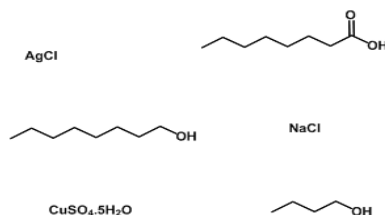


## Interview Workshop – Example Questions

Below includes sample interview questions and (where provided) any suggested answers/ideas/responses/approaches which tutors might expect at an interview.

### Biochemistry

Look at the image below. Put these in order of solubility of water and give your reasons

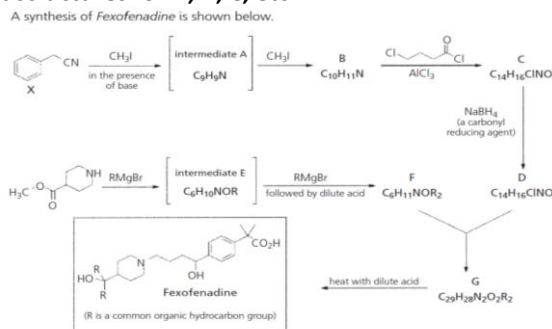


Look at the equation below.

- Explain what partition coefficient is.
- Why it is useful in drug discovery?
- What does  $\log P = 0, 1$  and  $-1$  mean?

$$\text{Partition Coefficient: } \log_{10} P_{\text{oct/water}} = \log_{10} \left( \frac{[\text{solute}]_{\text{octanol}}}{[\text{solute}]_{\text{water}}} \right)$$

Look at the following diagram. Suggest structures for A, B, C, etc.



### Biology

**Ladybirds are red. So are strawberries. Why?**

Many Biological Sciences tutors use plant or animal specimens – often alive – as a starting point for questions and discussion, so applicants shouldn't be surprised if they are asked to inspect and discuss an insect or a fruit. Red can signal either 'don't eat me' or 'eat me' to consumers. I'm interested in seeing how applicants attempt to resolve this apparent paradox.

**Why do lions have manes?**

Some of the best interview questions do not have a 'right' or a 'wrong' answer, and can potentially lead off in all sorts of different directions. Applicants might have picked up ideas about the function of a lion's mane from independent reading or from watching natural history documentaries. That's fine – but I'd follow up their response by asking how they would test their theory. When I've used this question in interviews I've had all sorts of innovative suggestions, including experiments where lions have their manes shaved to investigate whether this influences their chances with the opposite sex or helps them win fights over territory.

**Would it matter if tigers became extinct?**

This question is not about hoping students will display their expert knowledge of tigers. Most applicants would instinctively answer 'Yes...', but it is the 'because...' that interests me, and can help to distinguish critical thinkers. I might follow up this question by asking if it would matter if less glamorous creatures – like fungi – went extinct.

**If you could save either the rainforests or the coral reefs which would you choose?**

I'd expect students to be able to use their general knowledge plus their common sense to come up with an answer – no detailed knowledge is required. Students might then be asked about the importance of natural features, such as biodiversity and rare species, and human interests, such as the fuel and food, ecotourism and medicines we get from rainforests or reefs. Finally there are impacts to consider from climate change, soil erosion, pollution, logging, biofuel replacement, overfishing, etc. The final answer doesn't matter – both reefs and rainforests must be managed sustainably to balance conservation and human needs.

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**Why do some habitats support higher biodiversity than others?**

This question encourages students to think about what high-diversity habitats such as rainforests and coral reefs have in common. In many cases, patterns or correlations can help us to identify the underlying mechanisms. For example, a student might point out that both rainforests and coral reefs are found in hot countries and near the equator. The best answers will attempt to unravel exactly what it is about being hot or near the equator that might allow numerous types of plant and animal to arise, persist and coexist. Do new species evolve more frequently there, or go extinct less frequently? Once students have come up with a plausible theory, I'd follow up by asking them how they would go about testing their idea. What sort of data would they need?

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**Why do many animals have stripes?**

The main aim of the question is to get applicants to think about biological topics and put them in the context of successful adaptations to life on earth. So I might expect students to start by thinking of some stripey animals, then move on to thinking about categories of striped animals – for example those that are dangerous (such as wasps, tigers, and snakes), those that have stripes for camouflage (such as zebras but also tigers), and those whose stripes are harmless mimics of dangerous ones. They might think of specific examples for detailed comparison: tigers and zebras for example both have stripes for camouflage and blending in with background, one to hide from prey and the other to hide from predators.

Other things that would be worth considering include whether stripes may only occur in the young of a species; whether the colour of the stripes matters rather than just the contrasting stripe pattern, and why do stripe size, shape, width and pattern vary in different species. There are no right or wrong specific answers to the questions – I'm just interested in candidates' speculations about the advantages of having stripes.

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**Here's a cactus. Tell me about it.**

We wouldn't actually phrase the question this way – we give the student a cactus in a pot and a close-up photo of the cactus's surface structure and ask them to describe the object in as much detail as possible using the plant and the photo. We are looking for observation, attention to detail, both at the large and micro scale. We ask them to account for what they see – this means they don't have to use memory or knowledge about cacti (even if they have it) but to deduce the uses and functions of the shapes, sizes, structures that they have just described. So for example, why be fat and bulbous, why have large sharp spines, surrounded by lots of very small hair-like spines? Why does it have small cacti budding off the main body? There will frequently be more than one logical answer to these questions, and we are likely to follow one answer with another question – for example:

'The big spines are to stop the cactus being eaten, yes, but by what sort of animals?' We would also bring in more general questions at the end of the cactus discussion, such as what are the problems faced by plants and animals living in very dry habitats such as deserts.

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**Is it easier for organisms to live in the sea or on land?**

Firstly candidates should define 'easier' – does it mean less complexity, less energy expenditure, less highly evolved, less likely to be eaten etc? Then candidates could think of problems caused by living in the sea, such as high salinity, high pressure, lack of light etc. Problems living on land include extra support for the body, avoiding desiccation, the need for more complex locomotory systems (legs, wings etc) and hence better sensory and nervous systems etc. Then ask in which of the two ecosystems have animals and plants been more successful? So now they have to define 'successful'...

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**Why do a cat's eyes appear to 'glow' in the dark?**

This question builds on commonly held knowledge and on material covered in Biology at school about visual processes. The question assesses criteria such as scientific curiosity (has the applicant ever wondered this themselves? Have they formulated any theories?) and scientific reasoning, based on information provided by the interviewer as the interview progresses. After establishing that the applicant understands that light is detected by photoreceptors in the eye (and exploring and explaining this concept if it is a new one), the discussion would consider how the glow might be advantageous to the cat, seeing whether the applicant can appreciate that it may help the animal to see in the dark. Possible explanations for the glow would be discussed with an expectation that applicants might recognise that the light could be generated within the eye or alternatively that light entering the eye is in some way reflected back out. Having established the second possibility as more being more plausible, the interviewer would probe to see whether the candidate recognises the significance of giving photoreceptors two chances to capture light as rays pass into and then out of the eye and why at night this might enhance vision.

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**How many genes do you think we have? Why does this not correlate to how many proteins we need to produce?**

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**Why are DNA strands copied in opposing directions?**

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**Can you suggest some strategies to treat someone with a failing heart?**

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**Imagine you're walking up a tower. Why does your breathing rate increase?**

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**Why do we get angry? What physiological changes occur in anger?**

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**We have one heart but two kidneys. Why?**

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**Why is sugar in your urine a good indicator that you might have diabetes?**

This question builds on general knowledge and material studied at school in biology and chemistry to assess how students approach a clinically-relevant problem. It's commonly known that diabetes is associated with sugar (glucose) in the urine; this question asks students to think about why this occurs. Students have usually have learnt that the kidneys filter blood to remove waste products, such as urea, that must be eliminated from the body but many other useful substances which must not be lost – including glucose – are also filtered. Given that glucose is not normally found in the urine, students are asked to speculate as to how it can all be recovered as the urine passes through the kidney's tubules.

The process involves reabsorption by a carrier protein that binds the glucose molecules and moves them out of the renal tubule and back into the blood. Students should appreciate that, in binding glucose, the carrier will share properties with enzymes, about which they will have learned at school: the capacity to reabsorb glucose is finite because once all of the carriers are working maximally, no further glucose reabsorption can occur. A successful applicant will make the connection that an elevated level of glucose in the blood in diabetes leads to increased filtration of glucose by the kidneys and saturation of the carriers that perform the reabsorption, resulting in 'overspill' of glucose in the urine.

Classics & Classical Archaeology and Ancient History

**The following are questions that might be asked a candidate who has studied *The Aeneid* at A Level:**

- How do you feel Aeneas behaved in Book 4?
  - Can you remember what he says to Dido when she confronts him?
  - What do you think would be an appropriate thing to say in such circumstances?
  - Why does Aeneas say what he does? Why does Vergil make Aeneas say what he does?
  - At the beginning of the book, Aeneas compares Dido to a wounded animal. Can you remember the simile?
  - Who is hunting the deer?
  - Why is a shepherd hunting deer? What should a shepherd be doing?
- 

**The following are questions that might be asked a candidate who has studied *The Aeneid* at A Level:**

- What kind of character does Aeneas have? How does this compare to the character of Odysseus for example?
- How are the aims of these two characters different?

- What kind of hero is Aeneas?
- What did you make of the ending of the poem?
- Why end the poem in that way?
- "Bland and boring or barbaric and bloodthirsty" - is that a fair assessment of Aeneas?

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The following is a questions that might be asked of a candidate who has studied *The Aeneid* at A Level:

**Why do you think Dido kills herself in Aeneid 4? Couldn't she just have gone back to her old life?**

I would never ask a question like this without the student mentioning the text first, as we don't assume that all applicants will have read the same things. Many candidates have never studied Latin or Greek before at all, so we certainly wouldn't assume that they had any particular knowledge. I would open this part of the interview by asking the applicant to choose a Classical text that they have enjoyed. This could be something they have read at school/college or on their own, in the original or in translation – it just needs to be something that they found interesting and that they would be happy to discuss.

A good answer to this question about Aeneid 4 might point out that the work contains hints that Dido's sister and the people she rules will be devastated by her death: she actually has a lot to live for. The answer might look for things Dido says that suggest she's killing herself because she has lost her self-respect, and perhaps ask whether this rather obsessive focus on self-respect is a typical characteristic of ancient heroes.

Other typical questions might be about why so much of the Odyssey is about Odysseus' return to Ithaca, rather than the adventures at sea that everyone remembers, or whether Achilles or Hector is the real hero of the Iliad? It really depends on what the applicant says they have read. We're looking for candidates to be able to pick out details in the text that support the argument they want to make - and opposing arguments, too. The questions allow us to see whether candidates are open-minded and able to see how others, both today and, crucially, in the ancient world, might put the evidence from the texts together to draw different conclusions. And we would hope that candidates would think about how, although literary texts often encourage us to react to their characters as if they were real people, actually these characters are constructed by an author, and what we see of them always reflects that author's choices.

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Having founded a temple of Zeus Syllanios and Athena Syllania, having tribed the tribes and obed the obes, having established thirty as a council of elders (*gerousia*) along with the kings (*archagetai*), hold *apellae* season after season between Babyka and Knakion, and in this way bring in and set aside; but speaking in opposition and power (*kratos*) are to belong to the people (*damos*). But if the people should speak crookedly, the elders and the kings are to be setters-aside.  
(Plutarch, *Life of Lykourgos* 6)

1. In his *Life of Lykourgos*, Plutarch quotes a text (the "great rhetra") which is generally thought to be the earliest surviving public law from the ancient Greek world. Can you summarise, in your own words, what this text tells us about the Spartan constitution?
2. This text begins with a series of single events – "founding a temple", "tribing the tribes" (which probably means "dividing the people into tribes"; obes are apparently subdivisions of tribes), then moves on to general norms for the future ("hold *apellae*", probably "hold festivals of Apollo"). How do you explain this mixture of single events and permanent norms?
3. Which group appears to be sovereign within the Spartan political system?
4. How do you explain the mixture of religion and politics within the rhetra?

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This image (attached) depicts two sides of a single object, about 2cm in diameter.

1. Can you describe the object, as if you were writing a museum catalogue entry, without attempting to interpret it yet?
2. The image depicts two (human) couples, a male and female figure on each side. What does the way in which the figures are depicted imply about their relationships to one another?
3. Can you say anything about the artistic style in which the figures have been depicted?
4. The texts on the two faces (in Greek) read "siblings" and "gods". How does that impact your understanding of the figures being depicted here?

5. What might be the significance of the artist's choice to depict the eyes in the way that s/he has done?



Computer Sciences

A group of 7 pirates has 100 gold coins. They have to decide amongst themselves how to divide the treasure, but must abide by pirate rules:

- The most senior pirate proposes the division.
- All of the pirates (including the most senior) vote on the division. If half or more vote for the division, it stands. If less than half vote for it, they throw the most senior pirate overboard and start again.
- The pirates are perfectly logical, and entirely ruthless (only caring about maximizing their own share of the gold).

So, what division should the most senior pirate suggest to the other six?

The solution involves looking at what happens with only 2 pirates, and working up from there. (We assume that the most senior pirate has the letter A. Others will be B, C, D etc, depending on how many there are in the group.)

2 Pirates

Pirate A suggests he gets all the gold. He votes for it, so it carries.

Pirate A gets 100 coins, pirate B gets 0.

3 Pirates

Pirate A knows that if he's thrown overboard, pirate C would get nothing (as the situation would revert to the two pirate example above, with pirate C promoted to pirate B). So if pirate A bribes pirate C with 1 coin, pirate C will vote in favour.

Pirate A gets 99 coins, pirate B gets 0, pirate C gets 1.

4 Pirates

Pirate A knows that if he dies, then pirate C gets nothing (again, it will become the 3 pirate case, and pirate C will be promoted to pirate B), so he needs 1 coin to bribe him.

Pirate A gets 99 coins, pirate B gets 0, pirate C gets 1, pirate D gets 0.

5 Pirates

Now Pirate A needs 3 votes, so he must bribe each of the pirates who would get 0 coins if he dies with 1 coin each.

Pirate A gets 98 coins, pirate B gets 0, pirate C gets 1, pirate D gets 0, pirate E gets 1.

6 Pirates

Same story: bribe pirate B and pirate D.

Pirate A gets 98 coins, pirate B gets 0, pirate C gets 1, pirate D gets 0, pirate E gets 1, pirate F gets 0.

7 Pirates

In this final stage (although you can continue indefinitely!) the senior pirate has to get 4 votes, so must bribe 3 pirates... might as well bribe the 3 that have the most to lose if he dies (ie, pirates C, E and G). Pirate A gets 97 coins, pirates C, E and G get 1 coin each, and the others get nothing.

An urn contains 23 white beans and 34 black beans. A monkey takes out two beans; if they are the same, he puts a black bean into the urn, and if they are different, he puts in a white bean from a large heap he has next to him. The monkey repeats this procedure until there is only one bean left.

What colour is it?

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You are given 10 boxes, each large enough to contain exactly 10 wooden building blocks, and a total of 100 blocks in 10 different colours. There may not be the same number in each colour, so you may not be able to pack the blocks into the boxes in such a way that each box contains only one colour of block. Show that it is possible to do it so that each box contains at most two different colours.

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## Earth Sciences

How can you define life?

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How much water is there on the Earth?

This involves estimating the surface area of the Earth (from the radius, or from the circumference- estimated from a distance they know, from the time to fly across a certain number of time zones, etc), the average coverage (about 2/3), and an average depth (around 2km). They could carry on with determining how much solid material would be left if all the oceans evaporated (salts are 3.5% of seawater), and even where the salts come from (weathering of rocks).

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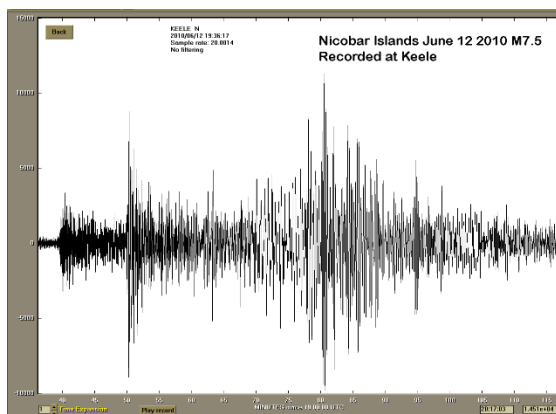
What is the mass of the atmosphere?

Most will try to estimate the volume, but then need to work out the average density, which decreases with altitude, so it would involve a lot of discussion. The better way is to see that atmospheric pressure is due to the amount of mass above the surface, and so it's a problem of  $F=ma$ , considering the mass over a square meter and knowing atm pressure. This also needs an estimate of the surface area of the Earth (from the radius, or from the circumference- estimated from a distance they know, from the time to fly across a certain number of time zones, etc).

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This image shows a typical trace from a modern seismometer following a large earthquake – in this case the seismometer is in the central UK (Keele), and the earthquake occurred in Indonesia. The x axis is time, the y axis is a measurement of displacement (amplitude) – so you can see how the Earth shakes as the wave passes.

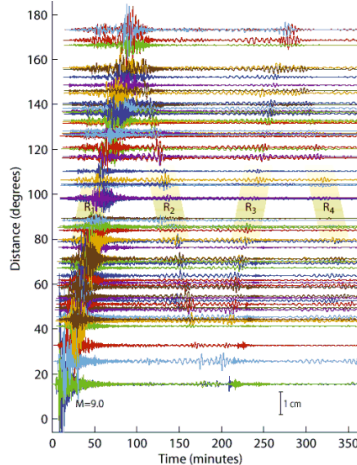
- Identify the approximate arrival times of the P (primary), S (secondary) and Surface (Love and Rayleigh) waves? [P are faster than S and travel through the Earth; surface waves are slower and travel around the Earth].
- Suggest a reason for the 10 minute delay between the first P (primary) arrival and the first S (secondary) arrival? [waves have travelled the same distance, but at different speeds. So if we know the typical velocities, we could calculate the distance to the origin].



The image below shows a set of seismograms from the Sumatra earthquake (Dec 26<sup>th</sup>, 2004), as measured on instruments that were located around the world. The earthquake happened at (0,0) on this graph. The x axis shows elapsed time; the y axis shows the angular distance (in degrees) between the earthquake, and the seismometer – assuming they both lie on a circle, cut through the centre of the Earth.

- Using simple assumptions, and without a calculator, estimate the speed of the surface waves created by the earthquake. [Your answer should be in km/s, in the end].

Can you explain the zig-zag pattern on the figure as a whole (e.g. that passes through R1, R2, R3..?)



Identify the surface wave signal on the figure (clue: look back at the previous question). Use the seismic trace at 180 degrees. How long did it take for the peak surface wave to arrive here; and how far did it travel to get here? (clue: it travels round the surface of circular section. Time: about 100 minutes. Distance is  $\pi r$  - as it is about half the circumference.  $r$  is the radius of Earth – (recall/guess/estimate this at about 6000 km). So  $v = 6000 \pi / 100 \times 60 = \pi$  km/s) – so about 3 km/s. Zigzag pattern: answer: the surface waves keep going – round and round the Earth

NASA have just announced that their next mission to Mars will include some seismometers. How, if at all, might traces of 'Mars quakes' differ from earthquakes?

### Economics and Management

Imagine that you and two of E&M candidates choose a number between 0 and 100.

You must do this independently and discreetly.

When you have each come back and given me your numbers imagine that I add them together and take an average of the numbers. I then tell you the number that is 2/3rds of that average.

Whichever of you is closest to my final number wins £50.

- What number would you choose so that you would win the £50?
- How might you change your mind if you were playing against other members of the public instead of E & M candidates?

There is a firm that wants to maximise profits. The price it sells for is £3. Its revenue function is  $R = 3y^2$ . Its cost function is  $C=2y$ . Determine the profit maximising quantity.

If Oxford is deciding what tuition fees to charge, how should I do this?

The Holiday Puzzle:

"Alex and Brian are cousins. They are planning a four-day holiday in Venice and they each have 400 euros to spend. (They have already paid for their return flights and for their hotel room.) On the flight to Venice Alex and Brian discuss how they should each allocate their spending over the four days.

Alex believes that the satisfaction he gains from spending a certain amount  $x$  euros on a given day is proportional to  $\sqrt{x}$ . Explain why this might be a reasonable way to represent his preferences. If he has these preferences how would you expect him to allocate his spending over the four days?

Brian has the same preferences as Alex, but he knows that he tends to be impatient. This means that, on any given day, he tends to give extra weight to the current day's spending when he makes his spending decisions for that day. Thus on a given day he behaves as if the satisfaction he would gain from spending  $x$  euros would be  $\sqrt{2x}$  whereas he thinks that on subsequent days the satisfaction he will gain from spending  $x$  euros will be only  $\sqrt{x}$ .

If Brian has these preferences how would you expect him to allocate his spending over the four days?

Is there a better way for Brian to allocate his spending and, if so, how might he achieve this better outcome?

Does your analysis of this problem have any implications for any current economic policy issues?"

After asking one or two general questions such as 'what topic in Economics have you enjoyed most, or found most surprising' we move on to working through a puzzle. We give the candidate a copy 10 minutes before the interview starts. We might spend 10-15 minutes going through the implications of the puzzle during the interview, though this depends on how far candidates get, and how quickly they get there!

Each puzzle is designed to see how willing candidates are to abstract from the complexities of a 'real world' case involving some economic principles and to put such principles 'to work'. There is usually some simple mathematical ideas involved (in this case, the idea that the utility function provided implies that it is best to allocate spending uniformly over the four days). However, we do not expect any calculations to be performed, though drawing a diagram is often useful (as it is in this example).

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**Do bankers deserve the pay they receive? And should government do something to limit how much they get?**

This is a very topical question in light of the recent financial crisis. A simple answer might be that since banks are generally private firms and workers are free to work where they wish, then the pay they receive is just the outcome of a competitive labour market. In this story, bankers earn a lot because they are very skilled and have rare talents. It is hard to see a reason for government intervention in this case – though on equity grounds one may want to have a progressive income tax system that redistributes some of this income. A good candidate would wonder why it is that seemingly equivalently talented people can get paid so much more in banking than in other occupations. Do we really believe that bankers are so much better than other workers in terms of skill? An alternative story is that the banking industry is not competitive and generates profits above what a competitive market would produce. This would then allow workers in that industry to share some of those profits and so earn much more. In this case, there is a role for government intervention - making the market more competitive. The key point about this question is trying to get candidates to think about the economics of pay rather than just whether they think it is fair or not.

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## Engineering

**How does a telescope work? (e.g. a big one like at Jodrell Bank). Where is the focal point of the parabola?**

**How would you design a gravity dam for holding back water?**

This is a great question because the candidate first has to determine the forces acting on the dam before considering the stability of the wall under the action of those forces. Candidates will probably recognise that the water could push the dam over. The candidate would then be expected to construct simple mathematical expressions that predict when this would occur. Some may also discuss failure by sliding, issues of structural design, the effects of water seeping under the dam, and so on. The candidate will not have covered all the material at school so guidance is provided to assess how quickly new ideas are absorbed. The question also probes the candidate's ability to apply physics and maths to new situations and can test interest in and enthusiasm for the engineered world.

**Place a 30cm ruler on top of one finger from each hand so that you have one finger at each end of the ruler, and the ruler is resting on your fingertips. What happens when you bring your fingers together?**

This would never be the opening question in an interview - we usually start with a first question that gives the candidate an opportunity to get comfortable by discussing something familiar. We then ask more technical questions based on material in the GCSE and A-level syllabi. This question would come later in the interview, when we present candidates with an unfamiliar scenario and ask them to use what they know about familiar concepts (such as friction) to explain something.

Almost everyone in this example will expect the ruler to topple off the side where the finger is closest to the centre to the ruler because they expect this finger to reach the centre of the ruler first. They then complete the 'experiment' and find both fingers reach the centre of the ruler at the same time and the ruler remains balanced on two fingers. We like to see how candidates react to what is usually an unexpected result, and then encourage them to repeat the experiment slowly. This helps them observe that the ruler slides over each finger in turn, starting with the finger that is furthest from the centre. With prompting to consider moments and friction, the candidate will come to the conclusion that moments mean that there is a larger force on the finger that is closest to the centre of the ruler. This means that there is more friction between the ruler and this finger and therefore the ruler slides over the finger furthest from the centre first. This argument will apply until the fingers are the same distance from the centre. The candidate should then be able to explain why both fingers reach the centre of the ruler at the same time as observed. In some cases, particularly if we have not done a quantitative question already, we might then proceed with a quantitative analysis of forces and moments. We might even discuss the fact that the coefficient of static friction is higher than the coefficient of dynamic friction and therefore the 'moving' finger gets closer to the centre than the static finger before the finger starts to move over the other finger.

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## English Language and Literature

### How is doing an English literature degree different to reading privately?

Many candidates identify the joys and benefits of reading as one of the reasons they want to do an English degree; this question invites them to think about the difference between reading for pleasure and what it means to read and write criticism.

### Tell me about [this literary work you have mentioned in your UCAS personal statement]

I'd want to start with something the candidate has already identified as something they want to talk about (so be honest on your personal statement!). I'd want to get a sense of what the candidate picks out about it, and perhaps to try to move the discussion onto matters of form (how the text is written) rather than content (what it is about). That might include - how does the author choose to begin or end the work and why? is it a first-person or a third-person narrator, and what effect does that have? what kind of vocabulary and writing style are chosen? what assumptions does it make about its readers? There might be other questions too: does the biography of the author have any relevance to our interpretation? do we need to know something about the historical context to understand it differently? how would we evaluate whether it is 'good' or not, and does that matter? where might its meaning be ambiguous? can it be compared to one of the other texts mentioned or studied to clarify any one of these aspects? All of these approaches are intended to develop a discussion - like a tutorial - and to work with something the candidate is already familiar with - something they have read and/or studied and enjoyed - but to ask some more sideways or expansive questions about it, moving away from the character or close-reading focus which is often prominent at A-level but is supplemented or challenged by other reading methods during university study.

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### Why do you think an English student might be interested in the fact that Coronation Street has been running for over 60 years?

First and foremost this brings popular culture into the mix and also shows that techniques of literary analysis can be applied to other media. It could also open up discussion about things such as techniques of storytelling; mixing humorous and serious storylines/ characters; how a writer might keep viewers or readers engaged; collaborative writing; the use of serialisation, and how writers/texts might move from being perceived as 'popular' (like Dickens, say) to be 'canonical'.

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### What do you think constitutes 'good' literature?

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### What do you think this poem is about?

- Describe and discuss any formal features you find interesting
- What does this poem say about language?
- Does this poem remind you of any others you have read?
- When do you think this poem might have been written?

*Don't ask us for the word to square  
our shapeless spirit on all sides,  
and proclaim it in letters of fire, to shine  
like a lost crocus in a dusty field.*

*Ah, the man who walks secure,*

*a friend to others and himself,  
uncaring that high summer prints  
his shadow on a peeling wall!*

*Don't ask us for the phrase that can open worlds,  
just a few gnarled syllables, dry like a branch.  
This, today, is all that we can tell you:  
what we are not, what we do not want.*

This is an English translation of a poem by the Italian Eugenio Montale (1896-1981) that was written in 1923.

It was on the eve of August Bank Holiday that the latest recruit became the leader of the Wormsley Common gang. No one was surprised except Mike, but Mike at the age of nine was surprised by everything. "If you don't shut your mouth," somebody once said to him, "you'll get a frog down it." After that Mike had kept his teeth tightly clamped except when the surprise was too great.

The new recruit had been with the gang since the beginning of the summer holidays, and there were possibilities about his brooding silence that all recognized. He never wasted a word even to tell his name until that was required of him by the rules. When he said "Trevor" it was a statement of fact, not as it would have been with the others a statement of shame or defiance. Nor did anyone laugh except Mike, who finding himself without support and meeting the dark gaze of the newcomer opened his mouth and was quiet again. There was every reason why T., as he was afterward referred to, should have been an object of mockery—there was his name (and they substituted the initial because otherwise they had no excuse not to laugh at it), the fact that his father, a former architect and present clerk, had "come down in the world" and that his mother considered herself better than the neighbors. What but an odd quality of danger, of the unpredictable, established him in the gang without any ignoble ceremony of initiation?

The gang met every morning in an impromptu car-park, the site of the last bomb of the first blitz. The leader, who was known as Blackie, claimed to have heard it fall, and no one was precise enough in his dates to point out that he would have been one year old and fast asleep on the down platform of Wormsley Common Underground Station. On one side of the car-park leaned the first occupied house, number 3, of the shattered Northwood Terrace—literally leaned, for it had suffered from the blast of the bomb and the side walls were supported on wooden struts. A smaller bomb and some incendiaries had fallen beyond, so that the house stuck up like a jagged tooth and carried on the further wall relics of its neighbor, a dado, the remains of a fireplace. T., whose words were almost confined to voting "Yes" or "No" to the plan of operations proposed each day by Blackie, once startled the whole gang by saying broodingly, "Wren built that house, father says."

- "Who's Wren?"
- "The man who built St. Paul's."
- "Who cares?" Blackie said. "It's only Old Misery's."
- What is happening in the passage?
- What do we learn about the characters?
- How would you describe their social group?
- When and where do you think it is set?
- Who is telling the story?
- What sort of language does the narrator use, and why?
- What sort of details does the story focus on, and why?
- What do you think might happen as the story continues, and why?

*This is the opening of Graham Greene's short story 'The Destructors'.*

## Experimental Psychology

**There is a theory that children's language development is more advanced between the ages of 5-6 than it is between the ages 6-7. How would you design an experiment that investigated this theory?**

- **What information would you need to know before you started?**

### **What is 'normal' for humans?**

We're keen to point out to potential psychology applicants that primarily psychology is the study of normal human beings and behaviour; in part this is because of a suspicion that potential undergraduates are attracted to psychology to help them study forms of human life they find strange (neuroses, psychoses, parents). There are various ways that this question might be approached, but some approach that distinguishes the normal from the statistical average is a good start. Issues such as whether normality is to be judged by 'biological' factors that might be held to be common to humans, or whether it's normal within a particular culture or at a particular period of history, might also be worth addressing. We are mainly looking for a line of thinking

which could be developed and challenged. Once candidates show a defensible position regarding what might serve as the basis of normality, we extend the discussion to (for example) the relation between abnormality and eccentricity.

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### **Why do human beings have two eyes?**

This question may result from a more general discussion about the human senses. It can develop in a number of different directions, partly depending upon the knowledge and expertise of the interviewee. For example, two eyes are important for three-dimensional (3D) vision. Why is it that we can still see in 3D when only looking through one eye? What determines the optimum position and distance between the two eyes? Why is it that we see a stable view of the world even though we are constantly moving our head? How can an understanding of mathematics, physics and biology help us explain 3D vision? The discussion may develop into a consideration of the different senses and the role they play in us interacting in our environment, including interacting with other people, and the nature of perceptual experience.

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### **Should interviews be used for selection?**

This question could come out of a discussion of errors and biases in human judgement – that we sometimes overlook some information, while attaching too much weight to other information; and we are often over-confident about the decisions we make. What sources of information might be used to select, for example, Oxford students? Why? How do we know that information is valid? What does validity even mean? Once we have chosen what information we will consider, how can we combine it? And what are we trying to predict? (What is the criterion?). How would you design a research study to see how well different sources of information do, in fact, predict how well we can select Oxford students? What would your study need to measure? Would there be a control group? If so, what kind of control group? What would you need to control for?

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### **A large study appears to show that older siblings consistently score higher than younger siblings on IQ tests. Why would this be?**

This is a question that really asks students to think about lots of different aspects of psychology, and we guide students when discussing it to think about both scientific factors such as maternal age (mothers are older when younger siblings are born - could that play a role?) and observational analysis about how birth order might affect behaviour and therefore performance on IQ tests. It's a great question because students begin from the point they are most comfortable with, and we gradually add more information to see how they respond: for example, noting that for example the pattern holds true even taking into account things like maternal age. This can lead them to think about what the dynamics of being an older sibling might be that produce such an effect - they might suggest that having more undivided parental attention in the years before a sibling comes along makes a difference, for example. Then we introduce the further proviso that the effect isn't observable in only children - there is something particular to being an older sibling that produces it. Eventually most students arrive at the conclusion that being an older sibling and having to teach a younger sibling certain skills and types of knowledge benefits their own cognitive skills (learning things twice, in effect). But there isn't really a 'right' answer and we are always interested to hear new explanations that we haven't heard before. What we are interested in is the kinds of reasoning students use and the questions they ask about the study - what it takes into account, what it might not – that tells us about their suitability for the course. And of course it doesn't matter if you have a sibling or not - though depending on family dynamics, that can add an interesting twist to the conversation!

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### **Imagine that 100 people each put £1 into a pot for a prize that will go to the winner of a simple game. Each person has to choose a number between 0 and 100. The prize goes to the person whose number is closest to 2/3 of the average of all of the numbers chosen. What number will you choose, and why?**

I like this as a question for Experimental Psychology because answering it brings in a range of skills relevant to the subject. Partly it involves numerical and analytical skills: the question implies that the answer will be 2/3 of some other number, but which one? Some people's first guess is 2/3 of 100, i.e., 66 or 67, in which case I'd ask them what numbers everyone else would have to pick for them to win. In this case, everyone else would have to choose 100, which is unlikely. More often people first guess 2/3 of 50 (= 33), which seems intuitively more likely. At this point, and usually without prompting, the recursive nature of the solution becomes clear: If there is good reason for me to choose 33, then maybe everyone else will choose 33 too, in which case I should choose 2/3 of 33... but then everyone will think this and choose 2/3 of 33 too, so I should choose 2/3 of that number.. and so on. Assuming everyone thinks like this, then everyone will eventually settle on 0 as their choice – this is the formal 'game theory' solution. At this point, I'd ask questions that bring out the candidate's broader reasoning skills in terms of thinking how we could define what it is rational to do in this game. Game theory gives one definition of rationality, but does it give a plausible winning answer – that is, is it likely that everyone, all 100 of them, will go through exactly the thought process we've just described? If not, is 0 really a rational answer? The question also has a psychological angle in thinking about reasons for people's behaviour and choices: Will everyone put in the same effort? Will everyone be motivated to win? When I've used this question in live audiences, sometimes people say they'd pick the number 100 just because it'd throw a spanner in the works for everyone playing the game rationally. How should this affect your choice of answer? What if the stakes were increased so that everyone put £1000 into the pot at the start?

What's clear from all of this is that we're not looking for a single answer. Rather, we're interested in seeing how people think through a problem, figure out what are the relevant factors, respond when new information is provided, and so on.

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**An experiment appears to suggest Welsh speakers are worse at remembering phone numbers than English speakers. Why?**

This would never be given as a one-line question out of context – it is one of a set of questions I ask students after showing them a psychology experiment case study with data about short-term memory in English and Welsh speakers. The key point is that numbers are spelled differently and are longer in Welsh than in English, and it turns out that memory (and arithmetic) depend on how easily pronounced the words are. I would hope the student would pick out this connection between memory and how easy to spell or pronounce a word is, and how that relates to spelling and pronunciation in Welsh versus in English. The interview is structured so that further hints and guidance are provided if the student doesn't immediately see this problem with the design of the experiment described in the problem sheet. This basic question can then lead to interesting discussion about the role of language in other cognitive abilities, such as memory or maths. This question is meant to be deliberately provocative, in that I hope that it engages candidates' intuitions that Welsh people aren't simply less clever than English people!

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### Fine Art

**Tell me about a recent exhibition of contemporary art that you have visited.**

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### Geography

**If I were to visit the area where you live, what would I be interested in?**

The question gives candidates an opportunity to apply concepts from their A level geography course to their home area. They might discuss urban planning and regeneration, ethnic segregation and migration, or issues of environmental management. The question probes whether they are able to apply 'geographical thinking' to the everyday landscapes around them. It reveals the extent to which they have a curiosity about the world around them. By asking specifically about their home area the question eliminates any advantage gained by those who are more widely travelled and have more experience of a variety of geographical contexts.

### History

**What is the difference between history and the past?**

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**Is History an art or a science subject?**

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**What can an Historian learn from a critical assessment of a programme such as EastEnders?**

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**Imagine we had no records about the past at all, except everything to do with sport – how much of the past could we find out about?**

I would say this to a candidate who had mentioned an interest in sport on their personal statement, though it could equally be applied to an interest in something else – like film, drama, or music. What I would be looking for is to see how the candidate might use their imagination, building on something they know about (probably much more than I do) to tackle questions of historical research. Answers could relate to the racial/class/gender relations in society (who played the sports, and which sports, at any given time); international politics/empire (which countries were involved, did groups of countries play the same sport); economic development (the technological development of sports, how sport was watched); the values within a society (bloodthirsty sports to more genteel sports); health (participation rates); or many other issues – the list is long. I would usually ask supplementary questions, to push the students further – and often, I would have no answer in my mind, but would simply be interested in seeing how far the student could push their analysis.

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**Imagine we had no records about the past at all, except everything to do with music – how much of the past could we find out about?**

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**Which person (or sort of person) in the past would you most like to interview, and why?**

Candidates know that this is not a right/wrong type question. The question is not so much about which person the candidate wants to meet, but what sort of issues the candidate wants to find out about (which can be quite revealing) and then working out the best way to do so. 'Meeting' Elizabeth I or Winston Churchill might be exciting, but if the candidate wants to find out about, say, their leadership style, they might be better off asking questions of a courtier or member of the war cabinet. Or if they wanted to find out what we don't know about any given period, they might want to interview people who didn't leave any written records. Sometimes we might encourage the candidate to think through whether the person they selected would be willing or able to reveal the information they sought (and we allow plenty of time for the candidate to change the issue they want to find out about, and reconsider their choice of person).

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### **Is violence always political? Does 'political' mean something different in different contexts?**

This pair of questions allows the interviewer to deal with historical material from any period the candidate is studying or knows about from more general reading. It could also be answered extremely well from contemporary or current affairs knowledge. The aim of the question is to get the candidate to challenge some received notions about what constitutes politics, and to think about how political history might be studied away from the usual kings, parliaments etc. A good candidate would, with assistance, begin to construct categories of when violence looks more and less political. A very good candidate would, with assistance, begin to construct a useful definition of 'political', but this is challenging. The main aim would not be to solve these problems, but to use them to find some new interest in a subject that the candidate already knows something about.

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### **What is the role of history in today's society? Does it or should it change?**

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### **What would a historian find interesting about the place where you live?**

We use this question to open a discussion that could go in a number of different directions. We want to encourage candidates to talk about a subject on which they know something, but where probing questions can lead them to look at what they know in a new and revealing light. It was very common for candidates to say that nothing interesting ever happens where they live, but this was a chance for the interviewers to encourage them to reflect on what we mean by historical significance, and why some places seem unremarkable in those terms. It also allowed us to hear candidates describe things like a town in decline, unusual street names, or pride in local sports teams, and then to ask them what questions a historian should ask in order to set these in context. It's also a good question because it allows us to steer candidates away from prepared scripts (which are always a waste of time), and for us to see evidence of some of the instincts and skills that are really important in good History students: observation, noticing the unusual, being interested in the world around them, a questioning attitude, and the ability to see things from new angles.

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## **History of Art**

### **Do you recognise this image?**

This is the first question we ask History of Art candidates in interviews when they are shown images of artworks like this one. And it is the only question for which there is a single, correct answer, which is 'No' – though if the answer happens to be 'Yes,' then we simply pull out another image to show them. The interviewers obviously know what the picture being shown is, and the point isn't to quiz candidates on what they may or may not have stumbled across in a book, online or in a gallery. Instead, we want our candidates, many of whom have never studied Art History, to show us how they would begin to approach an image they have not previously encountered. We want to find out what questions a candidate would ask about a particular image:

- **What is it made of?**
- **What is being depicted?**
- **What size might it be?**
- **For what purpose might it have originally been made?**
- **How could we try to figure out when it might have been produced, and by whom?**

We are less interested in hearing a "correct" answer than in seeing the thought process a candidate goes through in trying to analyze something he or she has never seen before. In fact, we have had candidates who have been off by several centuries and entire continents when assessing an unknown image, but who have really impressed us at interview



because of the potential they showed in the kinds of questions they asked. In trying to tackle these questions, we hope that the interview will resemble a tutorial in establishing a two-way conversation rather than being just an exercise in question and answer.

## Human Sciences

**In an economic crisis, why should we still fund the arts/galleries/museums?**

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**Describe the trends in human life expectancy over the past 100 years or so.**

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**What is the role of the family?**

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**How could we define a species? What different kinds of ways to classify things into species are there? What evidence is there for evolution available today?**

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**How many friends do you think a person can have, and do you think there's a natural limit?**

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**Why might people's behaviour change when they're being watched?**

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**Why do people copy the behaviour of others around them?**

## Law

**Enemy 1 poisons the water in V's water bottle. Enemy 2 drills a hole in the same water bottle so that the contents trickle out. Later, for want of water, V dies in the middle of the desert. Who, if anyone, caused V's death?**

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**A's bank manager tells him that he has \$10,000 in his account. He actually has \$5,000. A spends \$10,000 on a car thinking that he has that amount. Does A have to repay the bank? Can the bank seize A's car? If A sells the car to B, does the bank have any claim to the car against B?**

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**Should the law change in light of changes in society?**

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**Does law create morality or does morality create law?**

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**What does it mean for someone to 'take' another's car?**

There is no right answer to this question. For example, can you take a car without driving it, or even without moving it? Our focus is on the candidate's reasoning – how he or she formulates an initial definition, and how he or she then applies and refines that initial definition in response to hypothetical examples provided by the interviewers. One example might be: 'I am walking along the street when it starts to rain. I open the door of an unlocked car and sit there for 15 minutes until the rain passes. Have I 'taken' the car?' The aim of the interview is to give the candidate a chance to show his or her application, reasoning ability, and communication skills.

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**If the punishment for parking on double yellow lines were death, and therefore nobody did it, would that be a just and effective law?**

Candidates are not meant to give a right or wrong answer to this question. They need to demonstrate that they have recognised the various issues that arise. The candidate who distinguishes between 'just' and 'effective' does best. The issues are different once that distinction is made. A just law might not be effective, or vice versa. The issues of how proportionate the punishment is to the crime refer to the justness of the law. The answer to its effectiveness is already in the question: 'and therefore nobody did it.'

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**Should the UK government legalise assisted suicide? If legislation to legalise assisted suicide were to be passed, what restrictions and safeguards should be put in place to ensure that the system would not be abused?**

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**When unwanted photographs and information about celebrities, such as drug habits or sexual infidelity, appear in the press, is the celebrities' right to privacy more important than the press' right to freedom of speech? How should the courts deal with such issues?**

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**Should it be illegal to run a red light in the middle of the night on an empty road?**

Studying law requires that students understand what the law is, and also about what it should be, that is to think normatively. We are particularly interested in their capacity to justify their views and interpretations. This involves being able to analyse concepts and to critically appraise arguments and the reasoning behind a position, as well as to consider objections and to offer rebuttals to those objections. There isn't a right or wrong answer to this question; we would be using the example to see how well the candidate could justify their stance. For example, a candidate might say that if no one was harmed by running the light, then it wouldn't hurt to run it so it shouldn't be illegal. This would be suggesting that the law is based on preventing harm. We might then explore whether this is the only purpose or the dominant purpose of the law, and how that might shape how legal rules need to be constructed, whether there are any circumstances in which exceptions might be valid and how effective exceptions could be created. Here, we would be looking to see how well they can see the problems with their approach and the difficulties inherent in drafting a rule that works in every situation without being too broad. This line of discussion would draw out their capacity to respond to challenges to their position, their ability to amend their initial answer when it no longer seems sustainable, and their ability to think precisely. Another candidate might suggest that even if no one is harmed, it is important that laws are respected and we could examine why this is the case. For example, if running lights was only illegal when it was dangerous, this would leave it to each person's assessment of 'dangerous', so we could never be sure when someone would run a light, leading to chaotic traffic.

This question also picks up on ideas about what it means for something to be illegal and citizen's relationship with the law, whether it can ever be justified to break the law and what might be a sufficient justification. This could lead into more philosophical discussions of what it means for a law to be binding and how legal rules might differ from moral rules or guidelines. A candidate might begin to consider whether there is something special about legal rules – are they different from other kinds of rules, such as those of a game, moral rules, social rules, club rules and so on. We could use this as a way into exploring with them whether the fact that something is illegal is itself a reason not to do something, over and above, perhaps, the harm the rule is aiming to prevent. Candidates might then think about how law makes other people's behaviour more predictable so that we can plan our own actions, or how the law might serve functions like punishing wrongdoing. An example might be that because the law makes murder illegal and those who kill are punished, I can expect that I can leave my house and generally not expect to be killed, so this allows me to decide it's safe to go outside.

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## Mathematics

**Find the last digit of  $2^{1000}$**

21000 is a huge number, 302 digits long, too big for most calculators, and so the question looks rather difficult at first glance. But if we investigate the problem by trying to spot a pattern in the behaviour of powers of 2.

$k$  1 2 3 4 5 6 7 8 9

$2^k$  2 4 8 16 32 64 128 256 512

Last Digit 2 4 8 6 2 4 8 6 2

It seems then that the last digits of the powers of  $2^k$  repeat every four powers, forever going through a cycle 2, 4, 8, 6; so after 1000 powers we will be at the end of the

250th cycle. So 21000 ends in a 6.

But without being able to calculate 21000, we could still prove that 21000 ends in a 6 as follows. Note that:

- $6 \times 6 = 36 = 6 \pmod{10}$ ;
- so any product of numbers ending in 6, will also end in 6;
- in particular for any power of 6, we have  $6^k = 6 \pmod{10}$ ;
- $24 = 16 = 6 \pmod{10}$ ;
- $21000 =$

$$\begin{aligned} & i \\ & 24 \\ & \times 250 \\ & \hline & = 16250 = 6250 = 6 \pmod{10}. \end{aligned}$$

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**Which is bigger:  $8!^{1/8}$  OR  $9!^{1/9}$ ?**

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**Imagine a ladder leaning against a vertical wall with its feet on the ground. The middle rung of the ladder has been painted a different colour on the side, so that we can see it when we look at the ladder from the side on. What shape does that middle rung trace out as the ladder falls to the floor?**

This question tests whether you can do what mathematicians do, which is to abstract away all the unimportant information and use mathematics to represent what's going on. I'd initially ask the candidate what shape they think will be formed, and then ask them how they can test this hypothesis. They might initially try sketching the ladder at different stages – this is fine, but ultimately what we want is something that we can generalise and that is accurate (you can't be sure that your drawing is that accurate, particularly when you're making a sketch on a whiteboard and don't have a ruler). So eventually they will fall back on maths, and try to model the situation using equations. If they get stuck we would ask them what shape the ladder makes with the wall and floor, and they'll eventually spot that at each stage the ladder is forming a right-angled triangle. Some might then immediately leap to Pythagoras' Theorem and use that to find the answer (which is that it forms a quarter circle centred on the point where the floor meets the wall).

This is a fun question because the answer is typically the opposite of what they expect because they think about the shape the ladder makes when it falls (which is a series of tangents to a curve centred away from the wall and the floor). A nice extension is what happens when we look at a point  $1/3$  or  $2/3$  up the ladder.

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**How many ways are there to cover a  $2 \times n$  rectangular grid with  $2 \times 1$  tiles?**

The question would typically be posed with the caveat – "I don't expect you to have the answer straight away; try working out the answer when  $n = 1, 2, 3, 4$  say". So here is something to investigate. Maths interviews are usually conducted over a piece of paper, sometimes at a white board and so diagrams will get drawn and the student will find the answers are 1, 2, 3, 5 for the first four cases. Some systematic care may be needed to explain why the fourth answer is 5 and why no sixth solution has been missed.

A relatively comfortable few minutes has been spent on this, but it's also important that the student and I aren't talking at cross-purposes. At this point I usually tell the student the next two answers at 8 and 13 – any thoughts on the emerging pattern? The answer is the Fibonacci sequence – where a term of the sequence is the sum of the previous two eg  $8 = 5 + 3$ , though it's not important if the student hasn't met this before or has forgotten the name. The next stage of the interview is about understanding why that pattern should be appearing here.

When done with this bit of the interview hopefully the student has taken on board a few new ideas. So the question moves on to:  $3 \times n$  rectangular grids and  $3 \times 1$  tiles, to  $3 \times n$  rectangular grids and  $2 \times 1$  tiles. Hints will continue to be needed, but also there will be plenty of chance to see just how much the student has taken on board from earlier and how well s/he can adapt what's been learned.

One of the reasons I found this a good question in the past was that its knowledge content is low, no more than GCSE. But its internal complexity is sufficiently difficult to test the brightest students, especially in the final part, whilst also allowing students repeated chances to show what they were learning and share their thinking.

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**How many cups of tea could you make using water from an Olympic-sized swimming pool? Notes: An Olympic swimming pool is about 50m x 25m x 2m (minimum depth). Volume = 2,500m<sup>3</sup>**

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**How hot does the air have to be in a hot air balloon if I wanted to use it to lift an elephant?**

When I actually used this question in interviews, no-one actually got as far as an actual 'X degrees C' answer in the ten minutes or so we allowed for it, nor did we expect them to. We use this sort of question to try to find how applicants think about problems, and how they might operate within a tutorial. We make this clear to interviewees before even giving them questions of this type. Things we are looking for include how readily they can see into the core of a problem (what's the essential physics in this? – what concepts and equations might be useful?); how they respond to hints and suggestions from us (can they take a hint or two and run with it, or do they have to be dragged through every step?); their approach to basic concepts (how does a hot air balloon work, anyway? What else operates like one?); estimates (typical size of balloon, weight of elephant) and sorting out what's important (what about the weight of the balloon itself?); and how they use 'rough maths' to get a quick idea of the likely sort of answer, using sensible approximations in working through formulae, and keeping track of units.

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## Medicine

**Which NHS department would you consider cutting and why?**

- **What effects will this have?**
- 

**If there was one kidney available for transplant and three possible recipients, and you had to make the final decision, to whom would you give it out of the following: a 75 year-old woman who has lived a healthy, virtuous life and still does; a 40 year old alcoholic man who also smokes 10 cigarettes per day; a 2 year old child with learning disabilities which mean they may not live beyond the age of 20. Justify why you chose one ahead of the others.**

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**A survey of studies published in 2004 in nine influential medical journals found that only 37% of participants were women, and only 13% of studies analysed data by sex. Yet sex differences in incidence, prevalence, symptoms, age at onset and severity have been widely documented: in autoimmune diseases such as rheumatoid arthritis, and multiple sclerosis; in some psychological disorders, including schizophrenia and eating disorders and in asthma and some cancers.**

- **What do you think of this result?**  
surprised that studies that unequal  
not surprised as gender is another variable easier to ignore
  - **Why do you think researchers ignore gender?**  
harder to get enough subjects with equal numbers of each gender, fewer women volunteer for research?  
have to take female menstrual cycles into account – hormones changing all the time  
just more difficult  
lack of awareness by doctors of the importance of sex differences
  - **What might be the medical consequences of this gender imbalance in research?**  
if assume male and female physiology and disease is the same women may receive treatments based on male data which might be inappropriate, ineffective or even dangerous  
therefore it is important to know the extent to which biological processes are different in men compared to women, as disease rates are different for example, to design gender-specific treatments/drug dosages
  - **What would you do to ensure scientists and doctors consider gender in their research?**  
funding bodies require studies in males and females  
clinical training to reinforce importance of considering gender differences  
publishers require studies to be analysed by gender and to show male and female results
- 

**Put these countries in order by their crude mortality (deaths per thousand of the population): Bangladesh, Japan, South Africa, the UK.**

Interviews for Medicine aim to gauge candidates' understanding of the science underpinning the study of medicine, as well as skills in scientific enquiry. This question invites candidates to think about a public health question and epidemiology that can be approached in many different ways, without necessarily knowing anything about specific mortality rates around the world. We

would expect the initial discussion to probe the differing causes of death that contribute to mortality rates – such as those 'Western diseases' heart disease and cancer – and how they compare to those found in developing countries (high infant mortality, infectious diseases, poor nutrition, high rates of HIV etc.). The majority of candidates will expect Bangladesh or South Africa to have the highest crude mortality rate, and will be surprised to find that it is in fact Japan. The other part of the mortality rate calculation is of course the age of the population: we would ideally steer the conversation towards a discussion of why a wealthy but older country like Japan might have a higher mortality rate, while a country like Bangladesh – which many people might initially expect to have a high mortality rate due to relative poverty as a country – actually has a relatively lower mortality rate because of its young population. Similarly, Britain actually has the second-highest mortality rate because of the age structure of its population: we are a relatively old country and a majority of deaths occur in older people. We wouldn't expect students to get the right answer on their own, and in fact that's not the point: the point is to see how they apply their understanding of social and cultural factors in health and illness to a problem of epidemiology. Some students might already have a detailed knowledge of demography, others might need to be given more relevant information – the point isn't what they know, it's what questions they ask to make their conclusions, and how they interpret information to draw those conclusions. We might then go on to discuss how you could make a valid comparison between mortality rates in different countries.

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## Modern Languages

### **In a world where English is a global language, why learn French?**

I might use this question early in an interview in order to set the candidate thinking, and to elicit some idea of their motivation before moving on to more specific questions. Given the nature of the Modern Languages course, I would be interested in responses about the French language as a 'window' into French culture/literature/history, knowledge of which is valuable in itself/essential to understanding today's world, etc.; but would also be happy to see candidates investigate some of the assumptions underlying the question: Is English a global language? What about Mandarin Chinese, Spanish, etc.? Can we not in fact still consider French a global language? And so on.

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### **Should poetry be difficult to understand?**

This question arose out of discussion of a few poems that a candidate said he had read, and we were talking through how these poems were conveying meaning (through things such as tone and the imagery they used). We wanted to push the candidate into more conceptual thinking to test his intellectual curiosity and how he would handle moving from familiar particulars (the poems he knew) to less familiar ways of approaching them. What's important for candidates to realise is that we don't expect a single correct answer to such a question; it's a starting point for a new direction of discussion: what sorts of 'difficulties' might we have in mind? Are these specific to poetry or do they also feature in other types of writing? And so on.

What most interests us is that candidates are willing to venture down a new path, however uncertain this may feel: to have a go and show that they have the potential to develop their thinking further – and thus thrive on the sort of course we offer.

Literature forms an important part of a Modern Languages degree at Oxford, but we know that most candidates won't have studied literature formally before in the language for which they're applying. What we want to know isn't that they've read a certain number of texts to prove their interest, but that they have the aptitude for studying texts: that they're able to think carefully and imaginatively about whatever they've had chance to read (poems, prose, drama) that's interested them, in any language.

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### **What makes a short story different from a novel?**

To further their subject interest and to discover whether the Oxford Modern Languages course is a good fit for them, candidates are encouraged to try reading some literary texts in the foreign language. We know that most won't have studied literature formally before in the language for which they're applying, so this will be reading that they've undertaken independently. In that respect, short stories, such as those by Guy de Maupassant, are a good and a popular place to start: they're engaging, memorable and can feel quite approachable. So if a candidate mentions s/he has read a few short stories, we might begin by asking them which they found the most engaging (or, for instance, the most challenging) and why. After developing this discussion for a short while, we might then push outwards from particular narratives to broader, conceptual issues, such as 'what is a short story?' or, differently posed, 'what makes a short story different from a novel?'

This isn't a question on which we'd necessarily have expected the candidate to have reflected already; it would be the beginning of a conversation, which would start by breaking down the question itself and building up an answer gradually: what might we want to think about in making such a comparison? What elements of plot design or structure or character presentation might differ? Are there, in fact, salient differences? Is it a valid opposition to make? We'd be looking for a willingness to try out new

ways of thinking and an aptitude for thinking carefully and imaginatively through a perhaps initially unfamiliar issue. That we'd been speaking about one or two particular stories before posing this 'bigger picture' question would mean that the candidate would have ready to hand material to illustrate her/his responses. In asking such a question, I as interviewer don't have in my mind a fixed answer or set of expected points as the candidate starts to respond; the follow-up on any question depends on how s/he sets about thinking her/his way through it.

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### **What is language?**

Although I would never launch this question at a candidate on its own, it might grow out of a discussion. Students sometimes say they like studying Spanish, for example, because they 'love the language'. In order to get a student thinking critically and analytically, the question would get them to consider what constitutes the language they enjoy – is it defined by particular features or by function (what it does)? How does form relate to meaning? And so on.

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### **What makes a novel or play 'political'?**

This is the sort of question that could emerge from a student's personal statement, where, in speaking about their engagement with literature and culture of the language they want to study, they state a keen interest in works (of whatever type they mention, such as a novel, play or film) that are 'political'. We might start off by discussing the specific work that they cite (something that isn't included in their A-level syllabus), so they have chance to start off on something concrete and familiar, asking, for instance, 'in what ways?', 'why?', 'why might someone not enjoy it for the same reason?'. We'd then look to test the extent of their intellectual curiosity and capacities for critical engagement by broadening the questioning out to be more conceptually orientated and invite them to make comparisons between things that they've read/seen (in whatever language). So, in posing the overall question 'what makes this political?' we'd want the candidate to start thinking about what one means in applying the label: what aspects of a work does it evoke? Is it a judgment about content or style? Could it be seen in and of itself a value judgment? How useful is it as a label? What if we said that all art is, in fact, political? What about cases where an author denies that their work is political, but critics assert that it is – is it purely a question of subjective interpretation? And so on. The interviewers would provide prompt questions to help guide the discussion. A strong candidate would show ready willingness and very good ability to engage and develop their ideas in conversation. It would be perfectly fine for someone to change their mind in the course of the discussion or come up with a thought that contradicted something they'd said before -- we want people to think flexibly and be willing to consider different perspectives; ideally, they would recognise themselves that they were changing their viewpoint, and such awareness could indicate aptitude for sustained, careful reflection rather than a 'scattergun' effect of lots of different points that aren't developed or considered in a probing way. Undoubtedly, the candidate would need to take a moment to think in the middle of all that -- we expect that 'ermmm', 'ah', 'oh', 'well', etc. will feature in someone's responses!

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### **What do we lose if we only read a foreign work of literature in translation?**

This is a good question as it helps us to see how candidates think about both languages and literature. They might be able to tell us about the challenges of translation, about what sorts of things resist literal or straightforward translation from one language to another, and this would give us an indication of how aware they are of how languages work. They might also tell us about literary language, and why literary texts in particular use language in ways that make translation problematic. This might lead to a discussion of what is distinct about literary works, and this helps us to see what kind of reader they are more broadly. We don't do this with the expectation that they have already read any particular works, however, but in order to get a sense of why they think it is worth studying literatures in foreign languages. This is an important issue, given that Modern Languages students at Oxford read a lot of literature in the language as part of their course. Occasionally candidates are able to give examples of famous lines or quotations that risk being misread when translated into English. This issue might also be something we discuss when we read an extract or poem in the language together during the interview.

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## **Music**

### **If you could invent a new musical instrument, what kind of sound would it make?**

This question is really very open-ended, and I'm interested in answers which demonstrate a critical imagination at work--what kinds of sounds do instruments/voices make now, and how might these be imaginatively extended/developed? Are there new ways of producing sound (digital media) which have transformed the way we listen or understand sound? Is the idea of an

'instrument' somehow outdated these days, and can we imagine more symbiotic/hybrid ways of generating/experiencing musical sound? It's by no means limited to classical music – I'd welcome answers which deal with musical styles and tastes of all kinds (and which are produced/consumed in all places).

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**If we were to send an expedition to outer space to find intelligent life, what role could music play?**

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### Asian and Middel Eastern Studies

**Can archaeology 'prove' or 'disprove' the Bible?**

Candidates in my subject come from a wide variety of backgrounds and qualifications, so we generally try to tailor the interview questions to the individual according to what they have on the UCAS form or wrote about in their submitted work, in order to find out whether they have a genuine interest in the subject area and an aptitude for the course.

For this particular question I would be looking for an answer that showed the candidate could appreciate that the Bible was a collection of documents written and transmitted over several centuries, and containing important traditions that have a bearing on history, but that academic study of the Bible means that it has to be examined carefully to see when and where these traditions had come from and for what purpose they had been written. Whereas they should recognise that archaeology relies on non-literary sources preserved from ancient periods such as the remains of buildings and tools. These can often be dated by scientific means (and so appear more objective than literature), but we still frequently need additional information such as inscriptions or evidence from other similar sites in order to make sense of the ancient remains. In the end I would hope the candidate would work towards a realisation of the very different nature of these types of evidence, which sometimes gives a complementary picture, while in others it may be contradictory. Both require very careful interpretation, and just arguing that 'The Bible says' or that 'Archaeology proves' is much too simplistic. (The same kind of thing applies to archaeology, the Quran, and non-Islamic historical sources for a study of the early Arab conquests.)

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### Philosophy

**Part 1 - There are two boats on a lake. One boat has 4 people and the other has 2. Both are sinking quickly. You can only save 1 boat. Which do you choose to save and why?**

**Part 2 - You now know a bit more about the boat with 4 people on it. They are aged between 55 and 65. Two of them are unemployed and have become alcoholics and two of them are criminals with drug addictions. The other boat has 2 people on it. One person is a 30-year-old brain surgeon and has just discovered a possible new treatment to treat brain tumours. The other is 19 and works as an office secretary. Which of the two boats that are sinking do you choose to save now and why?**

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**Can you tell me the difference between these three words? Clever, Intelligent, Wise**

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**What exactly do you think is involved in blaming someone?**

Questions like this help draw out a candidate's ability to think carefully and precisely about a familiar concept, evaluating proposals, coming up with counter-examples, disentangling considerations, and being creative in proposing alternative approaches. Obviously the notion of blame is an important one in moral theory but insofar as blame is an emotional attitude it also brings in issues in the philosophy of mind. Debates about the nature of blame are going on right now in philosophy so the question is also partly a prompt for doing some philosophy together -- which is exactly what we hope to achieve in a tutorial. With a question like this we're not looking for a right answer but instead whether the candidate can be creative in coming up with examples and suggestions, and can think critically and carefully through their implications. So, for example, many

candidates start out by suggesting that for A to blame B, A would have to think that B had done something wrong. Many also make the point that B needn't actually have done anything wrong. We can use this opening suggestion to consider a simple theory of blame: blame is just thinking that someone has done something wrong. When this is put to candidates, most recognize that blame seems to involve more than this. This shows their capacity to evaluate a proposal, and we'll typically ask them to illustrate their verdict with a counter-example: a case where someone thinks someone has done something wrong but doesn't blame them. Candidates will then be encouraged to offer and test-out more sophisticated proposals about the nature of blame. Some might suggest that blame involves a more complex judgement than just that someone has done something wrong. Others instead might argue that real blame requires feelings of some kind on the part of the blamer: anger, or resentment, for example. And again we can put these proposals to the test by looking for counter-examples. Good interviews will often generate all kinds of interesting and revealing discussions that show a candidate's ability for analytical thought: for example about self-blame, cases of blame where the blamer knew the blamed had done nothing wrong, and indeed cases of blaming something inanimate (such as a faulty printer or phone).

### Physics

**Draw a graph sketching the speed of a lift going up 30 floors against time.**

- **Now imagine that there is a person standing on a set of scales inside the lift. Sketch a graph plotting the reading on those scales against time as the lift moves up 30 floors.**

**Imagine you're at the seaside and you've got a bucket and spade. Estimate how many grains of sand you could fill the bucket with.**

**A ball, initially at rest, is pushed upwards by a constant force for a certain amount of time. Sketch the velocity of the ball as a function of time, from start to when it hits the ground.**

Physics interview questions often start with a question like this which looks as though it could have come from the Physics Admissions Test. In this example, I've asked the student to sketch a graph, and then I'd help him or her to get through the problem. Students do make mistakes, and that's fine as I don't expect them to know all the material, especially as the interview progresses. It's not assumed that a less-talented student will need more help on any given problem, and for this reason it can be difficult for students to judge how well they're doing during the interview.

If a student gets things correct straight away, I just move on, either to further aspects of the original question, or to others. For instance, the above line of questioning could easily result in a discussion of satellites, orbits, weightlessness or dark matter. It's usually a guided discussion rather than a matter of getting answers right or wrong straight away. I want to see how students respond to guidance and how they correct themselves, hopefully less by guessing than by thinking through what they know and what I've told them. Or in other words, while I am looking for a correct answer in the end, I'm even more interested in rigorous thinking.

### PPE

**Imagine a political system with 5 political parties. After the election no one party has a majority of MPs. So a coalition government must be formed from parties which, in total, have at least 51 MPs. The table below tells you how many MPs each party has, in Column 2. It also shows whereabouts on a Left – Right scale each party is. A party with 0 points is at the very far left, one with 100 is at the very far right.**

**Which government do you think will be formed?**

PARTY	Number of MPs	Left/Right Score
A	31	10
B	7	15
C	13	50
D	31	55
E	17	100

**I'm having trouble with the meaning of three words: lie, deceive, mislead. They seem to mean something a bit similar, but not exactly the same. Help me to sort them out from each other.**

When I used this question, candidates adopted a number of strategies. One was to provide definitions of each of them - which turned out to be less easy than one might think without using the other words in the definition. Or they could be contrasted in pairs, or, like a good dictionary, examples might be given of sentences where they are used. No particular strategy was 'correct', and a variety of interesting discussions developed. A few candidates were inclined to think that it might be possible to lie without intending to; most reckoned that one could unintentionally mislead. A fertile line of discussion centred on misleading someone by telling them the truth. When Lucy tries to console Mr Tumnus, the faun, in Narnia, she tells him that he is 'the nicest faun I've ever met'. Which does sound comforting. She's only ever met one faun, though - him - so he's also the nastiest faun she's ever met. If he had felt comforted by her remark, would he have been deceived? And, in saying something true, had she deceived him, or had he deceived himself?

Questions of this sort help us to test a candidate's capacity to draw nuanced distinctions between concepts, and to revise and challenge their own first moves in the light of different sentences containing the key words. Discussion may well lead into areas which could crop up during a degree in philosophy, including questions in ethics, the philosophy of mind and of language. It's not, though, a test of 'philosophical knowledge', and the content of the discussion begins from words which candidates should have a good familiarity with. Until asked this question, they would probably think that they knew their meanings pretty well. Those for whom English isn't a first language might be thought to be at a disadvantage, but they often do strikingly well at such questions, better indeed than native speakers. There may well be reasons for this, which could form the basis of a different interview question.

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**When I was at school in the 1970s, there was talk of a pensions crisis that would one day hit. The talk persisted in the 1980s and the 1990s – and then there was a pensions crisis and little had been done to politically prepare us for it. Is there a fault with the British political system that means we can't sensibly address serious medium and long-term problems when they're identified?**

This question was an invitation to think about democracy and its limitations – it's a big question, but an important one. I have had candidates come up with good discussions about voting methods – for example, how having proportions of parliament voted in for much longer terms might promote more long-term policy thinking. Another approach might be to reflect on the responsibility of the electorate; if they do not think in long-term ways, it may not be politicians who are to blame, and the problem may be down to education. One might reflect upon the importance of having an unelected second chamber to which all really important business could be delegated. One candidate suggested that no one should be allowed to stand for parliament unless they have dependent children, with the thought that this would ensure a personal motivation towards longer term thinking on a variety of matters.

There is no single 'right answer' to the question; most answers given serve as the basis for further elaboration. For example, in the case of longer parliamentary terms: What would be the wider consequences of that change? Would they be desirable? We are testing the capacity to begin to locate the source of a problem, and try out solutions through discussion. The precise solution students suggest matters much less than evidence of the refining of ideas and of self-correction where necessary.

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**Do you have good reason to believe that the sun will rise tomorrow?**

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**Is this you?**



**'I agree that air transport contributes to harmful climate change. But whether or not I make a given plane journey, the plane will fly anyway. So there is no moral reason for me not to travel by plane.' Is this a convincing argument?**

The interview is not meant to test candidates' knowledge of Philosophy, since more often than not, they have not studied this subject before. Moreover, we are not trying to get them to guess or arrive at 'the right answer'. Rather, the interview is about candidates' ability to think critically, to deal with counter-examples to the views they put forward, and to draw distinctions between important concepts.

This answer raises the difficult question of individuals' responsibility, as individuals, for harmful collective actions. Some candidates might be inclined to dispute the premise that air transport contributes to climate change: that's fine, but we would then ask them to accept that premise for the sake of argument. Whether they are able to do that is in itself an important test, since much of philosophical thinking proceeds in this way.

Some candidates might say that the argument is a good one: given that what I do makes no difference, I have no moral reason not to do it. At this point, I would want to know what they consider a moral reason to be (as distinct from or similar to, for example, a practical or prudential reason).

I would also push them to think about other cases: for example, the bombing of Dresden (one jet fighter less makes no difference to the collective outcome – so why not go and fight); or voting (why should I vote in a general election, given that my vote makes no difference)? Are the cases the same? Are they different? If so, are the differences or similarities relevant? That is

to say, do those differences and similarities help us think about the original case? Do they help us to work out a view about individual responsibility in those cases? For example, in the Dresden case, the individual jet fighters act together as part of an organisation – the air force – whose aim is to bomb Dresden. But we cannot say of companies such as British Airways that they aim to cause climate change. And the air passengers cannot really be described as acting together. Does this make a difference?

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### **Are our deaths bad for us?**

I quite like this question because whichever way one answers it, new questions open up. One can distinguish between the process of dying and the state of being dead. The first seems non-problematically something that might well be bad for us (involving suffering), but the second is harder to assess – not least because one can have differing understandings of what the state of being dead is: is it permanent annihilation? Is it somehow waiting unconscious for a resurrection? Is to die simply to be transported instantaneously to some new realm? Or is it something else again? And can one know which? Whichever way the discussion goes, interesting topics branch off. These can include the nature of the self and personal identity; the rationality (or otherwise) of religious beliefs.

There are also different understandings of what ‘badness’ is or would be – are all bad things that happen to us things which affect our consciousness, in which case how could annihilation (if that’s what being dead is) be bad for us? And wider discussions of the nature of value might open up from there. Is there a world of value in some sense ‘out there’, waiting to be discovered, independent of what we might happen to think or feel about it? Or is value more ‘in here’, waiting to be created, depending on our own individual (or societal?) thoughts and feelings? Students might also have different understandings of the ‘us’ in the original question: perhaps it’s good for us as a species that individuals die off; perhaps it’s bad for each of us as individuals that we die off. Perhaps there isn’t an answer that applies across the board to all of us considered as individuals – some individuals’ deaths are bad for them; some aren’t. Questions in practical ethics come up here – to do with euthanasia and the like.

Most people have instinctive reactions to these types of questions, answers that feel right to them without argument. In Philosophy, we are less interested in what that answer or series of answers might be, but how the person developing their thinking justifies it with argument or adapts it in the light of counterargument; how they respond to new considerations – new conceptual distinctions, new evidence, and so on; how (or if) they spot inconsistencies or growing implausibility as their series of answers and ideas develop, or bonds of mutual support between their answers and ideas.

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### **Suppose that you could plug yourself into a machine for the rest of your life, which would give you all the experiences you find enjoyable and valuable. Once in the machine, you would not know that you are plugged in, and that these experiences are not real. Would you go into the machine? If so, why? If not, why not?**

The interview is not meant to test candidates’ knowledge of Philosophy, since more often than not, they have not studied this subject before. Moreover, we are not trying to get them to guess or arrive at ‘the right answer’. Rather, the interview is about candidates’ ability to think critically, to deal with counter-examples to the views they put forward, and to draw distinctions between important concepts. Thought-experiments are an important part of doing Philosophy. The experience machine is a thought experiment (it’s also at the heart of the movie *The Matrix*, of course.) It invites candidates to think about what makes a life worth living. Some candidates might be tempted to go into the machine, on the grounds that a good life is a pleasurable life. If so, we would invite them to consider the case of the addict with unlimited supplies of pleasures-inducing drugs. We would also invite them to consider the distinction between ‘experiencing’ and ‘doing/acting’: could actually carrying out those pleasurable activities be a better measure of a good life than merely experiencing those pleasures? Other candidates might say, on the contrary, that they would not go into the machine, precisely on the grounds that a good life is not merely one in which we experience pleasure. Depending on how they construct their argument, we would try and see what they make of the distinction between what is pleasurable and what is valuable (some experiences might be valuable precisely in so far as they are not enjoyable.) In all cases we want them to reflect on whether a good life, for me, is simply what I say it is, or whether a good life must be objectively good.

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### **Why is income per head between 50 and 100 times larger in the United States than in countries such as Burundi and Malawi?**

The question is focused on perhaps the most important economic question there is: why are some countries rich and some countries poor? As with most economics questions, there is no simple or unique answer. Candidates need to think about all the potential reasons why such income gaps exist. A good starting point is to think about whether the amount of capital and technology available to workers in different countries is the same and if not, why not? US workers are much more productive because they have access to the best technology - the US is at the technological frontier. But why do poor countries not just buy the same technology and be as productive? Possibly, the education levels are too low to allow for the use of such technology or perhaps there are insufficient savings to purchase the technology or the infrastructure might not exist. Good candidates should recognise that institutions matter a lot - respect for property rights and the rule of law appear to be pre-requisites for sustainable development. Other factors might include trade restrictions by the rich world on poor countries exports, civil wars, disease (eg AIDS, malaria) etc. The trick is to think widely and not try and fit the answer to some lesson that has been learnt in school.

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### **Is it better to be a citizen of a small democracy with few citizens, or a large democracy with many citizens?**

- This follows up on an issue raised in the Federalist Papers about the optimal size of a republic.
- It's asked in an open-ended way and some students don't see the point of the question immediately and need some help to find a trade-off to consider (e.g.: better to have a larger proportion of the total voice but in a smaller polity, big fish in smaller pond sort of thing). I wouldn't evaluate them on whether they need that help but on how they develop their thinking from that point.
- Good answers would consider the relationship between our own preferences and those of the wider demos, and the value of being a larger or smaller state for e.g. international relations or national economies.
- The best answers might think about averaging and the law of large numbers, about media and national discourse, and might also look for information not contained in the question - what kinds of preferences do we have? is the larger democracy a more divided one in terms of e.g. national identity? "better" for who and in what ways? etc.

## Sciences

**How many Golden eagles would need to be harnessed together to lift an elephant?**

- What information do you think you need to work this out?
  - How would you start answering this question?
- 

**How many carbon atoms are there in this room?**

- What information do you think you need to work this out?
  - How would you start answering this question?
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## Theology and Religion

**Is someone who risks their own life (and those of others) in extreme sports or endurance activities a hero or a fool?**

Theology and Religion doesn't require A-level Religious Studies, so we always want to find issues that enable us to see how a student is able to handle and unpick a question, relating the particular to more general concepts. This question appeared to work well because there really isn't a single answer – it's open not least because we could state the opposite case and observe how flexible, reasoned and committed each student was. The question is properly approached from many perspectives and opens up many topics – is there something distinctively human about going beyond boundaries? Is this impulse selfish, or does it contribute to the whole of humanity's attainment? Is the heroism of those who respond to the needs of the sportsperson more heroic still? What debts do individuals owe to society, and society owe to individuals? What is a hero, and is that category in opposition to folly? What we found with this question is that it did manage to open what is a stressful occasion into a real discussion, and we want to offer places to gifted candidates who are willing to think out loud with us in tutorials, and in a college community, whilst they are still explorers into truths.

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**Does God have a gender?**

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**Is football a religion?**

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**Are there any beliefs you hold that you wouldn't be willing to question?**

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**Is the bible just a glorified gossip column?**

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**Can atheists and theists engage in a truly meaningful dialogue?**

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