

Academic Reading Paper 08

Triangles, Placebos and Interviews

Time allowed: 1 hour

INSTRUCTIONS TO CANDIDATES

- Do not open this booklet until you are told to do so.
- Write your name and the date at the top of the answer sheet.
- Answer **all** the questions.
- Write your answers **on the answer sheet**, not in this booklet.
- You must transfer your answers within the hour. **No extra time is given for transferring answers in the Reading test.**
- Do not remove this booklet from the examination room.

INFORMATION FOR CANDIDATES

- There are 40 questions in this paper.
- Each question carries one mark.
- There are three passages, with 13, 13 and 14 questions.

These passages were written for this library. They are **not** reproduced from any published past paper. The format, timing and task types follow the published specification for the Academic Reading test so that sitting this on paper feels like the real thing.

You should spend about 20 minutes on Questions 1–13, which are based on Reading Passage 1 below.

Measuring a subcontinent

In April 1802 a British officer named William Lambton laid out a straight line on level ground near Madras and measured it with steel chains, repeatedly, until he was satisfied to within a few centimetres. The line was about twelve kilometres long and it took him nearly two months. Everything that followed for the next seventy years rested on it, because in the method Lambton was about to use only one distance ever has to be measured on the ground. Every other distance in the survey is calculated.

The method is triangulation and the principle is simple enough to state in a sentence. From each end of a measured baseline, sight a distant third point and measure the two angles; the shape of the triangle is then fixed, so the two unmeasured sides can be computed. Each of those sides now serves as the baseline for the next triangle, and the next, until a net of triangles covers a country. The arithmetic is elementary. The difficulty is entirely in the angles, because an error of one second of arc, repeated across hundreds of triangles, becomes an error of kilometres at the far end.

The instruments were therefore enormous. Lambton's great theodolite weighed about half a tonne, needed a dozen men to move it, and had to be hauled to the top of every hill and every purpose-built masonry tower in the chain; on one occasion it fell from a temple in Thanjavur and had to be repaired in camp over six weeks. Observation was done at night, with lamps set on the distant stations, because daytime air over the Indian plains shimmers badly enough to move a target by more than the survey could afford.

The undertaking that grew out of that first baseline was called the Great Trigonometrical Survey, and its central task was an arc of meridian running from Cape Comorin at the southern tip of the peninsula to the Himalaya, some two and a half thousand kilometres north. Lambton worked on it for twenty-one years and died in the field in 1823. George Everest took over, completed the Arc in 1841, and was succeeded by Andrew Waugh. The human cost was not incidental. Parties working in the forested lowlands below the mountains lost men to fever season after season, and in some years the survey buried more of its staff than it hired.

The result most people have heard of came out of an office rather than a field camp. The heights of the Himalayan peaks were computed in Calcutta from angles measured more than a hundred and fifty kilometres away, corrected for the curvature of the earth and for the bending of light through the atmosphere. In 1852 the chief computer of the survey, Radhanath Sikdar, worked through the observations for a summit then known only as Peak XV and reported that it appeared to be the highest mountain in the world. The figure was checked for four years before Waugh announced it.

The name was contested at once. Waugh proposed calling the peak after his predecessor, and George Everest objected: the mountain, he said, had local names, his own could not be written in Hindi, and the survey's own convention was to use local usage where it existed. He was overruled in 1865. The conven-

tion he was defending is now the standard practice of the discipline, which is a small irony attached to a large mountain.

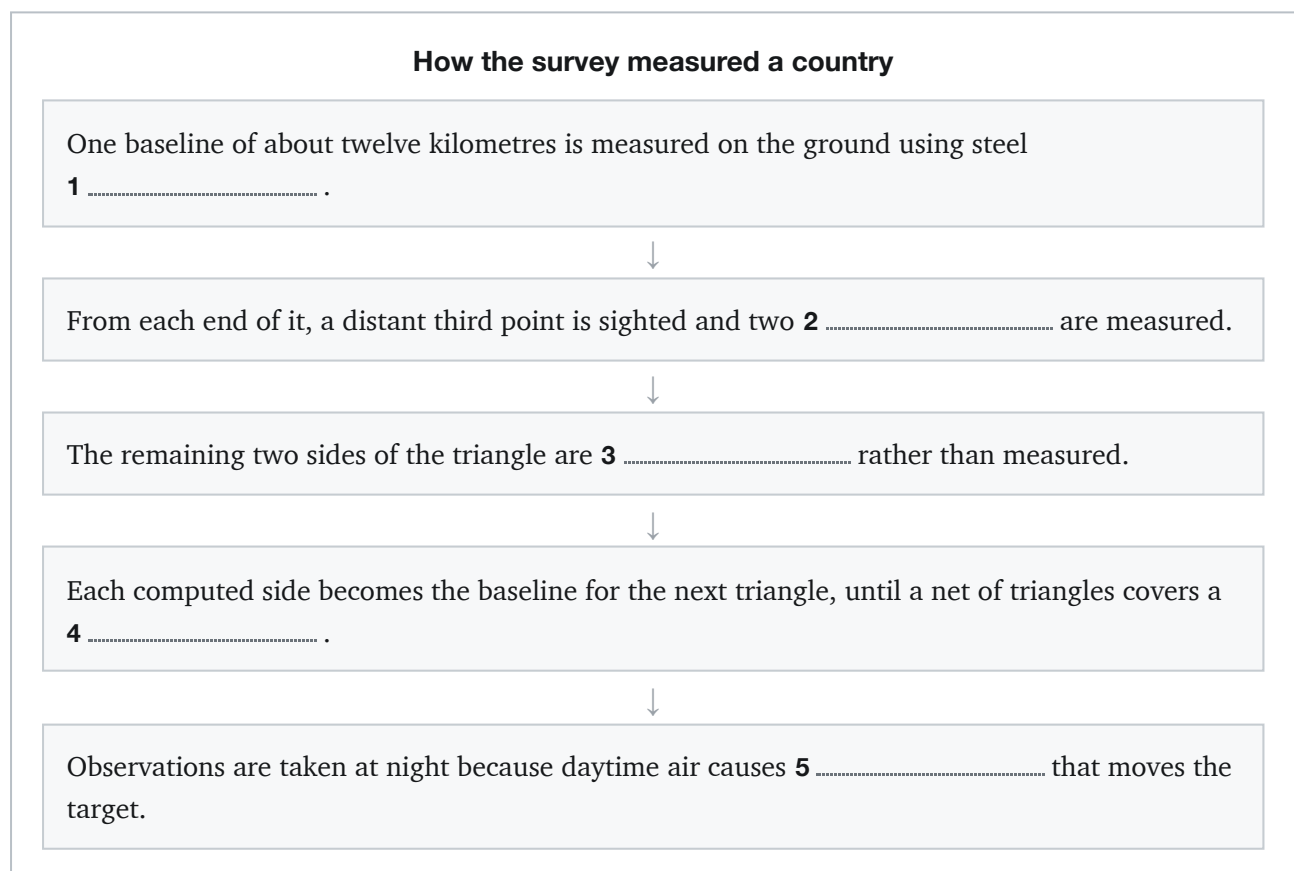
There was also a result that mattered more to science and is almost unknown outside it. As the survey approached the Himalaya, its plumb lines began to hang not quite vertically: the mass of the mountains was pulling them sideways. That much was expected. What was not expected was that the deflection was far smaller than the visible mass of the range should produce. The explanation, worked out in the following decades, is that a mountain range is not simply piled on the crust but floats, with a deep low-density root beneath it displacing heavier material — the idea now called isostasy, and one of the foundations of what is known about the structure of the earth. Two competing versions were proposed almost at once, one holding that the root varies in depth and the other that it varies in density, and the argument between them ran for the better part of a century before seismology was able to settle it.

Seventy years of work, then, produced a map, a mountain and a theory. It is worth noticing that only the first of those was the point when the chains were laid out at Madras.

Questions 1–5

Complete the flow-chart below.

Choose **NO MORE THAN TWO WORDS** from the passage for each answer.



Questions 6–9

Answer the questions below.

Choose **NO MORE THAN THREE WORDS AND/OR A NUMBER** from the passage for each answer.

- 6 How long did it take Lambton to measure the first baseline?
- 7 Roughly how much did Lambton's great theodolite weigh?
- 8 Who calculated the height of Peak XV?
- 9 What is the name of the theory that explains the small deflection of the plumb lines?
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Questions 10–13

Do the following statements agree with the information given in Reading Passage 1?

Write **TRUE** if the statement agrees with the information, **FALSE** if the statement contradicts the information, or **NOT GIVEN** if there is no information on this.

- 10 The Great Arc ran for about twelve kilometres.
- 11 George Everest proposed the name that the mountain now carries.
- 12 More surveyors died of fever than of accidents in the field.
- 13 The height of Peak XV was calculated from observations made over a hundred kilometres away.

You should spend about 20 minutes on Questions 14–26, which are based on Reading Passage 2 below.

The medicine that is not there

- A** In 1955 the American anaesthetist Henry Beecher published a paper called 'The Powerful Placebo', in which he reviewed fifteen trials and reported that on average about a third of patients improved when given an inactive treatment. The figure entered medicine and stayed there, and for half a century it was quoted as the size of the placebo effect. It was not measuring that. Beecher had compared patients before and after treatment, which cannot separate the effect of the placebo from two other things happening at the same time: illnesses that would have improved anyway, and regression to the mean, which is the tendency of anyone measured when they feel worst to be measured as better next time.
- B** The correction took until 2001, when Asbjørn Hróbjartsson and Peter Gøtzsche did the comparison Beecher had not. They collected more than a hundred trials that included both a placebo group and a group given no treatment at all, and asked whether the placebo group did better. For most objective outcomes it did not. The exception was subjective, continuous measures, and above all pain, where a real if modest effect survived. The paper was read in some quarters as showing that placebos do nothing, which is not what it says.
- C** That there is something real to explain was established by an experiment of unusual cleanliness. Fabrizio Benedetti and his colleagues compared giving a painkiller in the ordinary way, with a clinician present, against giving exactly the same drug through a pre-programmed pump at a moment the patient did not know about. The dose was identical and the hidden dose worked less well. The difference between the two is the part of the drug's effect that comes not from the drug but from knowing it has been given.
- D** The mechanism turned out to be traceable rather than mysterious. Placebo analgesia can be blocked by naloxone, a compound that occupies the receptors used by opioids, which means the effect is being produced by the body's own opioid system rather than by anything vague about attitude. In Parkinson's disease, placebo administration releases dopamine in the striatum, and the release can be measured. These are physiological events with locations.
- E** The strangest result came in 2010, and it undermines the assumption on which the whole subject had rested. Ted Kaptchuk and colleagues gave patients with irritable bowel syndrome a bottle of pills labelled as placebos, and told them in as many words that the capsules contained no active ingredient, that placebos had been shown to produce significant improvement through mind-body self-healing processes, and that they should take them anyway. The group given the honest placebos improved substantially more than the group given nothing. Deception, which everybody had assumed was the mechanism, turned out not to be necessary.

- F** The effect also runs in the other direction and is less often discussed. Patients in the placebo arm of a trial reliably report side effects, and the side effects they report tend to match the profile of the drug being tested rather than being random: participants told they may experience nausea experience nausea. This nocebo response is strong enough to be a practical problem, because a proportion of patients who stop taking a useful medicine because of its side effects are responding to what they were warned about rather than to the compound.
- G** What all this adds up to is that the phrase 'the placebo effect' is doing too much work. There is no single effect, and there is no general figure for its size. There is a set of specific responses in specific systems — pain, nausea, itch, some motor symptoms — produced by expectation and by conditioning, measurable in the tissue, and absent where there is nothing for expectation to act on. A placebo does not shrink a tumour and does not lower a cholesterol reading. It changes what a person feels, and a great deal of medicine is about what a person feels.
- H** The practical difficulty is that none of this tells a clinician what to do. A treatment that works partly through expectation works better when the clinician is confident, unhurried and clear, which is a description of good practice rather than of a technique. The open-label result suggests that honesty need not destroy the effect, which is the most useful thing in the literature for anybody who has to sit in a consulting room and decide what to say. It also cuts against the ordinary use of the word outside medicine, where calling something a placebo is a way of saying that nothing is happening.

Questions 14–18

Look at the following findings and the list of researchers below.

Match each finding with the correct researcher, **A–D**.

NB You may use any letter more than once.

List of Researchers

- A** Henry Beecher
- B** Hróbjartsson and Gøtzsche
- C** Fabrizio Benedetti
- D** Ted Kaptchuk

- 14** He produced the figure that was quoted for fifty years.
- 15** They compared placebo groups against groups given no treatment at all.
- 16** He showed that a drug works less well when the patient does not know it has been given.
- 17** He showed that patients can improve while knowing the pills are inert.
- 18** His conclusion could not distinguish the treatment from the illness improving on its own.

Questions 19–23

Reading Passage 2 has eight sections, A–H.

Which section contains the following information?

Write the correct letter, A–H.

NB You may use any letter more than once.

- 19 a description of unwanted effects reported by people receiving nothing active
- 20 a statement that a widely drawn conclusion misrepresented a paper
- 21 two examples of a placebo response that can be located in the body
- 22 a list of the conditions in which the effect is found
- 23 a reason why a patient might abandon a medicine that was working

Questions 24–26

Complete the sentences below.

Choose **NO MORE THAN TWO WORDS** from the passage for each answer.

- 24 Beecher's method could not separate the placebo from recovery that would have happened anyway or from to the mean.
- 25 Placebo pain relief can be prevented by giving, which occupies the opioid receptors.
- 26 Kaptchuk's result showed that is not necessary for a placebo to work.

You should spend about 20 minutes on Questions 27–40, which are based on Reading Passage 3 below.

The interview problem

Almost every organisation in the world selects its staff by talking to them. The conversation is usually loosely planned, the questions differ from candidate to candidate, and the decision is reached by a judgement that the people making it would find difficult to write down. Almost everybody who conducts such an interview believes they are good at it. Sixty years of research says that the unstructured interview is one of the weaker predictors of how somebody will actually perform, and the gap between those two sentences is the subject here.

The comparison that matters is not between interviewing and not interviewing but between two kinds of interview. In a structured interview every candidate is asked the same questions in the same order, the questions are written in advance from an analysis of what the job requires, and answers are scored against anchored descriptions rather than against an impression. In an unstructured interview the conversation goes where it goes. Across large bodies of accumulated evidence the structured form predicts later job performance substantially better than the unstructured one, and it is not close.

What makes the unstructured version worse is not that it gathers no information. It is that it gathers information of a kind the interviewer cannot help over-weighting. A candidate who is fluent, who shares a background, or who is simply comfortable being questioned by strangers, produces in the interviewer a strong impression of competence, and the impression forms early and then organises everything that follows. Nothing in the format prevents this, and the interviewer experiences it not as bias but as insight.

The most uncomfortable demonstration of that came from a study in which participants were asked to predict students' future grades. They were given the students' past grades and course schedules, which do predict grades, and some of them were also allowed to interview the student. The interviews made the predictions worse. In one condition the interviewees had been instructed to answer at random — yes or no according to a rule they kept to themselves — and the participants who interviewed them still formed confident impressions, still used them, and mostly failed to notice that the answers were meaningless.

That is the mechanism to keep hold of. People are extremely good at constructing a coherent account of somebody from very little, and the coherence of the account is not evidence about the person. It is evidence about the construction. An unstructured interview reliably produces the feeling of having learned something, which is why it survives, and the feeling is not connected to whether anything was learned.

It would be a mistake to conclude that interviews should be abolished, and the mistake is worth naming because it is the usual response to this literature. An interview does several things at once. It lets the candidate examine the employer, which matters and is not a side issue. It signals that a decision is being taken seriously. For some roles it provides a genuine sample of the behaviour the job consists of, which is

not a bias but the point. And it gives a successful candidate a reason to accept the offer, which an organisation that has assessed somebody thoroughly without ever speaking to them tends to discover it needed. None of that is an argument for scoring the conversation.

The practical proposal that follows is unglamorous and is resisted for reasons that have nothing to do with evidence. Decide in advance what the job requires. Write questions that ask candidates to describe how they have handled the situations it involves. Ask every candidate the same ones. Score each answer separately as it is given, against a written description of what a weak, adequate and strong answer looks like, and add the scores up afterwards rather than forming a view and then justifying it. Where possible, replace part of the interview with a sample of the work itself.

The resistance to all this is usually expressed as a complaint that structure removes judgement, and it does not. It relocates judgement to the point at which it is being exercised on something — the design of the questions, the writing of the scales, the reading of a work sample — and away from the point at which it is being exercised on a first impression. What organisations are defending when they defend the unstructured interview is not their judgement. It is their confidence in it, and those are not the same thing at all.

Questions 27–32

Do the following statements agree with the claims of the writer in Reading Passage 3?

Write **YES** if the statement agrees with the claims of the writer, **NO** if the statement contradicts the claims of the writer, or **NOT GIVEN** if it is impossible to say what the writer thinks about this.

- 27** The writer thinks organisations should stop interviewing candidates.
- 28** The writer believes structured interviews remove the need for judgement.
- 29** The study on predicting grades was carried out with employers rather than students.
- 30** The writer accepts that an interview allows a candidate to assess the employer.
- 31** The writer thinks work samples should replace interviews entirely.
- 32** The writer holds that what organisations defend is their confidence rather than their judgement.

Questions 33–37

Complete each sentence with the correct ending, A–H, below.

Endings

- A asks every candidate the same questions in the same order.
- B goes wherever the conversation takes it.
- C made the predictions less accurate than the records alone.
- D tells you about the person doing the constructing, not the person described.
- E moves judgement to the point where it has something to work on.
- F shows that fluent candidates are usually the strongest.
- G was abandoned once the evidence appeared.
- H proves that first impressions are always correct.

- 33 A structured interview
- 34 Adding an interview to the students' records
- 35 The coherence of an impression formed in an interview
- 36 Introducing structure into the process
- 37 An unstructured interview

Questions 38–40

Choose the correct letter, A, B, C or D.

- 38 In the study on predicting grades, the participants who interviewed students answering at random
 - A noticed that the answers were meaningless.
 - B refused to make a prediction.
 - C still formed confident impressions from them.
 - D predicted grades more accurately than the others.
- 39 According to the writer, why does the unstructured interview survive?
 - A Because it is cheaper than the alternatives.
 - B Because it produces the feeling of having learned something.
 - C Because candidates prefer it.
 - D Because the evidence against it is recent.

- 40** Which of the following best describes the writer's position?
- A** The conversation should be kept but not scored.
 - B** Interviews predict performance better than any other method.
 - C** Hiring decisions cannot be improved by evidence.
 - D** Bias in interviews can be removed by training interviewers.