itself. You then have to find a method or procedure which you can use to generate a solution. Typically you will have three or four numbers which have to be operated on. This aspect of Problem Solving is called Finding Procedures.

Three thermometers are each accurate to within 2 degrees above or below the temperature they actually read. One reads  $7^\circ$ , one reads  $9^\circ$  and one reads  $10^\circ$ .

What is the minimum range in which the true temperature lies?

**A**  $5^\circ - 12^\circ$

**B**  $7^\circ - 9^\circ$

**C**  $8^\circ - 10^\circ$

**D**  $8^\circ - 9^\circ$

**E**  $7^\circ - 10^\circ$

## Answer and explanation

The answer is **D**. The method here is to search for the acceptable highest and lowest temperatures for the conditions to be met, realising that the middle value is irrelevant. As one reads  $7^\circ$ , the temperature cannot be above  $9^\circ$  and, as another reads  $10^\circ$ , the temperature cannot be below  $8^\circ$ . This is given by **D**.

**A** This is obtained by subtracting 2 from the lowest and adding 2 to the highest.

**B** Takes the lowest reading and goes to 2 above it.

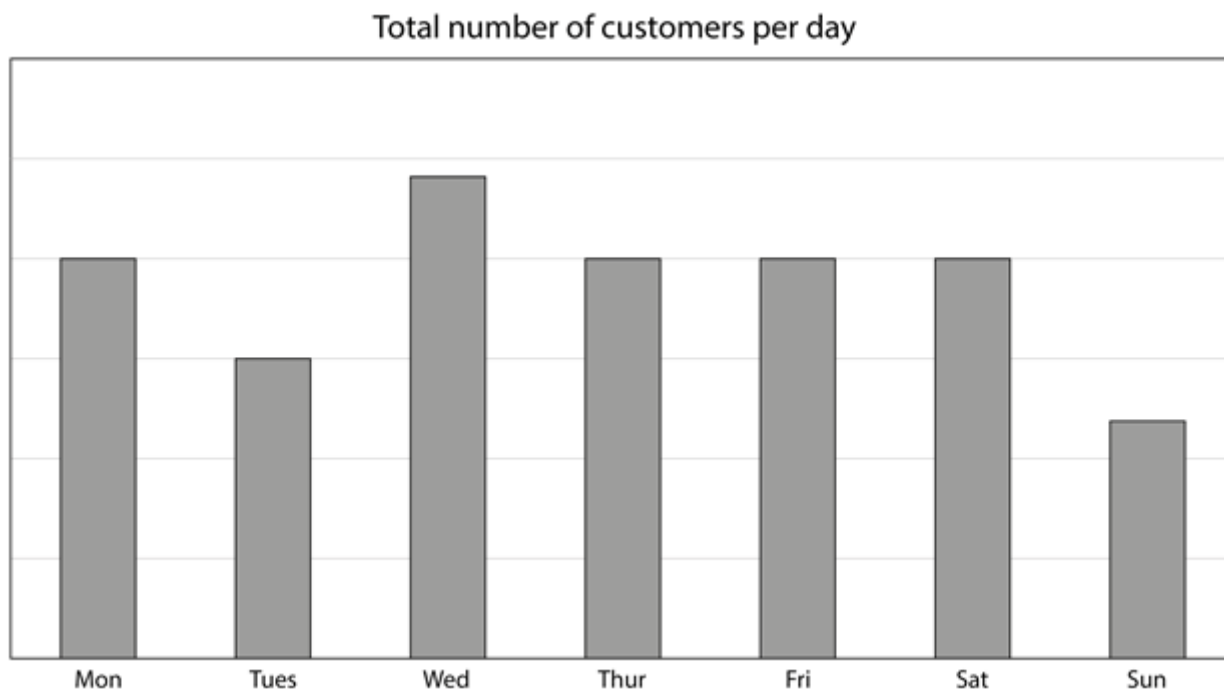
**C** Takes the highest reading and goes to 2 below it.

**E** Takes the range to be from the lowest reading to the highest reading.

### Example 3: Identifying Similarity

In these questions you will typically be presented with information or data represented in more than one way (including e.g. charts, tables, etc.). To answer the question, you will need to understand the relationships between these and to identify any similarity in the data they represent.

Graham recorded the number of visitors to his shop each day last week and presented the results in the bar chart below:



When he calculated the number of customers per hour he found that he had the same number for five of the days, but the values for Tuesday and Friday were slightly higher. The opening hours of the shop are as follows:

<i>Day</i>	<i>Open</i>	<i>Close</i>
Monday	8am	6pm
Tuesday	?	?
Wednesday	8am	8pm
Thursday	8am	6pm
Friday	?	?
Saturday	8am	6pm
Sunday	10am	4pm

Which one of the following could be the opening hours of the shop for Tuesday and Friday?

- A Tuesday 9.30am - 5.30pm, Friday 8.00am - 6.30pm
- B Tuesday 9.00am - 4.30pm, Friday 8.30am - 6.00pm
- C Tuesday 9.00am - 4.30pm, Friday 8.00am - 6.00pm
- D Tuesday 9.00am - 5.00pm, Friday 8.00am - 6.30pm
- E Tuesday 10.00am - 5.00pm, Friday 8.30am - 6.00pm

## Answer and explanation

The answer is **E**. The bar for Tuesday is three quarters the height for Thursday, so the shop must be open for less than 7 and a half hours if the average number of customers per hour is to be higher. The shop must also be open for less than 10 hours on Friday. The only option that satisfies these conditions is **E**.

**A** is open for 8 hours on Tuesday.

**B** is open for exactly 7 and a half hours on Tuesday.

**C** is the values if you assume the same average number of customers per day across the week.

**D** is open for too long on both days (misinterpreting the effect of the average number being higher).



# The mathematical knowledge and skills needed

## Number concepts

- simple fractions
- place value (for example, knowing that the '5' in '7654' indicates '50')
- ideas about percentages (for example, the idea that 1% could be thought of as '1 in every 100', and that if 20% of a cake has been eaten, then 80% of it must be left)

## Numerical operations

- the four rules of number (addition, subtraction, multiplication, division)
- percentage operations (for example, if something was sold at £10, and is now advertised at '20% off', how much would the customer pay?)
- calculations in everyday contexts (complex calculations with fractions and decimals are not required)
- calculation of an average (mean)

## Quantities

- time and the calendar
- money
- measures

Knowledge of the following relationships is also required:

$$1 \text{ km} = 1000 \text{ m}$$

$$1 \text{ m} = 100 \text{ cm}$$

$$1 \text{ cm} = 10 \text{ mm}$$

$$1 \text{ kg} = 1000 \text{ g}$$

Sometimes questions may use other common units of measurement (e.g. feet, tonnes, gallons), but knowledge of numerical relationships between these (e.g. 12 inches = 1 foot) is **not** required.

## Space and spatial reasoning

- area (including the calculation of the area of a rectangle)
- perimeter (including calculation)
- volume (including the calculation of the volume of a box)

## Tables and graphs

- extracting information from graphs and charts
- extracting information from tables

## Critical Thinking

Critical Thinking in the context of TSA can best be made clear by the following definition: In an argument, **reasons** are put forward as grounds for a **conclusion**. The argument is a good argument provided its conclusion follows from the reasons. That is to say, if you accept the reasons, you must accept the conclusion. **For the purposes of this test, the reasons given should be accepted as being true.**

Here is an example of a simple argument:

Jill promised she would attend the meeting or send a substitute. We know she can't attend the meeting. So we are expecting a substitute.

The structure of this argument is as follows:

**Reasons:** Jill promised she would attend the meeting or send a substitute. We know she can't attend the meeting.

**Conclusion:** So we are expecting a substitute.

In this case, the conclusion appears at the end of the argument, and is introduced by the word 'so'. Sometimes a conclusion may be introduced by words such as 'therefore', 'thus', 'it follows that'. However, sometimes a conclusion may not contain any such word. It is also important to note that a conclusion may appear at the beginning of, or in the middle of, an argument, rather than at the end. For example, the above argument could have been written in this way:

We know Jill cannot attend the meeting. We are expecting a substitute. She promised she would attend the meeting or send a substitute.

or in this way:

We are expecting a substitute for Jill. We know she cannot attend the meeting, and she promised she would attend or send a substitute.

In both these cases, 'We are expecting a substitute (for Jill)' is the conclusion, because it is the statement which **follows from, or is supported by**, the rest of the passage.

Some arguments may omit a crucial stage in the reasoning – an **assumption** which must be made in order for the conclusion to follow. Here is an example:

She doesn't stand much of a chance. The polar bear is right behind her.

In this argument it is not explicitly stated that polar bears are dangerous, but the conclusion that 'she doesn't stand much of a chance' depends upon the belief that polar bears are dangerous. This belief is taken for granted, or assumed.

In summary, the features of arguments are:

**reason(s)**

**conclusion(s)** (which may or may not be introduced by words such as 'so', 'therefore')

**assumption(s)** i.e. crucial parts of the argument which have not been stated.

Arguments can be much more complex in structure than the examples given so far and they can be lengthy. But whatever their length and complexity, there are certain skills involved in understanding and evaluating arguments. These are: Identifying the Main Conclusion, Drawing a Conclusion, Identifying an Assumption, Assessing the Impact of Additional Evidence, Detecting Reasoning Errors, Matching Arguments and Applying Principles. The following examples show the seven kinds of Critical Thinking question you will find in the test.

## Example 1: Identifying the Main Conclusion

In this type of question you have to judge which one of the statements **A** to **E** best expresses the main conclusion of the argument. So the first important step is to read the passage carefully and pick out the sentence which is the conclusion. Remember that the conclusion can appear anywhere within an argument – not necessarily at the end. Remember also that what you are looking for is the statement which follows from, or is supported by, the rest of the passage.

Vegetarian food can be healthier than a traditional diet. Research has shown that vegetarians are less likely to suffer from heart disease and obesity than meat eaters. Concern has been expressed that vegetarians do not get enough protein in their diet but it has been demonstrated that, by selecting foods carefully, vegetarians are able to amply meet their needs in this respect.

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

- A** A vegetarian diet can be better for health than a traditional diet.
- B** Adequate protein is available from a vegetarian diet.
- C** A traditional diet is very high in protein.
- D** A balanced diet is more important for health than any particular food.
- E** Vegetarians are unlikely to suffer from heart disease and obesity.

## Answer and explanation

What does this argument seem to be trying to get us to accept? It seems to be trying to persuade us that vegetarian food can be healthier than a traditional diet, as stated in the first sentence. We need to see whether the rest of the passage gives us reason to believe this. Two reasons are given:

1. Vegetarians are less likely to suffer from heart disease and obesity than meat eaters.
2. A vegetarian diet can contain sufficient protein.

We may not know whether these reasons are true, but if they were true, they would indicate that vegetarian food is healthier in one respect than a traditional diet which includes meat, and that a vegetarian diet does not necessarily have the disadvantage to health (providing insufficient protein) which we may have thought. So it seems clear that the first sentence of the passage is being offered as a conclusion.

**A** is the statement which best expresses this conclusion.

**B** is not the main conclusion, but it is one of the reasons for the main conclusion – labelled above as reason 2.

**C** cannot be the main conclusion, because it is not stated in the passage. It is taken for granted that a traditional diet provides enough protein, but even this is not explicitly stated.

**D** is not the main conclusion, as it is not stated in the passage. No attempt is made to define a balanced diet. The passage simply makes a comparison between a traditional diet and a vegetarian diet.

**E** is not the main conclusion, but it is close in meaning to one of the reasons for the main conclusion, labelled above as reason 1.

## Example 2: Drawing a Conclusion

When you are asked which conclusion follows, you need to consider each of the statements **A** to **E**, and to think about whether the information in the passage gives you good reasons to accept the statement. Note that this differs from the Identifying the Main Conclusion question type (see previous page) in that the conclusion does **not** appear in the passage.

Those in favour of coursework contributing to A-level grades say that this is much fairer than assessment by exam only, as it means that students who are willing to work hard but who perform poorly in exams will have a better chance of doing well. However, this arrangement currently allows far more opportunity for cheating, casting doubt on its fairness. For example, there is a growing market for customised essays, available (for a fee) via the internet. At the moment, the only deterrent is a teacher's vigilance, but while teachers might identify work which seems atypical for individual students, they won't necessarily detect when, for example, a student has had an unacceptable amount of help from family or friends.

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

- A** Assessment by coursework is not necessarily fairer than assessment by examination.
- B** The opportunities for cheating in coursework mean that A-levels should be assessed by exams only.
- C** Traditional examinations are still the fairest way of grading A-level students.
- D** There is no entirely fair way of assessing students at A-level.
- E** Examinations do not assess how hard a student has worked.

## Answer and explanation

The answer to this question is **A**, because the passage argues in the following way:

Firstly it presents the statement that the contribution of coursework in A-level assessment is seen to be fairer than an examination only because it allows students who perform poorly in examinations but who work hard to have a better chance of doing well.

However, it tells us that coursework is open to cheating through the buying of essays via the internet and also that cheating is possible through having help from family and friends.

So, teachers are the only deterrent against cheating in coursework at the moment – as they can detect some instances but not all.

Therefore, it concludes that the inclusion of coursework in A-level assessment does not mean the system is fairer than assessment by examination only.

**B** goes further than the conclusion suggested by the passage. The phrase 'At the moment, the only deterrent' suggests that other strategies may be employed in the future.

**C** refers to one of the reasons why the current system isn't fair, as a good student could perform badly on the day of the examination and so not receive an appropriate assessment of their ability.

**D** goes further than the passage by suggesting that there is no fair way to assess students at A-level. This may be true but is not claimed by the passage.

**E** while correct, is not a conclusion but is a part of the argument.

### Example 3: Identifying an Assumption

An assumption is something which is not stated in the argument, but which is taken for granted in order to draw the conclusion. So you first need to sort out what the conclusion of the argument is. Ask yourself what is the main point which the argument tries to get you to accept. Then look for the reasoning it gives to support this conclusion, and think about any important point which is not actually stated in the reasoning.

People who write books revealing the inner workings of the secret service have usually been dismissed from the service or have retired with a sense of grievance against it. The result is that only the seedy side of the secret service is exposed. This is partly because those who would paint a more favourable picture are unwilling to flout the legal restrictions placed on all who have been employed in the secret service, and partly because the records of the organisations are not available to outsiders.

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

- A** The records of the secret service are readily available to its former employees.
- B** The work of the secret service is undervalued as a result of publication of distorted accounts of its working.
- C** The seedy side of the secret service is of minor significance compared with the important work it carries out.
- D** Legal restrictions against revealing the inner workings of the secret service do not apply to those who have been dismissed.
- E** Those who have a grievance against the secret service are either unable or unwilling to give a balanced account of its workings.

### Answer and explanation

The answer to this question is **E**. The conclusion is that only the seedy side of the secret service is exposed. The reasons given for this are that:

1. The records of the secret service are not generally available.
2. There are legal restrictions on employees of the secret service which forbid them from writing about it.
3. The only employees or ex-employees who would ignore this restriction are those with a sense of grievance against the secret service.

From these reasons, it would not follow that only the seedy side of the secret service was exposed if those with a grievance were able and willing to give a balanced account. So it must be assumed that either they are not able or they are not willing to do so.

**A** is not assumed. The passage says that the records are not available to outsiders. But ex-employees may or may not have access to records. We do not need to assume that they do have access in order to conclude that when they write about the secret service, they reveal only its seedy side.

**B** is not assumed, because it goes further than the passage. It considers the effects of publications about the secret service. But what we are looking for as an assumption is something which helps to support the conclusion of the passage.

**C** is not assumed, because the passage says nothing about the importance of the work carried out by the secret service. It does suggest that there is another side to the secret service, besides the 'seedy side', but no assumptions can be made about which is more important.

**D** is not assumed, because the passage says that the legal restrictions apply to 'all who have been employed', and this must include those who have been dismissed.

## Example 4: Assessing the Impact of Additional Evidence

Here you are asked to consider what would weaken the argument, so you first need to be clear about what the argument is trying to establish. Work out what the argument is, then consider what effect each of the possible answers would have on it.

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.

### Answer and explanation

The answer is **B**. The conclusion of the argument is that the obsessive behaviour of polar bears in zoos shows that conditions of captivity are not a satisfactory substitute for the polar bear's natural environment. But if **B** is true, that is, if polar bears in the wild behave in the same way as those in captivity, then the behaviour of those in captivity cannot be taken as good evidence that the conditions of captivity are unsatisfactory.

**A** does not weaken the argument. If polar bears are ill-suited to a life in captivity, it follows that captivity is not a satisfactory substitute for their natural environment. So **A** strengthens the argument.

**C** does not weaken the argument, even though it suggests that polar bears might be better off in one respect in captivity (i.e., better fed). Captivity might nevertheless lead to stress which is not suffered by polar bears in the wild.

**D** does not weaken the argument, because even if polar bears cover many miles per days in the wild, pacing around in captivity may not be a satisfactory substitute for this freedom to roam.

**E** does not weaken the argument, because the conclusion is about the best environment for the polar bear species. Information about the best environment for those polar bears which have been reared in captivity cannot weaken this general conclusion about the species as a whole.

## Example 5: Detecting Reasoning Errors

You are asked to identify the flaw in the argument, which means that you must explain why the conclusion does not follow from the reasons which are given. So you need to be clear about what the conclusion is, and what reasons are meant to support it. Ask yourself what the main point is which the argument is trying to establish, and how it tries to establish it.

Some people attempt to smuggle a pet into Britain because of the quarantine regulations which are aimed at preventing rabies from entering the country. If there were no such regulations, there would be no reason to smuggle pets. Since the most likely source of a rabies outbreak in Britain is a smuggled pet, if the quarantine regulations were abolished, the danger of a rabies outbreak would be reduced.

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

- A** Rabies is not likely to enter Britain in a wild animal.
- B** The quarantine regulations cannot prevent owners from smuggling their pets.
- C** If there were no quarantine regulations, pets with rabies could enter Britain easily.
- D** If people did not want to travel with their pets, there would be no need for quarantine regulations.
- E** If pets were inoculated against rabies, there would be no need for quarantine regulations.

## Answer and explanation

The answer is **C**. The argument draws the conclusion that if quarantine regulations were abolished, there would be less likelihood of an outbreak of rabies. The reasoning offered in support of this is:

1. Smuggled pets are the most likely source of an outbreak of rabies.
2. If there were no quarantine regulations, no-one would be tempted to smuggle pets into Britain.

But the conclusion does not follow, because if there were no quarantine regulations, smuggled pets would no longer be the most likely cause of a rabies outbreak. Instead, the most likely cause would be pets which could be brought in without breaking any law. **C** is the statement which best explains this.

**A** does not describe the flaw, because it simply states something with which the argument would agree.

**B** does not describe the flaw, because it states something which the argument depends on – the idea that quarantine regulations cannot prevent outbreaks of rabies.

**D** does not describe the flaw, because it concerns the reason why quarantine regulations are thought to be necessary, rather than the consequences of getting rid of these regulations.

**E** does not describe the flaw, because it does not mention what would happen if quarantine regulations were abolished. Instead, it suggests a way to make them unnecessary, whilst still being able to prevent an outbreak of rabies.

## Example 6: Matching Arguments

This type of question asks you about similarity between arguments, but not the sort of similarity where two arguments are about the same topic. The similarity you are looking for is in the structure or the pattern of the argument.

I cannot get any answer when I dial my mother's number. Either she is not answering her phone or she has decided to stay away on holiday for an extra week. She must still be away. She would never let the phone ring without answering it.

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

- A** If I want to remain fit and healthy I have to watch my diet and take exercise. I want to stay fit so I eat carefully and go running regularly.
- B** If Denise had carried on going to the gym and eating sensibly, she would never have got so run down. She did get run down, so she must either have given up her diet or stopped going to the gym.
- C** Joe is looking a lot fitter. Either he has cut down on his eating or he has been out running every day. I know for a fact that Joe couldn't keep to a diet, so it must be exercise that's done it.
- D** Anyone who swims over twenty lengths a day has to be pretty fit. Sheena swims thirty lengths a day. Therefore Sheena must be quite fit.
- E** Sticking to a diet is hard at first but after about two weeks most people get used to it. I have been dieting for nearly two weeks so I should be getting used to it soon.

## Answer and explanation

As a first step to finding the structure in this argument, look at the passage to see if there are repeated statements which you could represent with a letter (e.g. X or Y). It is slightly difficult to do that in this argument, because the repeated statements are worded in a slightly different form each time. But we can see that there are two important ideas which are mentioned twice:

My mother is (must be) away.

My mother is not answering the phone (is letting the phone ring without answering it).

If we replace these statements with X and Y, we can see the following structure.

Either X is true or Y is true.

Y cannot be true.

So X must be true.

X = my mother is away.

Y = my mother is letting the phone ring without answering it.

We now have to look for the argument which has this same structure.

**C** is the answer. In this case X = Joe is exercising, Y = Joe is dieting and the structure is the same:

Either X (Joe is exercising) or Y (Joe is dieting).



Y (Joe is dieting) cannot be true.

So X (Joe is exercising) must be true.

**A** has a different structure:

If I want X, I have to do Y.

I want X.

So I do Y.

X = remain fit (and healthy).

Y = watch my diet and take exercise.

**B** has a different structure:

If X and Y had happened, Z would not have happened.

Z did happen.

So either X didn't happen or Y didn't happen.

X = Denise going to the gym.

Y = Denise eating sensibly.

Z = Denise getting run down.

**D** has a different structure:

All people who do X are Y.

Sheena does X.

Therefore Sheena is Y.

X = swim over twenty lengths a day.

Y = fit.

**E** has a different structure:

Most people who do X, succeed in Y.

I have done X.

So I should succeed in Y.

X = stick to a diet for 2 weeks.

Y = getting used to the diet.

## Example 7: Applying Principles

When you are asked which statement illustrates the principle underlying the passage, you must first identify this principle. A principle is a general recommendation, which, in the passage, will be applied to just one particular case, but which could also be applied to other cases. For example, someone might use the principle 'Killing is wrong' in order to argue for pacifism, i.e. for refusing to go to war. If we are to accept the principle that killing is wrong, then it also follows that capital punishment is wrong, and even that killing in self-defence is wrong. In order to answer this type of question, you first need to understand the argument, so look for the conclusion, and for the reasons, in the usual way. This should enable you to see what principle the argument relies on in order to draw its conclusion. You then need to consider each possible answer to see which one follows from the principle.

Smokers who suffer from heart disease which is caused by their smoking should not be allowed to get free health treatment. That is because this is an example of self-inflicted illness. Those whose actions have caused illness or injury to themselves should make a financial contribution to their treatment.

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

- A** Children should get free dental treatment, even if they eat sweets which cause dental decay.
- B** Heart disease sufferers who can afford to pay for health treatment should not receive free treatment.
- C** Smokers who cannot afford to pay for health care should be allowed free treatment when they are ill.
- D** People who are injured in car accidents should receive free treatment regardless of whether they were wearing a seat belt.
- E** Motor cyclists whose head injuries are caused by not wearing a crash helmet should make a financial contribution to their treatment.

## Answer and explanation

The conclusion of this argument is that smokers who get heart disease as a result of smoking should not get free health treatment. The reason given for this is that their illness is self-inflicted. This reasoning relies on the general principle that if your actions have caused your illness or injury, you should make a financial contribution to your treatment.

The correct answer is **E**, which applies the principle to motor cyclists whose failure to wear a crash helmet has caused their head injuries.

**A** is not an application of the principle, because it suggests that even if a child's actions (eating sweets) have caused a health problem (dental decay), the child should nevertheless have free treatment.

**B** is not an application of the principle, because it makes a recommendation based on people's ability to pay for treatment, rather than on whether their actions have caused their illness.

**C** is not an application of the principle, because, like **B**, it makes its recommendation solely on the ability to pay.

**D** is not an application of the principle because it recommends free treatment regardless of whether people's actions have contributed to their injuries.

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