UK Clinical Aptitude Test

Fairness
Wider participation

UKCAT
Official Guide
2016

UK Clinical Aptitude Test
for Medicine and Dentistry

www.ukcat.ac.uk

Foreword

This is the official guide to the UKCAT 2016 which contains definitive information regarding the test and its content. We have produced this guide in response to candidate feedback that they would like a comprehensive guide to the test that is portable and printable. We believe that this guide, in conjunction with additional information on our website www.ukcat.ac.uk and our free Candidate Preparation Toolkit, is all you need to prepare successfully for the test.

Please remember that we do not endorse any commercially-available preparation courses for the UKCAT and we would advise you to be sceptical about anyone's claims to be able to help you do well in the test by coaching. Of course you do need to practice in order to become familiar with test items and most importantly the timing in each subtest. We give more advice in this document regarding test preparation.

Our guide includes key information about the test, what it contains and how our Universities use the test. In addition, it contains information about what to expect on your test day. You will find descriptions of each subtest together with over 130 practice items and answers to help you prepare. Items can also be accessed through our Practice App available from the iTunes App Store and Google Play.

We hope you find this information useful. If you have any feedback and suggestions for additional content please contact us.

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Contents

What is the UKCAT?

UKCAT is committed to achieving greater fairness in selection to medicine and dentistry and to the widening participation in medical and dental training of under-represented social groups.

The UKCAT Consortium is a charity and company limited by guarantee. The members of the charity, who also nominate its board of directors, are the universities that have agreed to adopt the UKCAT as part of their selection process for medicine and dentistry.

The test helps universities to make more informed choices from amongst the many highly-qualified applicants to medical and dental programmes. It helps to ensure that candidates selected have the most appropriate mental abilities, attitudes and professional behaviour required for new doctors and dentists to be successful in their clinical careers.

The UKCAT does not contain any curriculum or science content; nor can it be revised for. It focuses on exploring the cognitive powers of candidates and other attributes considered to be valuable for health care professionals.

The test is run by the UKCAT Consortium in partnership with Pearson VUE, a global leader in computer-based testing and part of Pearson plc. It is delivered on computers worldwide through Pearson VUE's high street centres.

2016 Test

Key dates 2016

Registration opens	3 May
Bursary applications open	3 May
Testing begins	1 July
Registration deadline	21 September
Bursary applications close	21 September
Booking/rescheduling deadline	4 October
Last testing date	5 October
UCAS application deadline	15 October
UCAS choice notification deadline	21 October

Who should take the test?

The UKCAT is a compulsory entry requirement for our Consortium Universities. You are required to sit the test by 5 October 2016 if you are intending to apply for entry in 2017 (or deferred entry in 2018) to a relevant course listed overleaf. UKCAT results cannot be carried over from one year to the next.

There are no general exemptions from the test. Candidates who believe they may be unable to sit the UKCAT in 2016 should see the Mitigating Circumstances information on our website.

You may only take the test once in any test cycle and any instances of multiple testing in the same year will be treated as an example of unprofessional behaviour.

Which Universities require the test?

The information below may be subject to change. You should always check the entry requirements for each course before booking a test. Some universities may have different requirements for overseas or graduate applicants. The UKCAT website has the most up to date list.

University of Aberdeen	A100, A201
University of Birmingham	A100, A200
University of Bristol	A100, A108, A206, A208
Cardiff University	A100, A104, A200, A204, B750, B752
University of Dundee	A100, A104, A200, A204
Durham University	A100, A190, A191
University of East Anglia	A100, A104
University of Edinburgh	A100
University of Exeter	A100
University of Glasgow	A100, A200
Hull York Medical School	A100
Keele University	A100, A104
King's College London	A100, A101, A102, A202, A205, A206
University of Leicester	A100
University of Liverpool	A100, A200, A201
University of Manchester	A104, A106, A204, A206, B840
University of Newcastle	A100, A101, A206
University of Nottingham	A100, A108
Plymouth University	A100, A206
Queen Mary, University of London	A100, A101, A110, A200
Queen's University Belfast	A100, A200*
University of Sheffield	A100, A104, A200
University of Southampton	A100, A101, A102
University of St Andrews	A100, A990
St George's, University of London	A100, A900
University of Warwick	A101

* not all applicants – please see university website for more details

Non-UK Universities	
UKCAT also meets the admission requirements of the following course:	
Pozan University of Medical Sciences	4-Year MD Program in English for college graduates

Where can I take the test?

The UKCAT is a compulsory entry requirement for our Consortium Universities. The UKCAT is offered worldwide in the countries listed below. Consortium Universities expect overseas applicants to take the test which could mean travelling to another country.

There are no general exemptions from the test. Candidates who believe they may be unable to sit the UKCAT in 2016 should see our Mitigating Circumstances information on our website.

Afghanistan	Denmark	Jamaica	New Zealand	Swaziland
Albania	Ecuador	Japan	Nigeria	Sweden
Australia	Egypt	Jordan	Norway	Switzerland
Austria	Estonia	Kazakhstan	Oman	Taiwan
Bahamas	Ethiopia	Kenya	Pakistan	Tanzania
Bahrain	Finland	Kuwait	Palestine	Thailand
Bangladesh	France	Latvia	Philippines	Trinidad & Tobago
Barbados	Gambia	Lebanon	Poland	Tunisia
Belgium	Germany	Libya	Portugal	Turkey
Bermuda	Ghana	Lithuania	Puerto Rico	Uganda
Botswana	Gibraltar	Luxembourg	Qatar	Ukraine
Brazil	Greece	Malawi	Romania	United Arab Emirates
Brunei	Hong Kong	Malaysia	Russia	United Kingdom
Bulgaria	Hungary	Maldives	Saudi Arabia	United States of America
Cameroon	Iceland	Malta	Serbia	Vietnam
Canada	India	Mauritius	Singapore	Zambia
Cayman Islands	Indonesia	Mexico	Slovakia	Zimbabwe
Chile	Iraq	Morocco	Slovenia	
China	Ireland (Republic of)	Myanmar	South Africa	
Croatia	Israel	Namibia	South Korea	
Cyprus	Italy	Nepal	Spain	
Czech Republic		Netherlands	Sri Lanka	

Please check the website for a current list of countries.

Registration and Booking

The UKCAT can be taken between 1 July and 5 October 2016.

Registration

You are strongly recommended to register and sit the UKCAT at your earliest convenience to ensure that places are available at your chosen test centre. Each year there are candidates who book to take the test late and then encounter problems when they fall ill or experience other issues which prevent them from taking that testing slot. This can be avoided by booking to take your test early.

You can register for the test between 3 May and 5pm on 21 September 2016 by following the links on our **website www.ukcat.ac.uk**.

You need to register for the test personally – this cannot be done by your school or college.

Booking

Once you have registered you will be able to sign in again to book your test. We recommend you book a test slot as soon as possible to maximise the chance of attending a convenient test centre. Booking closes at midday on 4 October 2016.

Paying for your Test

The following test fees apply in 2016:

- Tests taken in the EU between
  1 July and 31 August **£65**

- Tests taken in the EU between
  1 September and 5 October **£80**

- Tests taken outside the EU **£100**

There is no difference in content between the UKCAT sat during the summer or autumn period. The increased price reflects demand on resources at particular times of the year. We recommend candidates sit the test during the summer period and pay the lower test fee.

Registration and test fees depend on the test centre location, not on your place of residence or nationality.

The registration fee is payable online at the time of booking by major credit card (Visa, Mastercard or UK Visa debit card). The fee is always charged in GBP (pounds sterling). If you have a non-UK credit card, your credit card company will bill you according to its own rules for foreign transactions.

Bursaries

UKCAT bursaries are available to candidates who are in receipt of one of the following:

- **16 to 19 Bursary** or **Educational Maintenance Allowance (EMA)**

- **FE 19+ Discretionary Learner Support** (or equivalent for Wales, Scotland, Northern Ireland)

- **Free School Meals**

- **Full Maintenance Grant** or **full Special Support Grant** (or equivalent for Wales, Scotland, Northern Ireland)

- **Income Support, Job Seeker's Allowance, Employment and Support Allowance** or **Universal Credit**

- An equivalent **means tested benefit** to one of the above, if they are outside the UK but within the EU.

Bursaries are also available to candidates who:

- Live with a parent/guardian in receipt of **Income Support, Income-based Jobseeker's Allowance** or **Income-based Employment and Support Allowance**

- Live with a parent/guardian in receipt of **Universal Credit** if the household income as stated on the award is less than £35k.

- Live with a family member in receipt of **Child Tax Credit** where the candidate is named on the award and the household income as stated on the award is less than £35k

- Live with a parent/guardian in receipt of **Asylum Support**

Further information regarding applying for a bursary can be found here **www.ukcat.ac.uk/registration/bursaries**

Rescheduling and Cancelling

Candidates may either reschedule or cancel their test by going through the Pearson VUE site and managing their booking. Booking and rescheduling closes at midday on 4 October 2016.

Refund policy

Candidates may cancel or reschedule their test, without charge, up to one clear day before their scheduled test date. A clear day does not include the day of the reschedule or the day of the test; for example for a test on a Friday, the last day to make any changes would be midnight on the preceding Wednesday. Where a candidate cancels their test within these deadlines they will receive a credit/debit card refund.

If the candidate cancels or reschedules later than this, the appointment will count as a 'no-show'. In this case a candidate wishing to reschedule their test would be required to pay a further fee for the rescheduled test. If you miss your test for any reason and have not rescheduled in time, you will have to book another test at your own expense. This applies in cases of illness, family emergency, accident, arrest, transport problems and security alert as well as forgetfulness and lateness. It also applies to those who arrive at the test centre with inadequate or invalid identification.

Candidates with Disabilities

This section covers special examination arrangements for candidates with disabilities.

- Candidates may require additional time for the test and in this case will sit the **UKCATSEN**

- Candidates may require a particular test-centre environment due to a medical condition or disability and will need to arrange this in advance of their test.

UKCATSEN (Special Educational Needs)

Candidates should book the UKCATSEN if they are entitled to additional time for public examinations based on a medical diagnosis or report from a specialist teacher. This is likely to relate to candidates with dyslexia, dyspraxia, dysgraphia, dysorthographia, attention deficit disorder, or working memory deficit. This may also apply to a range of other medical conditions.

Candidates do not need to supply UKCAT with evidence of their medical condition to book the UKCATSEN. If a candidate has sat the UKCATSEN the Universities to which they have applied will ask for the following evidence to be sent to them during their admissions cycle:

Candidates currently in education
- An official letter from their school, college or university that states that on the basis of a diagnosis from a qualified medical practitioner, educational psychologist or specialist teacher the candidate is currently entitled to additional time in public examinations (or have had additional time in public examinations within the last two years)

Candidates not currently in education
- A post-16 year's diagnosis or report from a qualified medical practitioner or educational psychologist that recommends additional time in public examinations.

A candidate's UKCAT result may be declared void if they do not present adequate supporting evidence when it is asked for by one of the universities.

Candidates unsure whether they are eligible to take the UKCATSEN or expecting to offer different evidence of their condition should contact **UKCAT - ukcat@nottingham.ac.uk** before booking their test.

For all other types of disability or medical conditions, medical evidence from a specialist or general practitioner is required. Evidence should be recent and detail your circumstances and explain explicitly why you need alternative examination arrangements. We are unlikely to support requests where there is not a clear medical recommendation that you should be granted additional time.

The UKCATSEN is not intended for candidates for whom English is an additional language. It is for those with learning difficulties or medical conditions for which they require additional time in examinations.

Special examination arrangements
Candidates may require a particular test-centre environment due to a medical condition or disability. This may also apply if you need to take medication during testing. Please see the website for more details.

Special examination arrangements cannot be handled by our online registration system and need to be arranged in advance. Candidates should register with Pearson VUE and then contact Customer Services who will advise them how to proceed.

Recent medical evidence will be required to support any requests for special examination arrangements.

Candidates who have booked a test date need to contact Customer Services immediately. It is possible that subject to their needs the test date, time or place may need to be changed. Testing without special exam arrangements in place will not be accepted as a mitigating circumstance.

Candidates who do not think that the UKCATSEN or special examination arrangements will meet their particular needs should contact UKCAT by email **ukcat@nottingham.ac.uk** and present supporting evidence.

Test Format

Overview

The test assesses a range of mental abilities identified by university Medical and Dental Schools as important. There is no curriculum content as the test examines innate skills. Each subtest is in a multiple-choice format and is separately timed.

For candidates sitting the examination in 2016, the UKCAT will consist of:

- **Verbal reasoning** - assesses ability to critically evaluate information that is presented in a written form

- **Decision making** - assesses ability to apply logic to reach a decision or conclusion, evaluate arguments and analyse statistical information

- **Quantitative reasoning** - assesses ability to critically evaluate information presented in a numerical form

- **Abstract reasoning** - assesses the use of convergent and divergent thinking to infer relationships from information

- **Situational judgement** - measures capacity to understand real world situations and to identify critical factors and appropriate behaviour in dealing with them.

UKCAT - Standard Test (120 minutes)

Section	Time (including instructions)	Items
Verbal Reasoning	22 minutes	44 items
Decision Making	32 minutes	29 items
Quantitative Reasoning	25 minutes	36 items
Abstract Reasoning	14 minutes	55 items
Situational Judgement	27 minutes	69 items

UKCATSEN - Extended Test (150 minutes)

Section	Time (including instructions)	Items
Verbal Reasoning	28 minutes	44 items
Decision Making	39 minutes	29 items
Quantitative Reasoning	31.5 minutes	36 items
Abstract Reasoning	17.5 minutes	55 items
Situational Judgement	34 minutes	69 items

Verbal Reasoning

The Verbal Reasoning subtest assesses your ability to read and think carefully about information presented in passages and to determine whether specific conclusions can be drawn from information presented.

Time	Items
22 minutes (one minute for instruction and 21 minutes for items)	44 items associated with 11 reading passages

Why Verbal Reasoning?

Doctors and dentists need excellent verbal reasoning skills in many aspects of their work. An ability to understand complex information and communicate this clearly and simply to patients is obviously essential. Medical practitioners must also be able to interpret findings from published materials and apply this to their own practice. It is also essential they are able to critique such materials and draw their own conclusion as to the validity of any findings.

Verbal Reasoning Items

You will be presented with eleven passages of text, each associated with four items (questions).

Some items assess critical reasoning skills, requiring candidates to make inferences and draw conclusions from information. You will need to read the passage of text carefully. You will then be presented with items which comprise a stem, which might be an incomplete statement or a question, with four response options. The candidate is required to pick the best or most suitable response. Candidates will only be able to select one response.

For other test items, your task is to read each passage of text carefully and then decide whether the statement provided follows logically from the information in the passage. In each case you can choose True, False or Can't Tell.

Decision Making

In 2016 UKCAT is piloting a new subtest of Decision Making which replaces Decision Analysis. The new Decision Making subtest tests your ability to apply logic to reach a decision or conclusion, evaluate arguments and analyse statistical information.

You are required to take this subtest as part of the UKCAT. However your performance in this subtest will not contribute to your final score, will not be communicated to your chosen medical and dental schools and will not be taken into consideration by universities during their admission processes.

The UKCAT Consortium Universities encourage candidates to take this subtest seriously even though it does not contribute to their UKCAT result. In doing so candidates will be assisting in the development and validation of a significant new aspect of the UKCAT, helping us improve selection processes for future medical and dental students.

Time	Items
32 minutes (one minute for instruction and 31 minutes for items)	29 items associated with diagrams, text, charts or graphs

Why Decision Making?

Doctors and dentists are often required to make decisions in situations that may be complex. This requires high-level problem solving skills and the ability to assess and manage risk and deal with uncertainty.

Decision Making Items

You will be presented with items that may refer to text, charts, tables, graphs or diagrams. Additional information may be presented within the question itself.

All questions are standalone and do not share data. Some questions will have four answer options but only one correct answer; others will require you to respond to five statements by placing a 'yes' or 'no' answer next to each statement.

A simple on-screen calculator is available for use in this section. You may also need to use your booklet and pen.

Quantitative Reasoning

The Quantitative Reasoning subtest assesses your ability to use numerical skills to solve problems. It assumes familiarity with numbers to the standard of a good pass at GCSE. However, items are less to do with numerical facility and more to do with problem solving (i.e. knowing what information to use and how to manipulate it using simple calculations and ratios). The subtest measures reasoning using numbers as a vehicle rather than measuring a facility with numbers.

Time	Items
25 minutes (one minute for instruction and 24 minutes for items)	36 items associated with tables, charts, and/or graphs

Why Quantitative Reasoning?

Doctors and dentists are constantly required to look at data, review it and apply it to their own practice. On a practical level drug calculations based on patient weight, age and other factors have to be correct. At a more advanced level, medical and dental research requires an ability to interpret, critique and apply results presented in the form of complex statistics. Universities considering applicants need to know they have the aptitude to cope in these situations.

Quantitative Reasoning Items

You are required to solve problems by extracting relevant information from tables and other numerical presentations. Some of the items may present additional supporting information in the form of tables, charts and graphs. For each, you may be presented with four items that relate to that table, chart or graph. For each item, there are five answer options to choose from. Your task is to choose the best option.

A simple on-screen calculator is available for use in this section. The calculator is integrated into the practice tests to allow candidates to familiarise themselves with using it.

Abstract Reasoning

Abstract Reasoning assesses your ability to identify patterns amongst abstract shapes where irrelevant and distracting material may lead to incorrect conclusions. The test therefore measures your ability to change track, critically evaluate and generate hypotheses and requires you to query judgements as you go along.

Time	Items
14 minutes (one minute for instruction, 13 minutes for items)	55 items associated with sets of shapes

Why Abstract Reasoning?

When considering possible diagnoses, medical practitioners may be presented with a set of symptoms and/or results. Some information may be more reliable, more relevant and clearer than other information. Doctors and Dentists need to make judgements about such information, identifying the information which will help them reach conclusions. Carrying out research involving data often involves identifying patterns in results in order to generate further hypotheses.

Abstract Reasoning Items

There are 4 different item types in the Abstract Reasoning subtest.

For type 1, you will be presented with two sets of shapes labelled "Set A" and "Set B". You will be given a test shape and asked to decide whether the test shape belongs to Set A, Set B, or Neither.

For type 2, you will be presented with a series of shapes. You will be asked to select the next shape in the series.

For type 3, you will be presented with a statement, involving a group of shapes. You will be asked to determine which shape completes the statement.

For type 4, you will be presented with two sets of shapes labelled "Set A" and "Set B". You will be asked to select which of the four response options belongs to Set A or Set B.

Situational Judgement

The test measures your capacity to understand real world situations and to identify critical factors and appropriate behaviour in dealing with them.

Time	Items
27 minutes (one minute for instruction and 26 minutes for items)	69 items associated with 20 scenarios (consisting of between 2 and 5 items)

Why Situational Judgement?

The test assesses integrity, perspective taking, team involvement, resilience and adaptability. SJTs are used widely in medical selection, including selection of Foundation Doctors, GPs and other medical specialities.

Situational Judgement Test Items

The test consists of a series of scenarios with possible actions and considerations.

The questions do not require medical or procedural knowledge to answer.

For the first set you will be asked to rate the **appropriateness** of a series of options in response to the scenario. When considering how to respond to the scenario, an option is:

- **A very appropriate thing to do** if it will address at least one aspect (not necessarily all aspects) of the situation

- **Appropriate, but not ideal** if it could be done, but is not necessarily a very good thing to do

- **Inappropriate, but not awful** if it should not really be done, but would not be terrible

- **A very inappropriate thing to do** if it should definitely not be done and would make the situation worse

A response should not be judged as if it is the **only** thing that is done. For example, if the wrong medication is provided to a patient, there are a number of steps that should be taken, including checking the patient is ok and assessing the patient medically. The response 'ask the patient if they are ok' should still be judged as appropriate. It should not be judged as if this is the **only** action that will be taken.

For the second set you will be asked to rate the **importance** of a series of options in response to the scenario. When considering how to respond to the scenario, an option is:

- **Very important** if this is something that is vital to take into account

- **Important** if this is something that is important but not vital to take into account

- **Of minor importance** if this is something that could be taken into account, but it does not matter if it is considered or not

- **Not important at all** if this is something that should definitely not be taken into account

Marking and scores

Verbal Reasoning, Quantitative Reasoning and Abstract Reasoning are marked on the number of correct answers a candidate gives.

In 2016 UKCAT is piloting a new Decision Making subtest. The data we collect from candidates taking this subtest is crucial to its development but at this stage results cannot be generated from the items answered.

Within the Situational Judgement test, full marks are awarded for an item if the response matches the correct answer and partial marks awarded if the response is close to the correct answer.

- There is no negative marking for incorrect answers.

- Performance on one item does not influence which other items are presented.

UKCAT Scores

As the number of items varies between Verbal Reasoning, Quantitative Reasoning and Abstract Reasoning it is not possible to make a direct comparison of the raw scores between the cognitive subtests. Raw scores are therefore converted to scale scores that share a common range from 300 to 900.

Candidates will not receive a score for the new Decision Making subtest and their results for this section will not be communicated to Universities.

- A total scale score is generated by summing the individual scale scores of Verbal Reasoning, Quantitative Reasoning and Abstract Reasoning.

- In 2016 a total scale score ranges from 900 to 2700

Candidates should note that in previous years the total scale score ranged from 1200 to 3600 because there were four cognitive subtests that contributed to the overall score. They need to be aware of this when comparing their scores to those used by Universities in previous years. Further details can be found at **www.ukcat. ac.uk/about-the-test/applications/**

Raw scores for the Situational Judgement subtest are expressed in one of four bands, with band 1 being the highest. Alongside their band, candidates will be given an interpretation of this performance:

Band 1	Those in Band 1 demonstrated an excellent level of performance, showing similar judgement in most cases to the panel of experts.
Band 2	Those in Band 2 demonstrated a good, solid level of performance, showing appropriate judgement frequently, with many responses matching model answers.
Band 3	Those in Band 3 demonstrated a modest level of performance, with appropriate judgement shown for some questions and substantial differences from ideal responses for others.
Band 4	The performance of those in Band 4 was low, with judgement tending to differ substantially from ideal responses in many cases.

As the SJT is a measure of non-cognitive attributes, it will be considered by universities in a different manner to the cognitive subtests. Please refer to their websites for more details.

Using My Results

When do I Receive My Result?
When you leave the test centre you will be given a copy of your test result. This test result is valid for the 2016 UCAS Admissions cycle (for entry into medical or dental school in 2017 or deferred entry to 2018).

If you need any additional copies of your UKCAT score report, these will be available for a fee of £25 GBP. You can order additional copies of your score report by contacting Pearson VUE **www.ukcat.ac.uk/contact-us**.

How Do I Use My Result?
You will have your test result before the UCAS deadline so please ensure you use this to help inform your UCAS choices, otherwise you might be wasting an application. Our Universities provide information on their websites regarding how they use the test in admissions.

Some Universities may provide indicative scores, based on previous years' experience to guide candidates in relation to their admission requirements. Such scores may be subject to change in 2016. Universities will indicate on their websites if this is the case.

For some the UKCAT score is a significant factor in their consideration of your application. For others it may be a less significant factor or only used in marginal situations. Most Universities consider the total score (i.e. the score after each of the cognitive subtest scores have been added together). Some however do look at individual subtest scores and may even have a cut-off score for a particular subtest.

Some Universities have a threshold score that candidates have to achieve in order to be considered further in their admission processes. This score is often determined each year but Universities will usually indicate on their website, threshold scores that have been used in previous years.

Other Universities use the UKCAT alongside factors such as academic achievement, personal statement and interview performance. The factor may be significant or may contribute a small amount to the final outcome.

Some universities use the score (sometimes in addition to the above uses) to discriminate between candidates who are ranked equally at some point in the process. The UKCAT score provides an additional way of ranking such candidates in order to decide who can proceed to the next stage.

A small number of Universities use the test to provide opportunities to candidates who perhaps would not have progressed to interview (for example) using traditional selection methods. This may advantage candidates who have not have achieved the highest academic score but have performed particularly well in the UKCAT.

Test Statistics
Statistics from previous test cycles are available on our website. UKCAT will issue interim score statistics in late September 2016 and final test statistics in early October 2016.

Delivering Results

How do Universities Receive My Result?

Once you have submitted your UCAS application you need to tell us your 10-digit UCAS Personal Identification Number (PID) and both the University name and UCAS course code (e.g. A100) of all your choices that require the UKCAT. We will use this information to help deliver your results to your chosen Universities.

We will email you in late-September asking you to provide this information. Please ensure you have your log-in details to your Pearson VUE UKCAT account as you will need these to complete the process.

It is your responsibility to provide us with this information by the 21 October 2016. If you fail to supply this information correctly it may delay the processing of your application to your chosen UKCAT Universities.

When do Universities receive my results?
Once we have details of your chosen Universities we communicate your test result directly to them, usually during the first week of November.

For clarity, we do not and cannot pass your mark onto any Universities outside the Consortium.

PREPARATION

The UKCAT is an important test. We know that candidates want to prepare properly. Please remember however that the UKCAT is a test of aptitude rather than academic achievement. It does not draw on any particular body of knowledge that candidates can learn in advance.

Candidates can prepare for their test using the free resources available in the **Candidate Preparation Toolkit** available from the website **www.ukcat.ac.uk/preparation/candidate-toolkit**. This has been developed by UKCAT to contain comprehensive information and practice materials to support your preparation, including official Practice Tests and Questions.

In 2012 we surveyed our candidates about how they prepared for the test and compared this against the scores they achieved. Some of the advice below draws on the outcomes from this analysis.

How should I prepare?

- Familiarise yourself with the requirements and question styles in each subtest. Use the Official Guide, Practice App and Practice Questions in the **Candidate Preparation Toolkit** to help you

- Use the **Tour Tutorial** to familiarise yourself with the onscreen test format, learn how to move around the screen and through the test and to use the calculator provided

- Use the **Question Tutorial** to learn strategies for approaching and answering questions

- Make full use of the UKCAT **Practice Tests**. UKCAT provides you with three fully timed tests which mimic closely the testing experience. It is important to understand the *time* limitations in each section and to develop strategies to approach each subtest with this in mind. Test items are of an equivalent standard to those you will encounter in the test and include any new sections or item types. You may review your responses against answer rationales. In our survey, 88% of respondents agreed that the practice tests increased their familiarity with the types of questions and their ability to manage the test. 74% agreed that it increased their ability to manage the timing of the test. *Use of the UKCAT online practice tests was associated with higher overall test performance*

- Spend around 21-30 hours in preparation for the UKCAT. This is the amount of preparation done by the highest scoring respondents to our survey

- Use the **UKCAT Official Guide** as 63% of those who downloaded this agreed that doing so increased their knowledge of how to prepare for the test, and 74% agreed that it increased their knowledge about the content of the test

- If you have not studied mathematics beyond GCSE level (or recently), make additional time to revisit and practice your mathematical skills as this will impact on performance in the Quantitative Reasoning section in particular

- Go to **www.thestudentroom.co.uk** where there is advice available from current and past candidates. This includes links to free practice resources which can be found on the internet

- Ask for advice from your school/college and previous test takers

- Watch our video of previous test takers sharing advice on their preparations and overall test experience.

What about commercial companies?

There are many commercial companies publishing books and offering coaching in the UKCAT. UKCAT does not work with any of these companies and we are concerned that taking advantage of these opportunities can cost candidates a great deal of money. UKCAT would advise you to be sceptical about claims they can help you do well in the test by coaching.

Please note that commercial organisations will be using items that are not necessarily of the standard you will encounter in the UKCAT and this may distort your performance whilst practicing. Screen views may be different and commercial organisations are unlikely to include the new item types which you may encounter in your test.

The UKCAT survey suggested that use of books relevant to the UKCAT was associated with higher overall test performance. These books may contain helpful strategies for candidates taking the test and include additional practice questions. However there is lots of advice available for free on the web regarding approaches to the test and many sources of free practice questions. Unless the book has been published very recently it is unlikely to include the correct test content and timings and new test items.

Candidate Preparation Toolkit

UKCAT
Candidate Preparation Toolkit

Practice Tests and Questions

We have a large bank of practice questions which you can use to familiarise yourself with the format and style of item types from all the subtests.

You can then progress to the three fully timed practice tests. These mimic closely the testing experience and allow you to familiarise yourself with the onscreen format, answer items from all sections that are of an equivalent standard to those you will encounter in the actual test and review your responses against answer rationales. Each practice test is available in 3 formats: UKCAT (standard timing 120 mins), UKCATSEN (extended timing 150 mins) or an untimed version.

Please note that when you take the live test your correct and incorrect answers will not be reported.

Tour Tutorial

You can familiarise yourself with the format of the UKCAT by working through this helpful Tour Tutorial. It will illustrate all of the functions that you may be asked to use when taking a computer-based test including how to answer questions, change answers, and review questions.

Question Tutorial

The Practice Question Tutorial will take you through example questions from each subtest and offer strategies on how to approach and answer questions.

Decision Making is not yet covered by this tutorial but an additional presentation containing strategies and example questions for this subtest is available on the website.

Official UKCAT Practice App

The Official UKCAT Practice App is a free preparation resource which allows you to familiarise yourself with the question styles in each subtest. It is a complementary resource in addition to the online practice tests, to help you prepare thoroughly. Download this from the iTunes App Store or Google Play Store.

Videos

Our official UKCAT YouTube Channel has a number of videos to support your preparation. High-scoring, former UKCAT candidates share advice on their preparations for the test and overall test experience, plus a selection of Admissions Tutors from UKCAT Consortium Universities share their thoughts on the use of the test and what they look for in an applicant. There are also videos showing what to expect in a Pearson VUE test centre. Find it at **www.youtube.com/OfficialUKCAT**

Adviser Toolkit

Schools and Colleges can access resources from our website www.ukcat.ac.uk/preparation/adviser-toolkit for advising prospective test takers about the UKCAT.

Test Strategies

Advice

- Candidates who take our test early do better! Getting it out of the way will allow you to concentrate on other things (such as your UCAS application!). If you book early you will have your choice of test slots and if you then feel unwell or unprepared you can reschedule. This might not be easy in the final weeks of testing.

- If you are not well, reschedule your test to a later date – even if you lose your test fee. In presenting yourself for testing, you are declaring yourself fit. We will not consider health issues as extenuating circumstances.

- Make sure you are given a laminated booklet and pen before the test starts.

- Ask for earplugs and/or headphones if you think you may find other candidates arriving/leaving disturbing.

General test strategies

- Good multiple-choice questions include answer options that are wrong but almost right. Work hard to find them and eliminate them. Questions like these are not tricks. Accept that one (and only one) of the answers to each question is correct. All the questions have been thoroughly checked.

- Many candidates do not complete all sections in the test. Use the practice test to ensure you know how to pace yourself. Try to answer all the questions but don't worry if you don't get to the end of each section.

- There is a point for each right answer, but no points are deducted for wrong answers – we do not use negative marking. Try not to leave blanks. If you really can't work out the answer, it is better to eliminate the answers that you know to be wrong and then make your best guess from those that are left.

- If you are struggling with a question we would advise you to make your best guess and move on. You can flag it for review if you want to come back to it later.

- Finally, stay calm in the test. Prepare, pace yourself and move on if you're struggling. It is inevitable you will find some questions and sections easier than others.

Verbal Reasoning Strategies

- You are unlikely to be familiar with the content of the text shown to you. Do not draw on existing knowledge as this will not be relevant.

- Think about how you will plan your time in this section. You need to allocate time to read each passage thoroughly. In 2015 approximately 18% of candidates failed to answer every question.

- This section requires real concentration – it is at the beginning of the test and you should be ready for this. Focus from the start.

Decision Making Strategies

- Timing is important in this subtest. Flag questions you are unsure about so you can come back to them at the end.

- It may help you to write out or draw the information given in the question. Make sure you have your booklet and pen to hand.

- Some questions require you to 'drag and drop' the correct response. Practice this functionality in the Tour Tutorial.

- Brush up on your maths skills around probability and Venn diagrams.

- Some items ask you to weigh arguments for and against a particular solution to a problem. You must suspend your own beliefs to reach the strongest conclusion.

Quantitative Reasoning Strategies

- Timing is very important in this section – pace yourself during the test. Check how you are doing halfway through and adjust your speed accordingly. In 2015 approximately 25% of candidates failed to answer every question.

- Read the questions carefully – individual words and units may be crucial in answering the question correctly.

- In the first place try to understand the scenario presented – this will help you focus quickly on the questions.

- Use the laminated notebook and pen provided to assist with your calculations.

- Review where there might be gaps in your maths. You may need to work out percentages, averages, ratios and fractions – remind yourself how to do some of these calculations if they are causing you problems.

- If you are finding a question difficult, eliminate the more obvious incorrect answers.

- Practice your mental arithmetic to speed up your answering.

Calculator

- A simple on-screen calculator is available for use in this subtest. To access this you will need to click on the icon in the top left hand side of your screen.

  The calculator has been included within the timed practice tests. We strongly advise you to use the calculator when taking the practice tests in order to familiarise yourself with the functionality.

  In the live test the calculator closes when you click away or move to another question. You can recall it by clicking on the icon. Your current calculations should be retained. To clear the calculator click the ON/C button. You can use the mouse or the number pad on your keyboard to operate the calculator. Make sure the 'Num Lock' is on for the number pad to work.

  Please note that due to limitations with the web browser format the practice test calculator does not retain calculations when you click away or move to another question.

If you require assistance with the calculator during the test please raise your hand.

The calculator will look similar to this:

Abstract Reasoning Strategies

- Timing is again important in this section. In 2015 approximately 18% of candidates failed to answer every question.

- Remember to leave time to review set A and set B at the beginning of each set of questions. Once you have identified what links each set you are half way there.

- Consider issues around size and shape of objects; number of objects; sides of objects; shading and colour; symmetry, number of angles, position and direction... this sounds complicated but as you look at these shapes you will start to grasp what you need to focus on.

- What links shapes in set A and those in set B will often be linked in some way – remembering this may help you ignore distracting information.

Situational Judgement Strategies

- This is the last subtest but you still need to be able to concentrate fully during this section.

- Read each scenario and response thoroughly before answering.

- Remember, there are two sets of questions in this subtest; read the instructions carefully to make sure you understand what you have to do.

- Within a scenario, *each rating can be used more than once or not at all*. For example, all response options can be given the same rating of *very appropriate*.

- Responses should relate to what an individual *should* do, rather than what they may be likely to do.

- Response options should be treated independently. You should make a judgement as to the appropriateness or importance of a response option independent from the other options presented within the scenario.

- Response options provided are not intended to represent all possible options. The response you think would be the most appropriate/most important may not be present.

- Some options may be appropriate/important in the *short term* (i.e. immediately addressing a wrong doing) and some are appropriate/important in the *long term* (discussing the implications of the wrong doing after the event). Consider response options irrelevant of the timeframe. A response option may still be an appropriate thing to do even if it is not something that can be done immediately.

TEST DAY

Arrival and Identification

When you book your test you will be able to choose a convenient test centre location. You may access online directions to your chosen centre through our Test Centre Locator. Before you set off for our test, make a note of the Test Centre's address and phone number and find it on a map.

Please arrive at the Test Centre at least 15 minutes before your scheduled test time so that you can complete the check-in formalities.

On arrival at the test centre, you should present to the Test Centre reception BOTH of the following:

• a printout of your confirmation email from Pearson VUE

• one piece of photographic identification from our approved list which meets the requirements of the region where you are taking the test.

If you do not bring acceptable photographic identification you will not be allowed to sit the test and will forfeit your test fee. Full details regarding acceptable photographic identification can be found on our website **www.ukcat.ac.uk/test-day.**

When you arrive at the Test Centre you will be given a copy of the **UKCAT Professional Examination Rules**. You will sign these to state that you understand them. A copy is available on our website so you can familiarise yourself with these before your test.

If you arrive late admission is at the discretion of the Test Centre staff. If you are refused admission you will be recorded as a 'no-show' and will forfeit your appointment and test fee. If you are a 'no show' you will need to book another test and pay again. Please refer to Rescheduling and Cancelling for further details. This applies in cases of family illness, family emergency, accident, arrest, transport problems and security alert as well as forgetfulness. It also applies to those who arrive with inadequate or invalid identification.

Personal belongings

You will be asked to store your personal belongings in a locker at the test centre. Personal belongings (including bags, coats, papers, books, pens, watches, wallets, keys, IDs, mobile phones, sweets and drinks) are not allowed into the testing room. For clarity, nothing is allowed into the testing room apart from you and the indoor clothes you are wearing.

Environment

You will be allocated a desk space at which you will find your PC and space for your booklet. There will be other people taking tests in the same room as you and as tests start and finish at different times, there may be some limited disturbance as other test takers arrive and leave the room. The test centre will endeavour for such disturbance to be kept to a minimum. You can request ear plugs or headphones if you think this will be disturbing.

Calculator

A simple on-screen calculator will be made available to you to assist you in the quantitative reasoning section. To access this you will need to click on the icon in the top left hand side of your screen. The calculator will look similar to this:

The calculator has been included within the timed practice tests available on our website. We strongly advise you to use the calculator when taking the practice tests in order to familiarise yourself with the functionality. NB there are differences between the practice test calculator and the live test one which are explained earlier in this guide.

Booklet and Pen

You will be given a laminated booklet and a permanent marker pen to make notes during the test. If you need another booklet during the test, please hold your booklet in the air and the invigilator will bring a replacement.

Please note that these booklets are not erasable. Test centre staff will have checked the pen is working before giving it to you. However you may also wish to check this before you start the test in order to avoid the need to seek assistance during testing.

If you are not given a laminated booklet and pen when you enter the test room, you should request this by raising your hand. Not requesting a laminated note board and pen during your test will not be considered as an extenuating circumstance.

Breaks

Please note that once started the test cannot be paused whilst you take a break. If you need to take a break during the test in order to access medication or to use the centre toilets then you may raise your hand and the invigilator will assist you in leaving the test room. However you need to note that the test will continue running during this time and you will lose time whilst out of the test room.

Problems

If you experience hardware/software problems, noise disturbance, illness or other distractions that affect your ability to take the exam, you must notify the administrator immediately by raising your hand. If you do not do this, then such events will not usually be accepted as mitigating circumstances after testing – especially where it is possible that had you reported the incident, the issue could have been resolved by the administrator.

Unprofessional behaviour

UKCAT expects candidates to meet minimum standards of acceptable behaviour during testing and during any interactions with UKCAT and Pearson VUE staff. Please familiarise yourself with the UKCAT Professional Examination Rules before your test. Where candidates fall short of these minimum standards, such incidents will be thoroughly investigated. Where such allegations of misconduct are upheld, UKCAT reserves the right to take actions which may include:

- withdrawal of test results;
- disqualification from sitting the test for a period in the future;
- the sharing of the outcomes of the investigation with legitimate third parties (which may include UCAS and Consortium Universities).

Examples of misconduct include:

- Testing more than once in any test cycle;
- breach of security arrangements;
- impersonation;
- failure to follow invigilator or other staff instructions;
- creating a disturbance;
- using prohibited aids (e.g. notes, note paper, calculators, mobile phone, audio/recording device etc.);
- copying another candidate's work;
- using the test questions, their content or information about them for purposes other than sitting the UKCAT;
- giving of false or misleading information during the registration, booking and payment processes;
- giving of false or misleading information relating to test results during admissions processes.

TEST DAY PROBLEMS

UKCAT and its partner Pearson VUE aim to provide you with a straightforward and convenient way of sitting the UKCAT in a businesslike environment. However, occasionally things may go wrong and we have put systems in place to deal with such circumstances.

Before the Test

In presenting yourself for the UKCAT, you are declaring yourself fit to take the test. If you are not fit to take the test, due to illness or other personal circumstances, then you must reschedule your test to a later date even if this means losing the test fee.

If you have planned to take the test in the final weeks of testing and encounter such issues, this can be a real problem, since you may not be able to reschedule within the test window. This is why we recommend you take the test early in the cycle. **It is probable that Universities will not consider such issues as mitigating circumstances.**

During the Test

If you are unable to complete the test due to illness you will need to inform the invigilator immediately. You will need to contact UKCAT directly with supporting medical evidence before we can reschedule a new test. If this is in the final weeks of testing you may not be able to reschedule within the test window.

If a candidate experiences hardware/software problems, noise disturbance or other distractions that affect their ability to take the exam, they must notify the invigilator immediately by raising their hand. If they do not do this, then such events will not usually be investigated after testing – especially where it is possible that had they reported the incident, the issue could have been resolved by the invigilator.

In the event of a reported incident or if a general incident affects a test, the candidate will be given an incident number by the test centre. This should be collected before leaving the test centre.

If a candidate wishes an incident to be followed up they must contact Customer Services as soon as they are able following testing. The issuing of an incident number does not automatically result in a detailed follow up unless it is specifically requested.

We will only consider incidents reported after the day of testing in exceptional circumstances as it is often difficult for us to investigate such incidents fully.

Once an incident has been logged in this way it will be investigated by Pearson VUE and the outcome of this investigation will be reported back. To obtain an update on how the investigation into an incident is progressing please contact Customer Services and quote the incident number.

Candidate Complaints

If a candidate is unhappy with the outcome of the investigation by Pearson VUE, UKCAT has put in place a Complaints and Appeals Procedure. Please note that Pearson VUE and the UKCAT Consortium Ltd do not deal with complaints about admissions decisions, which should be addressed to the individual university concerned.

PRACTICE QUESTIONS

The following questions are reproduced from our free Official UKCAT Practice App available from the iTunes App Store and Google Play.

Since the questions are formatted to fit a mobile screen they may not completely reflect the appearance of questions you will experience in the real test.

Three fully timed practice tests and additional practice questions are available from the website **www.ukcat.ac.uk/preparation/candidate-toolkit**.

Practice Questions

Verbal Reasoning

VR1 – The Teleological Argument

Since the Greeks, the teleological argument has been commonly used to prove the existence of a Creator or Supreme Being. It was famously expressed by William Paley in 1802, who imagined finding a pocket watch on a heath. If you had never seen a watch before, you might marvel at its mechanism and rightly assume that someone with great skill had made it. He pointed to the intricate structure of living things and argued that they were so cleverly put together that some unknown designer must have made them. He went on from there to say that because organs and organisms in nature seemed to have a purpose – bees pollinate flowers, the intricate structure of the eye enables us to see – that a hidden planner is at work. The Universe operates to known rules – Newton's Laws of Motion for example – which is a further argument for a planned and purposeful world.

This argument became seriously challenged fifty years later, when Charles Darwin published his theory of natural selection as an explanation for the variety and complexity of living organisms. This did not presuppose a hidden designer. More than a hundred and fifty years later, the evolutionist Richard Dawkins published a book explaining evolution by natural selection entitled 'The Blind Watchmaker'.

VR1-1 **Dawkins' title of his book, 'The Blind Watchmaker', is appropriate because:**
- ☐ A no watchmaker is blind.
- ☐ B the structure of living things cannot be explained.
- ☐ C a Supreme Being must be blind.
- ☐ D natural selection does not depend on an intelligent designer.

VR1-2 **From the passage, teleology can be defined as:**
- ☐ A arguing that all events have a purpose.
- ☐ B using Natural Selection to explain a watch's mechanism.
- ☐ C arguing that everything happens by chance.
- ☐ D using Newton's Laws to predict the future of the Universe.

VR1-3 **Which of these assertions is best supported by information contained in the passage?**
- ☐ A Natural selection depends on a hidden designer.
- ☐ B Natural selection depends on chance events.
- ☐ C The operation of the Universe does not depend on hidden rules.
- ☐ D The Universe has been carefully planned.

VR1-4 **Using the information in the passage, a belief in the existence of a Supreme Being is:**
- ☐ A justified because humans have a purpose.
- ☐ B not justified because of evolution.
- ☐ C not possible to justify using scientific theories.
- ☐ D possible to contradict using scientific theories.

VR1-5 **William Paley used the construction of a watch in an argument from:**
- ☐ A analogy
- ☐ B deduction
- ☐ C comparison
- ☐ D authority

VR1-6 **The structure of the human eye is similar to a camera. From the passage we can conclude that the human eye:**
- ☐ A must take pictures like a camera.
- ☐ B may take pictures like a camera.
- ☐ C was designed like a camera.
- ☐ D did not evolve like a camera.

Verbal Reasoning

VR2 – The 1737 Licensing Act

London's West End is famous for its theatres but this was not always so. Between 1642 and 1660 all theatrical performances were banned as immoral, corrupt and subversive. In 1660 drama was legalised once more but in all England only two London theatres and acting companies were permitted. Royal sponsorship resulted in strict control of content and performance while critical comment was forbidden. Theatre catered for upper class audiences.

In the 1690s commercial interests replaced royal patronage and government control decreased. Owners, seeking increased profits wanted more socially diverse audiences. Many dramatists, leading up to the late 1730s criticised the government and royal family. As performances became increasingly critical and outspoken the government established tighter control and imposed censorship. The 1737 Licensing Act was passed following the reading in parliament of a scurrilous play, *The Golden Rump,* which offensively mocked King George's personal habits.

The Lord Chamberlain's office, which censored all plays two weeks before performance, only licensed them if everything objectionable was deleted. Heavy fines and imprisonment were used to punish authors and actors who broke this law. Many authors resented this restriction on their freedom to criticise politicians.

After 1788 magistrates could authorise local theatres. Many new provincial theatres were built but London theatres were still restricted to two. Country gentry could now enjoy culture not available to many Londoners. Censorship meant fewer plays were written so critics of government found new satirical mechanisms and London theatre managers developed new entertainment forms to attract audiences. Censorship finally ended in 1968.

VR2-1 **Which of these statements is best supported by the passage?**
- ☐ A. The two London theatres allowed by the Licensing Act were both in the West End.
- ☐ B. The king of England who ascended the throne in 1660 was a supporter of theatre.
- ☐ C. The Lord Chamberlain was appointed because he was an expert in the writing of plays.
- ☐ D. The terms of the Licensing Act remained in force unaltered until the twentieth century.

VR2-2 **Based on the passage, each of these statements is true EXCEPT:**
- ☐ A. Plays were often used as a way of criticising government actions.
- ☐ B. The reigning king in 1737 was not popular with all of his subjects.
- ☐ C. The Licensing Act reduced the number of theatres allowed in London.
- ☐ D. Legal censorship of plays in England lasted for over two hundred years.

VR2-3 **It was easier for people in the North of England to see plays in the 1790s compared to the 1660s because:**
- ☐ A. better transport made it easier for them to get to London theatres.
- ☐ B. censorship had been relaxed so that more plays were being written.
- ☐ C. authors who criticised the government were no longer allowed to write plays.
- ☐ D. it was legally possible to open theatres outside London for the first time.

VR2-4 **Using information contained in the passage it can be inferred that:**
- ☐ A. criticism of the government in the 1730s was considered to be more of a problem than it was in the 1660s.
- ☐ B. the main reason the king sponsored theatres after 1660 was because he wanted to make a financial profit.
- ☐ C. the Lord Chamberlain's office was set up by theatre managers who wished to control the work of playwrights.
- ☐ D. many authors enjoyed the freedom the Licensing Act gave them to write plays which were critical of politics.

VR2-5 **Which of these statements best supports the claim that as far as drama was concerned 'country gentry could now enjoy culture not available to many Londoners'?**

- ☐ A. Before 1788 theatres were only legally allowed in London.
- ☐ B. After 1788 new theatres were opened in several provincial towns.
- ☐ C. Theatre managers in London experimented with new types of amusement.
- ☐ D. In the 1690s royal sponsorship of theatres was replaced by commercial interests.

VR2-6 **In the eighteenth century the main target audience for theatre managers was:**

- ☐ A. the upper classes.
- ☐ B. country gentry.
- ☐ C. members of the government.
- ☐ D. the middle and working classes.

VR2-7 **Using information contained in the passage, it is most likely that parliament would have objected to the play *The Golden Rump*, because it was:**

- ☐ A. satirical
- ☐ B. anti-government
- ☐ C. individually insulting
- ☐ D. badly written

VR2-8 **It is most likely that the author believed one of the main targets attacked by playwrights between 1690 and 1730 to be:**

- ☐ A. London magistrates.
- ☐ B. members of the government.
- ☐ C. the Lord Chamberlain's office.
- ☐ D. theatre managers and owners.

Verbal Reasoning

VR3 – Exchange Rates

A basket of chosen groceries may cost £50 in the UK, but to pay for those same groceries in a supermarket in the USA you would need to have exchanged your pounds for US dollars.

People exchange some of their own currency for that of another country in order to buy goods from that country or to save their money in that country - for example, Australia. People choose to save their money in other countries to get a better return than they would in the UK. Such savings would involve lending to a bank by the UK individual and borrowing by the bank.

However, the prices at which currencies are bought and sold fluctuate more than the groceries. A way to avoid all the uncertainty of buying or selling goods from or to other countries in different currencies is for countries all to use the same currency, as in the eurozone. Hence the euro was introduced in 1999 and, by 2013, was used by 17 countries which previously had 17 different currencies all with their own exchange rates.

If someone in France buys goods from a firm in Spain or goes on holiday to Italy, there are no currency issues because they are all using the euro. By contrast, if exchange

rates fluctuate, my UK pounds may buy fewer euros (pound devalues), so a holiday in Portugal becomes more expensive or, if my pounds buy more euros (pound revalues), much cheaper. Problems arise for the eurozone (as for an individual country) if demand and supply for the euro fail to balance – excess demand causes exchange rate rises, excess supply means the exchange rate falls.

VR3-1 **If the pound devalues against another currency, exports from the UK to that country will cost less in the country buying them in currency terms.**
- ◯ A. True
- ◯ B. False
- ◯ C. Can't Tell

VR3-2 **A person using the euro in France or Germany will be unaffected by changes in exchange rates between the euro and the UK £, even if they purchase goods imported from the UK.**
- ◯ A. True
- ◯ B. False
- ◯ C. Can't Tell

VR3-3 **If the interest rate on a savings account in Australia gives a rate of return three times higher than the best rate in the UK, a saver would always get at least twice as good a return after tax and currency fluctuations have been taken into account.**
- ◯ A. True
- ◯ B. False
- ◯ C. Can't Tell

VR3-4 **If I convert £50 into the equivalent number of US dollars, I will be able to buy the same basket of groceries in the USA as I originally purchased in the UK.**
- ◯ A. True
- ◯ B. False
- ◯ C. Can't Tell

VR3-5 **A country which imports many raw materials including oil and chemicals from overseas so it can manufacture products is in danger of adversely affecting its exchange rate as a result.**
- ◯ A. True
- ◯ B. False
- ◯ C. Can't Tell

VR3-6 **When a saver makes a deposit in a bank, this technically means the money is being lent by the bank.**
- ◯ A. True
- ◯ B. False
- ◯ C. Can't Tell

VR3-7 **If by importing £100 million-worth of raw materials, a country is then able to export an extra £200 million-worth of exports to other countries, the overall supply of its currency will rise.**
- ◯ A. True
- ◯ B. False
- ◯ C. Can't Tell

VR3-8 A holiday company organizing tours across Asia by train guarantees not to increase its prices once the holiday has been booked. An initial payment of 10% is required with booking, and the other 90% is to be paid in Russian roubles a week before the holiday commences.

This means there is no possibility that the holiday will cost the traveller more than he or she expects to pay.

- ☐ A. True
- ☐ B. False
- ☐ C. Can't Tell

Verbal Reasoning

VR4 – Rule of War

Humans have fought each other since the dawn of civilisation. They have done so over food, territory, resources and slaves. Many developments in technology have been spurred along by the competition over weapons. While aggression may be a part of human nature, there are many ethical issues over war, and most would regard it as a wholly undesirable activity. Unspeakable things happen during wars, but fighting has usually been subject to implicit rules and codes of conduct. Although warfare has changed dramatically since the Geneva Conventions of 1949, they are still considered the cornerstone of contemporary International Humanitarian Law. They protect combatants who find themselves hors de combat, and they protect civilians caught up in the zone of war. These treaties came into play for all recent international armed conflicts, including Afghanistan, the invasion of Iraq, the invasion of Chechnya and the war in Georgia. The Geneva Conventions also protect those affected by non-international armed conflicts such as the Syrian civil war.

While conventions lay down rules to which the leaders of countries or armies must adhere and answer to in international courts, the notional separation of combatants and civilians has become increasingly difficult to make. The mass bombings undertaken by both Britain and Germany in the Second World War were as much about intimidating the population as destroying weapons and military personnel. The rise of terrorism as a mode of warfare has further muddied the water. The use of drones in difficult warzones, presented as a safe and reliable method of attacking soldiers or terrorists who travel or live in civilian areas, has raised ethical questions for their operators.

VR4-1 The Geneva Conventions are designed to:

- ☐ A establish the human rights of military personnel in battle.
- ☐ B protect civilians against all actions of their government.
- ☐ C protect civilians caught up in battle areas.
- ☐ D prevent civilians taking up arms in wartime.

VR4-2 **One conclusion that can be drawn from the passage is that:**
- ☐ A humans will always fight one another.
- ☐ B there were no humanitarian conventions before 1949.
- ☐ C there is no justification for the conflict in Afghanistan.
- ☐ D civilians in civil wars have no legal rights.

VR4-3 **According to the passage, the writer most probably agrees that:**
- ☐ A the Geneva Conventions are ineffective.
- ☐ B the mass bombing of cities in wartime is an international crime.
- ☐ C there will be fewer wars in the future.
- ☐ D developments in technology will prevent wars.

VR4-4 **The use of armed drone aircraft, controlled by far distant operators, could be unethical because:**
- ☐ A there is a risk of injury to civilians.
- ☐ B the operator may not be a soldier.
- ☐ C terrorists are protected by international law.
- ☐ D their operators can only view through a remote camera.

VR4-5 **From the information in the passage, which of the following is correct?**
- ☐ A Everyone regards warfare as unethical.
- ☐ B Injury to civilians is an ethical consequence of warfare.
- ☐ C Acts of war are always unethical.
- ☐ D Drone attacks can have unethical consequences.

Verbal Reasoning

VR5 – Greener Jet Engines

The recent decision by the European Parliament to include air traffic in the EU's Emissions Trading Scheme (ETS) has increased the pressure on aircraft manufacturers to produce 'greener' aircraft. An estimated 3% of Europe's entire greenhouse gas emissions are currently generated by airlines, and with it potentially doubling by 2020 the introduction of this controversial tariff has increased the pace of innovation. There are two areas of potential fuel saving in aircraft design – the engines and the airframe. The ratio of lightweight materials and recycled components in wing and body production is growing, but creating an engine that reduces fuel consumption, noise and nitrous oxide pollution is key.

In normal turbofan designs, an intake fan at the front reduces the speed of air passing around the engine, mixing it with the much faster moving hot gases generated by burning fuel and air to create greater thrust. This calls for larger engine chambers which can allow this slowed air to pass through but the bigger the engine, the greater the weight, fuel consumption and noise. An American company, Pratt and Whitney, have developed such an engine by introducing a geared turbofan to their designs. This is based on the principle that turbines are most effective at high speeds and fans at much lower revolutions.

The gearbox acts to reduce the rotation of the inlet fan to around a third of the turbine inside the engine. This creates a 15% improvement in fuel efficiency and a smaller, lighter housing.

VR5-1 If airlines adopt aircraft with 'greener' credentials by 2020, they will be considered for exemption from the Emissions Trading Scheme by the European Union.
- A. True
- B. False
- C. Can't Tell

VR5-2 Airline manufacturers are concentrating solely on the development of lighter, more fuel-efficient engines to meet the stringent emissions tariffs set by the European Union.
- A. True
- B. False
- C. Can't Tell

VR5-3 When comparing normal turbofan design to geared turbofans, two of the greatest differences are the size and weight of the chambers housing the engine components.
- A. True
- B. False
- C. Can't Tell

VR5-4 According to the EU, by 2020 airlines will contribute 3% of total greenhouse gas emissions across Europe.
- A. True
- B. False
- C. Can't Tell

Verbal Reasoning

VR6 – Arctic Foxes

Research into the variation in numbers of the arctic fox has shown that, in areas where there is a population of small rodents, the number of foxes is associated with the numbers of rodents. The fox populations respond to increased food availability by increasing reproduction. However, in areas where there are no small rodents eg Svalbard in Norway, the picture is more complex.

Prior to 1973, the diaries of polar bear trappers (who took the bear furs, but left the carcasses) reported flourishing populations of arctic foxes.

After 1973, when the polar bear became a protected species, both the trappers and the reports of foxes declined.

Researchers estimated the fox numbers in Svalbard by several methods including a 'capture index' (the number of live foxes trapped in baited traps) and an 'observation index' (based on sightings by scientists and local people). Estimated numbers of foxes fluctuated: they were low in 1990/1991, rose from 1992 to 1995, and then dropped so sharply in autumn 1995 that they seemed to have disappeared from the area by 1996. Fox tracks were not observed again until autumn 1996.

Two important sources of food for arctic foxes in Svalbard are Barnacle geese and reindeer carcasses. Numbers of Barnacle geese rose until 1994, when predation on nests by foxes left only 2 surviving goslings. Numbers of goslings then rose to over 600 in 1996, when no foxes were observed. There was a sharp rise in reindeer mortality in the winter of 1993/4, which led to a high number of carcasses, but lower numbers in the winter of 1995/6.

Fox numbers may be influenced by the migration of foxes to other areas and/or by disease, but no studies were carried out to investigate this.

VR6-1 Which of the following is most likely to be true?
   A. There is no relationship between the numbers of foxes captured, and those observed by local people.

   B. The numbers of foxes captured and those observed by scientists will be the same.

   C. Where there are rodents, as numbers of rodents go up, so will the number of foxes.

   D. Where there are rodents, as numbers of foxes go up, so will the number of rodents.

VR6-2 Which of the following cannot be inferred from the passage?
   A. Foxes act so as to limit the number of Barnacle geese.

   B. Low reindeer numbers led to the 1996 crash in the number of foxes.

   C. Methods for estimating fox numbers are imprecise.

   D. The variations in animal population numbers are cyclic.

VR6-3 Which of the following statements about the disappearance of foxes in 1996 could be justified from the passage?
   A. The foxes died from starvation.

   B. The foxes were subject to predation by other animals.

   C. The foxes died from disease.

   D. The foxes had all been trapped.

VR6-4 After 1973, which of the following seems the least feasible reason for the decline in observed foxes?
   A. There were fewer trappers.

   B. Trappers did not report their experiences in diaries after 1973.

   C. Polar bears declined after 1973.

   D. There were fewer carcasses.

Decision Making

DM1

Every year Madrigal School has a school photograph taken. Eight teachers sit at the front in a row.

Mr None sits fifth from the left with Mrs O'Rourke and Mr Percival on either side.

Mr Rowley sits as far away from Mrs O'Rourke as possible.

Mr Stephen sits next to Mr Percival.

Miss Zenzer does not sit beside Mrs O'Rourke or Miss Trollope.

Mr Warlock sits three seats away from Mr None.

			Mrs O'Rourke				

Which one of the following statements MUST be true?

- ⬡ A Miss Zenzer sits at the far left of the row.
- ⬡ B Mr Stephen sits next to Mrs O'Rourke.
- ⬡ C Mr Warlock sits next to Mr Percival.
- ⬡ D Miss Trollope sits at the far right of the row.

DM2

I walk my dogs daily.

Barker and Dainty have to walk alone.

Boxer goes for an afternoon walk.

Dainty is the only dog who has two walks each day.

Rex always has his morning walk with another dog.

Which one of the following MUST be true?

- ⬡ A Boxer is Rex's companion.
- ⬡ B Boxer has more than two walks a day.
- ⬡ C I have at least five dogs.
- ⬡ D Each day I have to make a minimum of six walks with my dogs.

DM3

In a prize draw two boys (Alec and Daniel) and three girls (Betty, Carole and Edna) each picked a prize (Pram and doll set, Roller blades, Chemistry set, Teddy bear, and Jigsaw puzzle).

The Pram and doll set was not picked out by a girl.

Edna and Carole were disappointed when the Roller blades were picked by one of the others.

The Chemistry set did not go to either Edna or Betty.

Daniel was quite amused when he picked the giant Teddy bear.

What gift did Edna pick?
- [ ] A   Chemistry set
- [ ] B   Jigsaw puzzle
- [ ] C   Pram and doll set
- [ ] D   Teddy bear

DM4

W, X, Y and Z are playing football in the garden. One of them breaks a window by mistake.

W says, 'It was X'.

X says, 'It was Y'.

Y says, 'It was not me'.

Z says, 'It was not me'.

Which one MUST be lying?
- [ ] A   W is lying
- [ ] B   X is lying
- [ ] C   Y is lying
- [ ] D   Z is lying

DM5

Four people H, I, J, K are a Doctor, a Manager, a Teacher and a Lecturer, not necessarily in that order. They each own a different type of vehicle.

H is a Doctor.

J owns a sports car.

K owns an electric car.

The person who owns a motor bike is not a Teacher.

The Manager polishes her scooter every weekend.

Which one of the following MUST be true?
- [ ] A   K is a Teacher
- [ ] B   J is a Teacher
- [ ] C   I is a Manager
- [ ] D   K is a Manager

Decision Making

DM6

Should we focus more on rehabilitating offenders rather than punishing them for the crimes they commit?

Select the strongest argument from the statements below.

- [ ] A Yes, crimes are often committed by people with serious personal issues.
- [ ] B Yes, focusing on the cause of crime will ultimately lead to a reduction in crime.
- [ ] C No, it doesn't matter what causes the crime, a crime is still a crime.
- [ ] D No, victims of crime need to see that justice has been done.

DM7

Should the Government make wearing a uniform compulsory in all schools in the UK?

Select the strongest argument from the statements below.

- [ ] A Yes, school uniform prevents students from being judged by the clothes they wear.
- [ ] B Yes, compulsory school uniform prepares pupils for the world of work.
- [ ] C No, enforcing school uniform would add to a Head Teacher's workload.
- [ ] D No, school uniforms are expensive for parents to purchase.

DM8

Should the maximum speed limit on motorways in the UK be reduced from 70 mph to 60 mph to improve road safety?

Select the strongest argument from the statements below.

- [ ] A Yes, reducing the speed limit will cut harmful fuel emissions.
- [ ] B No, the accident rate at the lower limit is no different to the one at the higher speed limit.
- [ ] C No, it is difficult to stop drivers ignoring the present speed limit; a new speed limit would be ignored in the same way.
- [ ] D No, the real problem is slow drivers, it would be better to have a minimum speed limit.

DM9

Should the number of university student places in UK arts/humanities courses be drastically cut?

Select the strongest argument from the statements below.

- [ ] A Yes, as they are not academically rigorous.
- [ ] B Yes, because the country does not need people with arts backgrounds.
- [ ] C No, because otherwise all the arts lecturers would be without work.
- [ ] D No, because many students benefit from the transferable skills they teach.

DM10

The town's new Academy for Girls specialises in sport.

All pupils at the academy are required to take three sports.
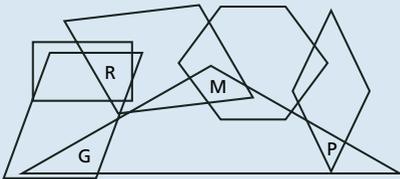
Key

▭	gymnastics	◇	boxing
△	swimming	◇	line-dancing
▱	tennis	⬡	athletics

Which letter shown above represents pupils participating in boxing, athletics and swimming?
- ○ A   Letter G
- ○ B   Letter M
- ○ C   Letter P
- ○ D   Letter R

DM11

The diagram shows the status and occupation of a number of people. Each shape shows a different status or occupation.
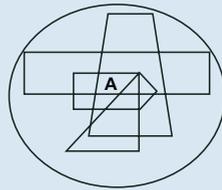
Key

- △   males
- ◸   in work
- ○   total population
- ▭   in education
- ▱   married

What does the letter 'A' represent in the diagram above?
- ○ A   Unmarried women who are in education.
- ○ B   Unmarried men who are in work.
- ○ C   Married men who are education.
- ○ D   Married men who are neither in work nor in education.

Decision Making

DM12

The water sports centre offers three different activities. The table below shows the activities taken on one particular day.

Activity	Number of customers
Windsurfing only	5
Water-skiing only	11
Canoeing only	4
Windsurfing and Canoeing	12
Canoeing and water-skiing	8
Windsurfing and water-skiing	7
All three activities	13

There were 60 customers that day. How many did canoeing?

- A 4
- B 33
- C 37
- D 39

DM13

Twelve couples attended the tea dance, but they did not all join in every dance.

Four couples danced the quickstep; they took no further part in the dance.

Three couples danced the foxtrot and the waltz but not the quickstep or samba.

The five couples who danced the samba also danced the foxtrot and the waltz.

Which of the following represents the group of twelve couples?
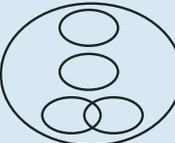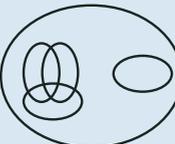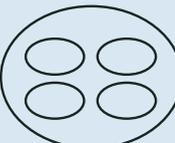
- A
- B
- C
- D

DM14

The diagram gives information about the numbers of people who had holidays in certain countries.
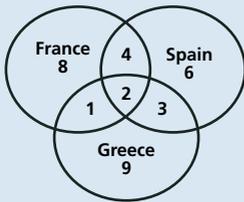
Which one of the following statements is true?

- ☐ A   More people went to France than went to Spain.
- ☐ B   More than half of the people who went to Spain also went to Greece.
- ☐ C   8 people went to exactly two countries.
- ☐ D   20 people went to only one country.

DM15

One night at a youth club 8 people played snooker.

12 people (of which 4 also played snooker) played table tennis.

9 people played darts (none of these played either snooker or table tennis).

6 people played no game; they just talked.

Which one of the following represents the activities taking place at the youth club that night?

- ☐ A

- ☐ B

- ☐ C

- ☐ D
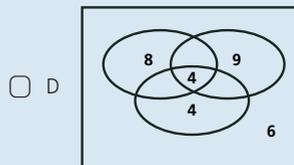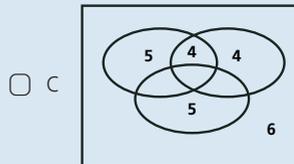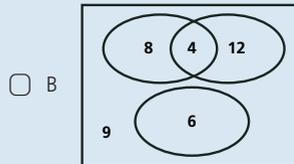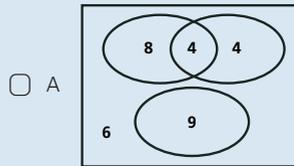
Decision Making

DM16

There are 48 people in a room. They are asked what they enjoy doing in their spare time.

29 of the people say they enjoy reading.

9 of the people say they enjoy watching television.

Which of the following MUST be true?

- ☐ A Between 10 and 19 (inclusive) people neither like reading nor like watching television.
- ☐ B There are exactly 20 people who like reading but do not like watching television.
- ☐ C There are more people who do not like reading than who do not like watching television.
- ☐ D There are 38 people who like either reading or watching television.

DM17

Martin's journey home from work involves taking the bus to the station, catching the six o'clock train and then a short walk to his house. If the bus is late, he has to catch a later train.

On 10 days out of the past 50, the bus has not reached the station in time for him to catch the six o'clock train. Similarly on 10 days out of the past 50, the six o'clock train has arrived late at Martin's home station.

Is it more likely than not that Martin will get home on time tomorrow?

- ☐ A Yes, the buses and the trains each meet the requirements of the timetable 40 out of 50 times respectively, so he should get home on time tomorrow.
- ☐ B Yes, if the bus is late, the train may be too, so he would get home on time.
- ☐ C No, on 20 occasions over the 50 days either the train or bus has been late, so it is unlikely he will get home on time.
- ☐ D No, every day is different so predictions are no more than guesses and wholly unreliable.

DM18

Father Christmas has a sack of wrapped presents from which visiting children can randomly select a gift. At the start, there are 15 presents of a harmonica and 15 of a drum in Father Christmas's sack. By lunchtime, 5 harmonicas and 4 drums have been chosen.

Has the chance of a harmonica being randomly selected now increased when the next child collects a present?

- A   Yes, it was 1/2 and is now 10/21.
- B   Yes, it was 1/2 and is now 11/21.
- C   No, it was 1/2 and is now 11/21.
- D   No, it was 1/2 and is now 10/21.

DM19

Three students, Sarah, Simon and Paul test the same coin for bias.

The table gives information about their results.

	Sarah	Simon	Paul
Throws	50	100	160
Heads	37	73	88

Sarah and Simon pool their results to give their estimate of the probability that when the coin is thrown once it lands Heads. Paul uses his results to give his estimate.

Will Sarah and Simon's estimate be better than Paul's estimate?

- A   Yes, because it comes from two different tests.
- B   Yes, because their separate estimates are very close to each other.
- C   No, because Paul had more throws in total.
- D   No, because Paul's estimate will be nearer one half.

Quantitative Reasoning

QR1 Buying Leaflets

The table gives information about the cost of buying one leaflet from a printing company. VAT is charged at 20% of the total order.

	Number Ordered				
	1-9	**10-49**	**50-199**	**200-599**	**600+**
Single sided black/white	70p	60p	40p	30p	20p
Double sided black/white	£1.30	£1.00	70p	55p	40p
Single sided colour	£1.60	£1.10	80p	60p	50p
Double sided colour	£2.90	£2.00	£1.40	£1.00	90p

QR1-1 Gina buys 450 single sided colour leaflets. The total cost, to the nearest £, including VAT is:
- ◯ A £206
- ◯ B £216
- ◯ C £270
- ◯ D £324
- ◯ E £432

QR1-2 Sophie buys 200 single sided black and white and 200 single sided colour leaflets. The total cost, including VAT is:
- ◯ A £216
- ◯ B £248
- ◯ C £310
- ◯ D £372
- ◯ E £420

QR1-3 Karin buys 150 single sided black and white and one and a half times as many single sided colour leaflets. The total cost, including VAT is:
- ◯ A £222
- ◯ B £234
- ◯ C £288
- ◯ D £330
- ◯ E £342

QR1-4 Stefan bought 300 double sided black and white leaflets and 100 single sided colour leaflets. What percentage, correct to 1 decimal place, of the total cost including VAT, did he spend on the colour leaflets?
- ◯ A 27.2%
- ◯ B 27.6%
- ◯ C 32.7%
- ◯ D 56.1%
- ◯ E 67.3%

QR1-5 Bo bought some double sided colour leaflets. The VAT on her bill was £12. How many leaflets did she buy?
- ◯ A 30
- ◯ B 36
- ◯ C 60
- ◯ D 72
- ◯ E 75

QR1-6 Frank bought some leaflets. The cost including VAT was £174. All the leaflets Frank bought were the same. How many leaflets did he buy?
- ◯ A 145
- ◯ B 290
- ◯ C 348
- ◯ D 696
- ◯ E 725

Quantitative Reasoning

QR2 Taste

A group of people were asked to taste some paper soaked in a weak solution of the chemical PTC. The table gives some information about the results.

	Women	Men	Girls	Boys
Can taste PTC	35	72	18	27
Cannot taste PTC	20	60	10	20

QR2-1 Of the adults in the group, what percentage, correct to 1 decimal place can taste PTC?
- A 40.0%
- B 40.8%
- C 57.2%
- D 58.0%
- E 59.1%

QR2-2 3/5 of the women who can taste PTC and 7/12 of the men who can taste PTC do not drink coffee. What percentage, correct to 1 decimal place, of the adults who can taste PTC do drink coffee?
- A 33.7%
- B 41.1%
- C 43.9%
- D 58.9%
- E 66.3%

QR2-3 If 10% of the men who said they cannot taste PTC could in fact taste PTC at higher concentrations, what would be the ratio of men who can taste PTC to men who cannot taste PTC, at higher concentrations?
- A 39:25
- B 39:27
- C 39:30
- D 41:25
- E 41:30

QR2-4 A population of 100,000 people is equally divided between men, women, boys and girls. Use the data in the table to estimate the number, correct to 4 significant figures, of people in the population who can taste PTC.
- A 40,020
- B 41,980
- C 58,020
- D 58,610
- E 59,980

QR2-5 In a population, 8% can taste neither PTC nor sodium benzoate, 74% can taste PTC and 60% can taste sodium benzoate. What percentage can taste exactly one of these two chemicals?
- A 18%
- B 32%
- C 42%
- D 50%
- E 58%

Quantitative Reasoning

QR3 Balloon Flights

Helium balloons are used for weather research. Here is some information about how the temperature of the atmosphere changes with height and how fast balloons ascend.

Dry Air Temperature decrease is 5.2°C per 500m.

Wet Air Temperature decrease is 2.8°C per 500m.

The rate of climb of a balloon is 4.8 metres per second.

In addition, here is some information about conversion factors.

5280 feet = 1 mile. 1 mile = 1.6 km.

You can convert °C to °F using the rule F = 1.8 × C + 32.

QR3-1 **When the ground temperature is 24°C, what is the temperature, correct to 1 decimal place, in dry air at a height of 1.8 km?**
- [ ] A 5.3
- [ ] B 10.1
- [ ] C 13.9
- [ ] D 18.7
- [ ] E 19.3

QR3-2 **When the ground temperature is 24°C, at what height in dry air, correct to 1 decimal place, is the temperature -15°C?**
- [ ] A 3.2 km
- [ ] B 3.8 km
- [ ] C 7.0 km
- [ ] D 7.5 km
- [ ] E 15.0 km

QR3-3 **A balloon rises in wet air from a ground temperature of 24°C. How many minutes, correct to the nearest minute, will it take to reach a height where the temperature is 0°C?**
- [ ] A 6
- [ ] B 8
- [ ] C 9
- [ ] D 15
- [ ] E 343

QR3-4 **A balloon rises from the ground through dry air. After 5 minutes the temperature of the air round the balloon is 12°C. What is the ground temperature, correct to the nearest °C?**
- [ ] A 15°C
- [ ] B 16°C
- [ ] C 20°C
- [ ] D 27°C
- [ ] E 28°C

QR3-5 **A balloon flew on Monday. A second balloon flew on Tuesday. The rate of climb of the second balloon was 25% more than the first balloon's. Both balloons flew to the same height. Which one of the following statements is true?**
- [ ] A The second balloon took 25% of the time that the first balloon did.
- [ ] B The second balloon took 75% of the time that the first balloon did.
- [ ] C The second balloon took 80% of the time that the first balloon did.

☐ D The second balloon took 120% of the time that the first balloon did.

☐ E The second balloon took 125% of the time that the first balloon did.

QR3-6 **What is the decrease of temperature, correct to 2 decimal places, in wet air when measured in ºF per mile?**

☐ A 2.49 ºF per mile
☐ B 4.98 ºF per mile
☐ C 6.30 ºF per mile
☐ D 16.13 ºF per mile
☐ E 29.95 ºF per mile

Quantitative Reasoning

QR4 Concrete

The table gives information about the ratios, by volume, of material used to make types of concrete mix.

Type	Cement	Sand	Gravel
General use	1	2	4
Foundation	1	3	6
High Strength	2	2	3
Watertight	2	3	6
Rough	1	4	8

For example, rough concrete mix requires a ratio cement:sand:gravel of 1:4:8 by volume.

The mass of cement is 2,240 kg per m³.
The mass of sand is 1,600 kg per m³.
The mass of gravel is 1,680 kg per m³.

For all concrete mixes, water is added in the proportion 7 litres water for every 25 kg of cement to make concrete.

(The mass of 1 litre of water is 1 kg)
(1000 litres = 1m³).

QR4-1 **Which type of concrete mix contains the greatest proportion, by volume, of sand?**

☐ A General use
☐ B Foundation
☐ C High Strength
☐ D Watertight
☐ E Rough

QR4-2 **Jim is making general use concrete mix for a garage floor. The floor is rectangular, 9m by 4m and 15cm deep. How much sand in m³, correct to 2 decimal places, is required?**

☐ A 1.35m³
☐ B 1.54m³
☐ C 1.62m³
☐ D 1.66m³
☐ E 1.80m³

QR4-3 **What is the ratio, by mass, of cement:gravel for general use concrete mix?**

☐ A 1:3
☐ B 1:4
☐ C 2:9
☐ D 8:3
☐ E 10:21

QR4-4 **How many litres of water, correct to the nearest whole litre, are needed to make 3.5 m³ of watertight concrete?**

- ◯ A 111
- ◯ B 366
- ◯ C 399
- ◯ D 627
- ◯ E 5089

QR4-5 **When high strength concrete is made, what percentage, correct to the nearest whole number, of the total mass will be water?**

- ◯ A 8%
- ◯ B 9%
- ◯ C 10%
- ◯ D 22%
- ◯ E 28%

QR4-6 **What is the ratio by volume, correct to 3 significant figures, of water to cement in any concrete mix?**

- ◯ A 1:0.0159
- ◯ B 1:0.159
- ◯ C 1:0.627
- ◯ D 1:1.59
- ◯ E 1:6.27

Quantitative Reasoning

QR5 Motorboats

The table shows the total cost of renting different types of motorboats for a certain number of hours. Total cost is calculated using the deposit and the cost of renting per hour. Some information is missing in the table.

Type	Hours	Deposit	Cost per Hour	Total cost
A	2	_	£25	£135
B	4	_	£60	£330
C	8	£100	£75	_
D	10	£95	£100	£1,095

QR5-1 If the deposit for Type D motorboats is increased by 5% on Sundays, what will be the total cost of renting a Type D motorboat for 6 hours on a Sunday?
- A. £695.00
- B. £699.75
- C. £750.20
- D. £754.25
- E. £950.00

QR5-2 Martha's total cost of renting a Type C motorboat was £325. For how many hours did she rent the motorboat?
- A. 1
- B. 2
- C. 3
- D. 4
- E. 5

QR5-3 The total cost of renting a Type E motorboat is £240 per hour. Type C and Type E motorboats have the same deposit. What is the ratio of the cost per hour of a Type C motorboat to that of a Type E motorboat?
- A. 1:3
- B. 15:28
- C. 14:23
- D. 5:7
- E. 23:27

QR5-4 Alan rented a Type A motorboat for 3 hours on Monday and a Type C motorboat for 2 hours on Tuesday. What was the percentage change in Alan's total cost from Monday to Tuesday?
- A. 15.00%
- B. 50.00%
- C. 56.25%
- D. 72.25%
- E. 75.00%

Abstract Reasoning

AR1

Set A
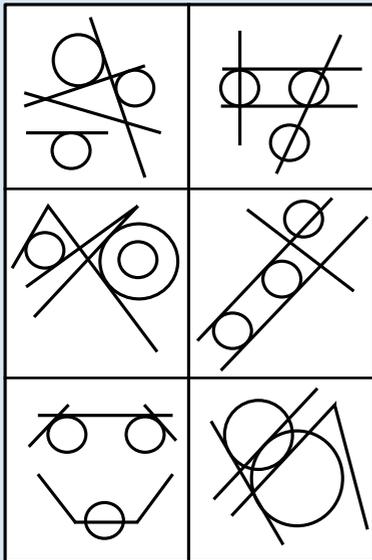
Set B

AR1-1
Test shape:
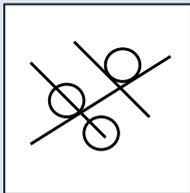
- A. Set A
- B. Set B
- C. Neither

AR1-2
Test shape:
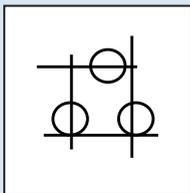
- A. Set A
- B. Set B
- C. Neither
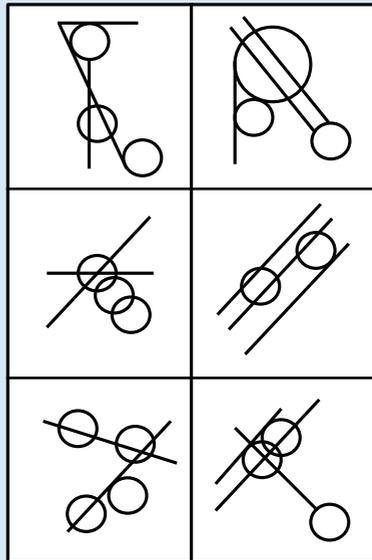
AR1-3
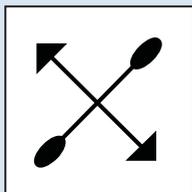Test shape:
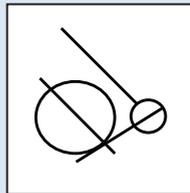
- A. Set A
- B. Set B
- C. Neither

AR1-4
Test shape:
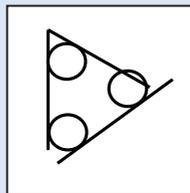
- A. Set A
- B. Set B
- C. Neither

AR1-5
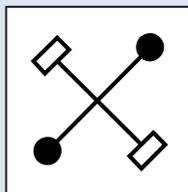Test shape:
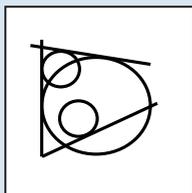
- A. Set A
- B. Set B
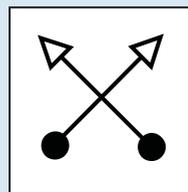- C. Neither

AR1-6
Test shape:
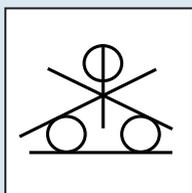
- A. Set A
- B. Set B
- C. Neither

AR1-7
Test shape:
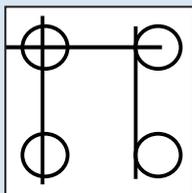
- A. Set A
- B. Set B
- C. Neither

AR1-8
Test shape:
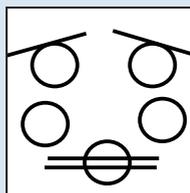
- A. Set A
- B. Set B
- C. Neither

AR1-9
Test shape:
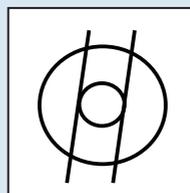
- A. Set A
- B. Set B
- C. Neither

AR1-10
Test shape:
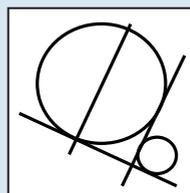
- A. Set A
- B. Set B
- C. Neither

Abstract Reasoning

AR2
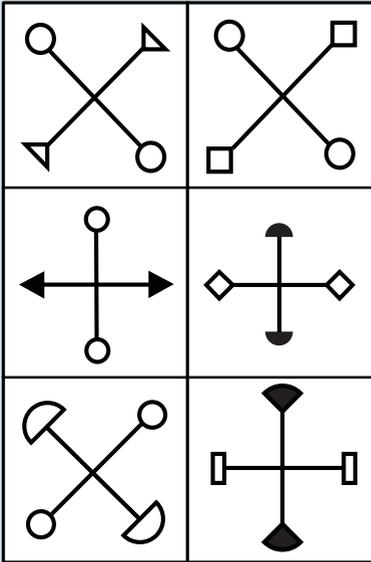
Set A	Set B
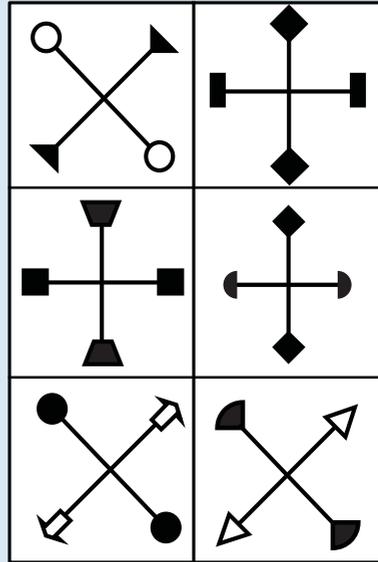
AR2-1
Test shape:

A. Set A
B. Set B
C. Neither
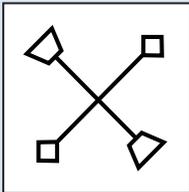
AR2-2
Test shape:

A. Set A
B. Set B
C. Neither

AR2-3
Test shape:
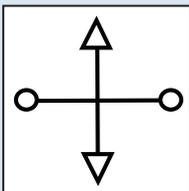
A. Set A
B. Set B
C. Neither

AR2-4
Test shape:
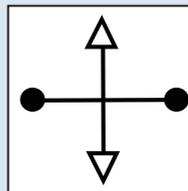
A. Set A
B. Set B
C. Neither

AR2-5
Test shape:

- ☐ A. Set A
- ☐ B. Set B
- ☐ C. Neither
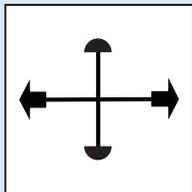
AR2-7
Test shape:

- ☐ A. Set A
- ☐ B. Set B
- ☐ C. Neither

AR2-6
Test shape:

- ☐ A. Set A
- ☐ B. Set B
- ☐ C. Neither

AR2-8
Test shape:

- ☐ A. Set A
- ☐ B. Set B
- ☐ C. Neither

Abstract Reasoning

AR3

Set A
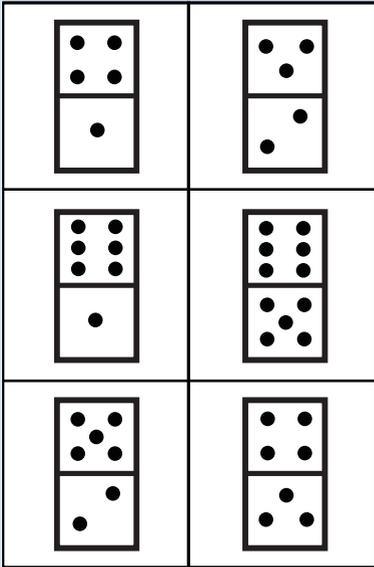
Set B
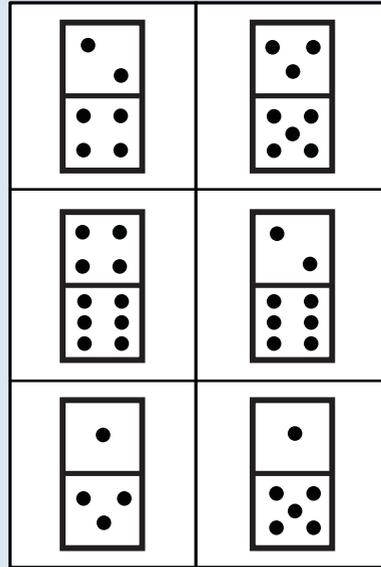
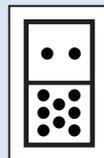**AR3-1** **Which of the following test shapes belongs in Set A?**
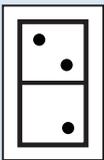
 A.
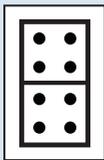
 C.
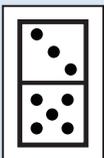
 B.
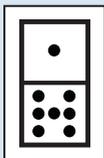
 D.

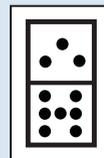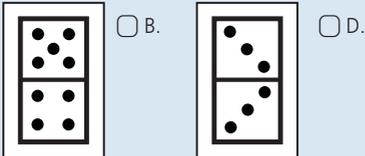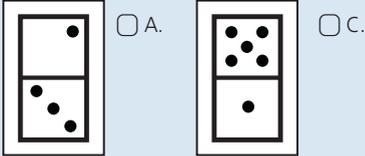**AR3-2** **Which of the following test shapes belongs in Set A?**
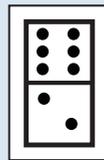
 A.
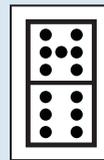
 C.

 B.

 D.

AR3-3 **Which of the following test shapes belongs in Set A?**

○ A.

○ B.

○ C.

○ D.

AR3-4 **Which of the following test shapes belongs in Set B?**

○ A.

○ B.

○ C.

○ D.

AR3-5 **Which of the following test shapes belongs in Set B?**

○ A.

○ B.
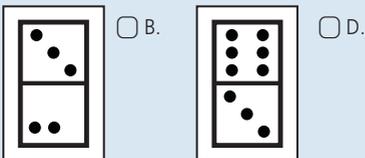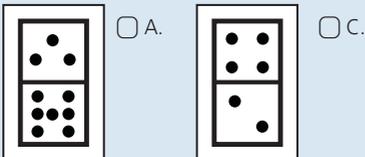
○ C.

○ D.
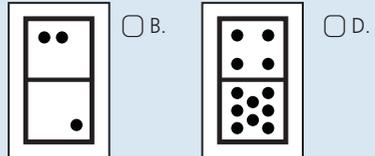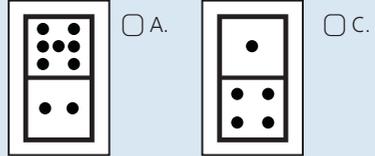
AR3-6 **Which of the following test shapes belongs in Set B?**

○ A.

○ B.

○ C.

○ D.
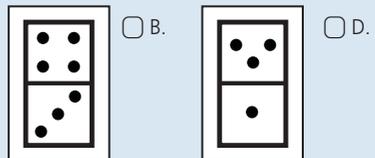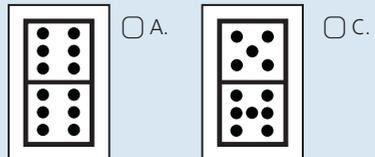
Abstract Reasoning

AR4
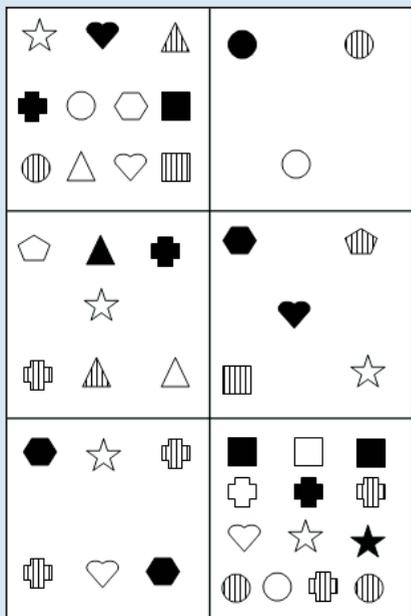
Set A   Set B
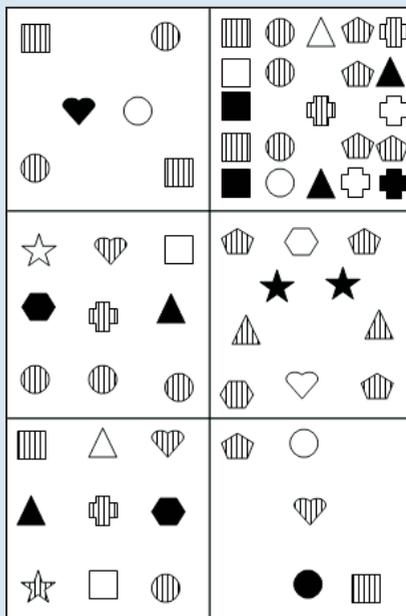
AR4-1

Test shape:
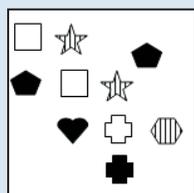
- A. Set A
- B. Set B
- C. Neither

AR4-2

Test shape:
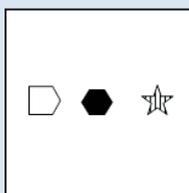
- A. Set A
- B. Set B
- C. Neither

Abstract Reasoning

AR4-3

Test shape:
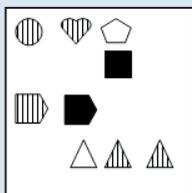
- [ ] A. Set A
- [ ] B. Set B
- [ ] C. Neither

AR4-4

Test shape:
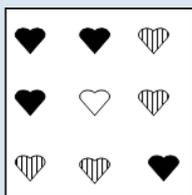
- [ ] A. Set A
- [ ] B. Set B
- [ ] C. Neither

AR4-5

Test shape:
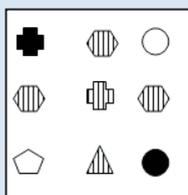
- [ ] A. Set A
- [ ] B. Set B
- [ ] C. Neither

Abstract Reasoning

AR5

Which figure completes the series?

A.   B.   C.   D.

AR6

is to

as

is to
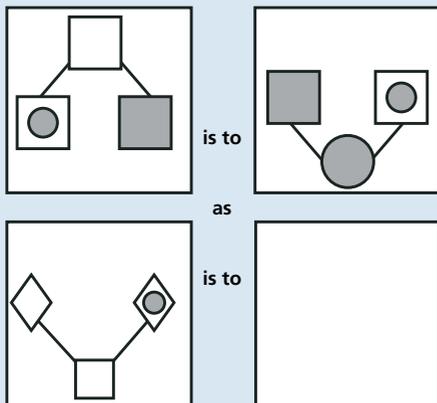
Which figure completes the statement?

A.   C.

B.   D.

Situational Judgement

SJ1

A medical student, Sehn, has been assigned to work with a senior doctor, Margaret, on a hospital ward for one week. The purpose of this attachment is for Sehn to gain insight into the work the Margaret undertakes and assist in his developm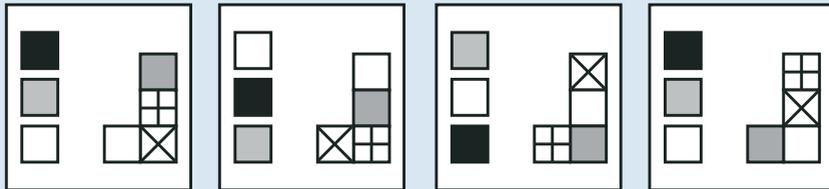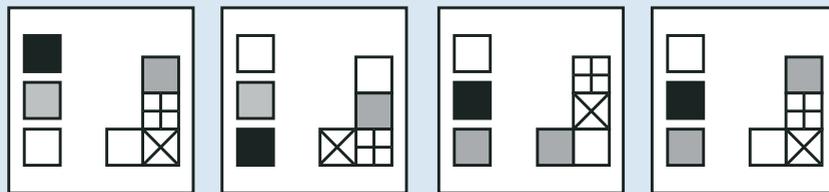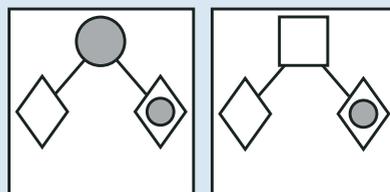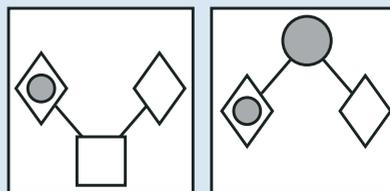ent. At the start of the week, Margaret assigns Sehn personal tasks, which do not appear to be related to Sehn's clinical development. These tasks will take at least two of the five days to complete.

How **appropriate** are each of the following responses by **Sehn** in this situation?

SJ1-1 **Complete the assigned personal tasks for Margaret, without mentioning that they do not seem to be related to his development**
  - A A very appropriate thing to do
  - B Appropriate, but not ideal
  - C Inappropriate, but not awful
  - D A very inappropriate thing to do

SJ1-2 **Suggest to Margaret examples of more clinical tasks that he could get involved with during the attachment**
  - A A very appropriate thing to do
  - B Appropriate, but not ideal
  - C Inappropriate, but not awful
  - D A very inappropriate thing to do

SJ1-3 **Seek advice from the academic tutor responsible for the learning attachment**
  - A A very appropriate thing to do
  - B Appropriate, but not ideal
  - C Inappropriate, but not awful
  - D A very inappropriate thing to do

SJ2

A medical student, Gemma, is observing a patient consultation conducted by Dr Mitchell. Dr Mitchell is updating the patient's medical records on the computer. He asks the patient whether he is allergic to penicillin, to which the patient replies Yes. However, Gemma notices that Dr Mitchell types No as the response to this question on the computer record.

How **appropriate** are each of the following responses by **Gemma** in this situation?

SJ2-1 **Inform Dr Mitchell once the patient has left the room that he appears to have made an error with the computer record**
  - A A very appropriate thing to do
  - B Appropriate, but not ideal
  - C Inappropriate, but not awful
  - D A very inappropriate thing to do

SJ2-2 **Change the computer record after Dr Mitchell and the patient have left the room, to avoid Dr Mitchell being embarrassed**
  - A A very appropriate thing to do
  - B Appropriate, but not ideal
  - C Inappropriate, but not awful
  - D A very inappropriate thing to do

SJ2-3 **Ask the patient to repeat his answer to the question**
  - A A very appropriate thing to do
  - B Appropriate, but not ideal
  - C Inappropriate, but not awful
  - D A very inappropriate thing to do

SJ2-4 **Inform the patient privately about the error after the consultation has finished**
- ☐ A A very appropriate thing to do
- ☐ B Appropriate, but not ideal
- ☐ C Inappropriate, but not awful
- ☐ D A very inappropriate thing to do

SJ3

A dental student, Rio, is leading a group of fellow students in a project they have been assigned to work on together. Jerome approaches Rio with a complaint about one of the other students in the group, Elizabeth. Jerome insists that Elizabeth is not dedicating enough time and effort to the group project. Jerome explains that Elizabeth leaves meetings early and her notes are not very comprehensive when she is asked to research topics. He asks if Rio can do something about this as he is leader of the group.

How **appropriate** are each of the following responses by **Rio** in this situation?

SJ3-1 **Take no action unless further complaints are received from other members of the group**
- ☐ A A very appropriate thing to do
- ☐ B Appropriate, but not ideal
- ☐ C Inappropriate, but not awful
- ☐ D A very inappropriate thing to do

SJ3-2 **Suggest to Jerome that he raises his concerns with Elizabeth directly**
- ☐ A A very appropriate thing to do
- ☐ B Appropriate, but not ideal
- ☐ C Inappropriate, but not awful
- ☐ D A very inappropriate thing to do

SJ3-3 **Report Elizabeth's lack of dedication to the academic tutor**
- ☐ A A very appropriate thing to do
- ☐ B Appropriate, but not ideal
- ☐ C Inappropriate, but not awful
- ☐ D A very inappropriate thing to do

SJ3-4 **Ask other members of the project group whether they have similar concerns about Elizabeth's behaviour**
- ☐ A A very appropriate thing to do
- ☐ B Appropriate, but not ideal
- ☐ C Inappropriate, but not awful
- ☐ D A very inappropriate thing to do

SJ3-5 **Speak to Elizabeth directly to raise concerns about the time and effort she is dedicating to the group project**
- ☐ A A very appropriate thing to do
- ☐ B Appropriate, but not ideal
- ☐ C Inappropriate, but not awful
- ☐ D A very inappropriate thing to do

SJ4

A medical student is due to attend an appointment with her supervisor. One hour prior to the meeting, an opportunity to attend a clinical session becomes available at short notice. The student knows this session would be of value to her learning and development, however it will clash with her appointment with her supervisor.

How **important** to take into consideration are the following factors for the **student** when considering how to respond to the situation?

SJ4-1 **The importance of the meeting with the supervisor**
- ☐ A Very important
- ☐ B Important
- ☐ C Of minor importance
- ☐ D Not important at all

SJ4-2 **Whether the supervisor is contactable to be able to re-arrange the meeting**

- ◯ A Very important
- ◯ B Important
- ◯ C Of minor importance
- ◯ D Not important at all

SJ4-3 **That other clinical sessions may arise in future that will be of value to her development**

- ◯ A Very important
- ◯ B Important
- ◯ C Of minor importance
- ◯ D Not important at all

SJ4-4 **Her supervisor's view on whether this clinical session would be a valuable learning opportunity**

- ◯ A Very important
- ◯ B Important
- ◯ C Of minor importance
- ◯ D Not important at all

SJ5

A medical student, Cameron, is told by a patient, that a senior doctor frequently swears loudly on the ward which makes him feel so uncomfortable that he does not want to stay in hospital. Cameron consults a nurse on the ward and she tells him that she has not ever witnessed this behaviour by the senior doctor. The nurse reminds Cameron that the patient might just dislike being in hospital. Cameron is unsure what to do because the senior doctor is marking one of his assessments.

How **important** to take into account are the following considerations for **Cameron** when deciding how to respond to the situation?

SJ5-1 **The senior doctor is marking one of his assessments**

- ◯ A Very important
- ◯ B Important
- ◯ C Of minor importance
- ◯ D Not important at all

SJ5-2 **A patient on the ward has told him that he feels so uncomfortable that he wants to leave**

- ◯ A Very important
- ◯ B Important
- ◯ C Of minor importance
- ◯ D Not important at all

SJ5-3 **Other patients may have overheard the senior doctor swearing loudly on the ward and also feel uncomfortable**

- ◯ A Very important
- ◯ B Important
- ◯ C Of minor importance
- ◯ D Not important at all

SJ5-4 **The nurse has not witnessed the senior doctor swearing loudly on the ward**

- ◯ A Very important
- ◯ B Important
- ◯ C Of minor importance
- ◯ D Not important at all

SJ6

A consultation is taking place between a senior doctor and a patient; a medical student is observing. The senior doctor tells the patient that he requires some blood tests to rule out a terminal disease. The senior doctor is called away urgently, leaving the medical student alone with the patient. The patient tells the student that he is worried he is going to die and asks the student what the blood tests will show.

How **appropriate** are each of the following responses by the **medical student** in this situation?

SJ6-1 Explain to the patient that he is unable to comment on what the tests will show as he is a medical student

- [ ] A A very appropriate thing to do
- [ ] B Appropriate, but not ideal
- [ ] C Inappropriate, but not awful
- [ ] D A very inappropriate thing to do

SJ6-2 Acknowledge the patient's concerns and ask whether he would like them to be raised with the senior doctor

- [ ] A A very appropriate thing to do
- [ ] B Appropriate, but not ideal
- [ ] C Inappropriate, but not awful
- [ ] D A very inappropriate thing to do

SJ6-3 Suggest to the patient that he poses these questions to the senior doctor when he returns

- [ ] A A very appropriate thing to do
- [ ] B Appropriate, but not ideal
- [ ] C Inappropriate, but not awful
- [ ] D A very inappropriate thing to do

SJ6-4 Tell the patient that he should not worry and that it is unlikely that he will die

- [ ] A A very appropriate thing to do
- [ ] B Appropriate, but not ideal
- [ ] C Inappropriate, but not awful
- [ ] D A very inappropriate thing to do

Rationales and Answers to Practice Questions

Verbal Reasoning – VR1 The Teleological Argument

VR1-1 Correct answer: D
Dawkins has used Paley's analogy to suggest that the maker of his watch could not be blind, otherwise the making of the watch would be too difficult or impossible, and also that natural selection is blind in the sense that it does not operate towards a final goal.

VR1-2 Correct answer: A
This is supported by the passage in the first paragraph, the teleological argument has been commonly used to prove the existence of a Creator or Supreme Being.

VR1-3 Correct answer: B
This is supported by the passage in the theory of Charles Darwin: ...theory of natural selection as an explanation for the variety and complexity of living organisms. This did not presuppose a hidden designer. Therefore events are not planned, they occur by chance.

VR1-4 Correct answer: C
This is supported by the passage using Paley's attempt to provide a scientific explanation of a designed world using Newton's Law of Motion but failing to justify it fully when Darwin and Dawkins published books on evolution and natural selection.

VR1-5 Correct answer: A
An analogy is a form of reasoning using familiarity in which one thing is referred to as another thing, on the basis that the other thing is of similar structure. Paley's story of the construction of a watch on the basis that it is very similar to the way the universe is constructed is a classic example of analogy.

VR1-6 Correct answer: B
This is supported by Paley's argument in the first paragraph: He pointed to the intricate structure of living things and argued that they were so cleverly put together that some unknown designer must have made them. Using this information, it can be inferred that the similar structure means they have a similar purpose, so that the eye may take pictures like a camera.

Verbal Reasoning – VR2 The 1737 Licensing Act

VR2-1 Correct answer: B
This is supported in paragraph 1: 'In 1660 drama was legalised once more. It also goes on to say that the censorship of plays was a result of Royal Sponsorship, suggesting the King of 1660 was a supporter of Theatre.

VR2-2 Correct answer: C
This is supported by paragraph 1 which refers to 2 theatres in London in 1660 but no comment about number of London theatres in 1737 (paragraphs 2-3).

VR2-3 Correct answer: D
This is supported by paragraph 4: After 1788 magistrates could authorise local theatres. Many new provincial theatres were built but London theatres were still restricted to two.

VR2-4 Correct answer: A
In 1660 the king controlled criticism by sponsorship of theatres (paragraph 1) but in the 1730s the government found it necessary to take legislative and punitive action to reduce/control criticism (paragraph 2). No indication is given of why the king sponsored theatres in paragraph 1 other than control.

VR2-5 Correct answer: A
This is supported by the last paragraph which states that there was no longer a limit of having theatres solely in London.

VR2-6 Correct answer: D
This is supported by the passage in paragraph two, Owners, seeking increased profits wanted more socially diverse audiences i.e. not the upper class/a range of people.

VR2-7 Correct answer: C.
This is supported by the passage in paragraph two where it states that the play offensively mocked King George's personal habits. None of the other response options are is cited in this passage as a feature of this play.

VR2-8 Correct answer: B
This is supported by the passage in paragraph two, Many dramatists, leading up to the late 1730s criticised the government and royal family.

Verbal Reasoning – VR3 Exchange Rates

VR3-1   Correct answer: True
If the exchange rates change so the overseas purchaser can buy more pounds for their currency than previously, then it will be true that exports from the UK will cost less in the country buying them in currency terms.

VR3-2   Correct answer: False
Fluctuations do occur in the exchange rate between the pound (£) and the euro, so (as in the example in para 4) a person in France or Germany will be affected by fluctuation in exchange rates between the two currencies.

VR3-3   Correct answer: Can't Tell
We have no idea whether interest rates in the UK or Australia will remain unchanged or how the exchange rates between the UK £ and Australian $ have fluctuated or will fluctuate, nor does the passage tell us anything about the tax rates in the two countries so we cannot tell whether the statement is true or false.

VR3-4   Correct answer: Can't Tell
Prices can differ greatly in different countries and the passage says nothing about purchasing power.

VR3-5   Correct answer: True
The more oil or chemicals the UK purchases from overseas, the greater will be its demand for foreign currency, so the supply of pounds in the foreign exchange markets will rise unless balanced by more demand from overseas for UK pounds.

VR3-6   Correct answer: False
As para 2 makes clear, when a saver makes a deposit in a bank, this technically means the money is being borrowed – not lent - by the bank.

VR3-7   Correct answer: False
No, the importing country would have to sell £100 million–worth of pounds to buy other currencies but the countries to which it is exporting goods will need to buy £200 million-worth of pounds to pay for the goods, so it is the overall demand for pounds – not supply – which will rise.

VR3-8   Correct answer: False

The statement is incorrect because there is a possibility that the holiday may cost the traveller more than anticipated if the exchange rate for the Russian rouble rises and therefore the traveller needs to exchange more pounds to pay for the holiday.

Verbal Reasoning –
VR4 Rule of War

VR4-1   Correct answer: C

The first paragraph states that they protect civilians caught up in the zone of war.

VR4-2   Correct answer: A

First line states that Humans have fought each other since the dawn of civilisation and 3rd line states aggression may be a part of human nature so it is fair to assume that this will always continue to be the case.

VR4-3   Correct answer: B

The bombing and intimidation (paragraph 2) goes against the Geneva Conventions' purpose to protect civilians caught up in the zone of war potentially making it an international crime.

VR4-4   Correct answer: A

It is logical that far distant operators may not be as accurate in their control of the armed drone aircraft and cause injury to civilians.

VR4-5   Correct answer: D

The last sentence states The use of drones has raised ethical questions for their operators. Therefore, if questions have been raised for their operators then there must have been some consequences that spurred those questions.

Verbal Reasoning –
VR5 Greener Jet Engines

VR5-1   Answer: Can't Tell.

There is no information in the passage that suggests the EU will consider exemption for airlines from the Emissions Trading Scheme.

VR5-2   Answer: False.

This is supported by the first paragraph statement: 'There are two areas of potential fuel saving in aircraft design – the engines and the airframe. The ratio of lightweight materials and recycled components in wing and body production is growing'.

VR5-3   Answer: True.

This is inferred by the majority of the information in the third paragraph, particularly in the final sentence which states that the geared turbofan creates 'a 15% improvement in fuel efficiency and a smaller, lighter housing.'

VR5-4   Answer: False.

This is inferred by the first paragraph statement 'An estimated 3% of Europe's entire greenhouse gas emissions are currently generated by airlines, and with it potentially doubling by 2020…' suggesting it could rise to 6% of emissions.

Verbal Reasoning – VR6 Arctic Foxes

VR6-1   Answer: C.
This is supported by the information presented in the whole passage. Since rodents are a food source for foxes, it is common sense that when there are more rodents, there will be more foxes as their reproduction is dependent on food availability.

VR6-2   Answer: D.
The passage does not indicate that the animal population numbers in general are cyclic. On the contrary, the passage refers to the estimated numbers of foxes as fluctuated.

VR6-3   Answer: A.
In the third and fourth paragraph, the passage made a link between the decline in the number of foxes in 1996 and the low number of reindeer carcasses in 1995/6. It can, thus, be inferred that the low number of reindeer carcasses in 1995/6, which are an important source of food for foxes, led to the starvation of foxes which consequently declined in number.

VR6-4   Answer: C.
The passage does not state that Polar bears have declined after 1973. On the contrary, the Polar bears after 1973 became protected species, therefore one would expect that there will be fewer carcasses left by trappers. Therefore, this option cannot be one of the reasons for the decline in observed foxes. As Polar bears became a protected species then there will be fewer trappers probably not reporting their experiences.

Decision making

DM1   Correct answer: A
From left to right, the teachers are sitting in this order: Miss Zenzer, Mr Warlock, Miss Trollope, Ms O'Rourke, Mr None, Mr Percival, Mr Stephen, and Mr Rowley.

DM2   Correct answer: C
Rex has his morning walk with another dog so this cannot be Barker or Dainty as they have to walk alone. Boxer goes for an afternoon walk so there must be one other dog that is Rex's companion on his morning walk = at least five dogs.

Not A as Boxer has to walk alone. Not B as Boxer has an afternoon walk. Not D as the minimum number of walks would be 5: 1 x Barker, 2 x Dainty, 1 x Boxer and 1 x Rex (with another dog).

DM3   Correct answer: B
Each child picked the following gift: Alec = Pram and doll set; Betty = Roller blades; Carole = Chemistry set; Daniel = Teddy bear; Edna = Jigsaw puzzle.

DM4   Correct answer: B
Suppose W is telling the truth, and X is lying, then Y and Z are telling the truth. X is therefore the only one who must be lying.

W cannot be lying as X or Y would also be lying. Y cannot be lying as W would also be lying. Z cannot be lying as X would also be lying.

DM5   Correct answer: C
The Manager must be I as we know H is a Doctor and J and K own cars that is not owned by the Manager. K and J could be the Teacher but they could equally be the Lecturer. K cannot be the Manager as they own an electric car and the Manager has a scooter.

DM6   Correct answer: B
B is the strongest argument that deals with the outcome of rehabilitation. The other options are a matter of opinion.

DM7   Correct answer: A
A is the strongest argument that considers the impact of the Government's action to those wearing the uniform (all the students). The other options considers only a subset of those affected.

DM8   Correct answer: B
B is the strongest argument that deals with the aim to improve road safety (accident rate). The other options are a matter of opinion.

DM9   Correct answer: D
D is the strongest argument that deals with the consequence of the courses being cut. The other options are matter of opinion.

DM10   Correct answer: B
Letter M is the only letter that represents boxing, athletics and swimming. Letter G represents tennis and swimming. Letter P represents line-dancing and swimming. Letter R represents tennis, gymnastics and boxing.

DM11   Correct answer: C
The letter 'A' is placed within the shapes that represent 'married', 'males' and 'in education'.

DM12   Correct answer: C
The number of customers who did canoeing either solely or with another activity is 24 (4 + 12 + 8). 13 people did all three activities so in total 37 customers took part in canoeing.

DM13   Correct answer: B
All four diagrams have a large circle to indicate attendance at the tea dance. A separate oval is used to represent those who danced the quickstep but took no further part in the dance. Three overlapping shapes are necessary to show the remaining couples' dance variations. Only the diagram in option B represents those couples who danced the samba, foxtrot and the waltz.

DM14   Correct answer: C
In total 8 people went to exactly two countries (4 people went to France and Spain, 3 people went to Spain and Greece, 1 person went to France and Greece). The same amount of people went to France as went to Spain (15) so A cannot be correct. 5 of the 15 people who went to Spain also went to Greece so B cannot be correct. 23 people only went to one country so D cannot be correct.

DM15   Correct answer: A
A separate oval is used to represent the 9 people who played darts but no other activity. 6 people played no game so this number needs to be outside the ovals. Overlap between ovals is needed for the 4 people who played table tennis and snooker. Only the diagram in option A reflects this.

DM16   Correct answer: A
In total, 38 people (29 + 9) like reading and/or watching television. It is not known if there is any overlap in those who enjoy reading and watching television so the range of people must be 10 (48 – 38) and 19 (48 – 29).

DM17   Correct answer: A
The first bus and the train have been on time 40/50 and 40/50 times respectively (80/100). The probability calculation is 0.8 X 0.8 = 0.64, so it is more likely than not that Martin will get home on time.

DM18 Correct answer: D
The chance of selecting a harmonica at first is 1/2 as there are an even number of harmonicas and drums (30 in total). After 9 gifts have been selected, there are 21 left in the sack (10 harmonicas and 11 drums). The chance of selecting a harmonica is 10/21 which is lower than the original chance of 1/2 so the correct answer is 'No'.

DM19 Correct answer: C
Sarah and Simon collectively had 150 throws whereas Paul had 160 throws – Paul's estimate is therefore more reliable. The other options are statistically incorrect.

Quantitative Reasoning – QR1 Buying Leaflets

QR1-1 The correct answer is D: £324.
Calculation required: 450 x £0.60 x 1.20

QR1-2 The correct answer is A: £216
Calculation required:
200 × (£0.30 + £0.60) × 1.20

QR1-3 The correct answer is B: £234
Calculation required:
(150 × £.40 + 225 × £0.60) × 1.20

QR1-4 The correct answer is C: 32.7%.
Calculation required:
(100 × £0.80) × 1.20 / (300 × £0.55 + 100 × £0.80) × 1.20) ×100

QR1-5 The correct answer is A: 30.
Calculation required:
12 ÷ 0.2 = 60   60 ÷ 2

QR1-6 The correct answer is E: 725.
Calculation required:
174 ÷ 1.2 = 145   145 ÷ 0.2

Quantitative Reasoning – QR2 Taste

QR2-1 The correct answer is C: 57.2%.
Calculation required:
35 + 72 + 20 + 60 = 187
35 + 72 = 107 (107÷187) ×100 = 57.2%

QR2-2 The correct answer is B: 41.1%
Calculation required:

100 - $\frac{63}{35+72}\times100$ = 41.1%

QR2-3 The correct answer is B: 39:27
Calculation required: 78:54 = 39:27
60 ÷ 10 = 6, 72 + 6 = 78, 60 - 6 = 54

QR2-4 The correct answer is E: 59,980.
Calculation required:
$\frac{35}{55}\times25,000+\frac{72}{132}\times25,000+\frac{18}{28}\times25,000+\frac{27}{47}\times25,000$

= 59,980

QR2-5 The correct answer is D: 50%.
Calculation required: 74 – x + 60 – x + 8 + x = 100, x = 42, 32 + 1

Quantitative Reasoning – QR3 Balloon Flights

QR3-1 The correct answer is A: 5.3.
Calculation required: 24 – (1.8 × 5.2) / 0.5 = 24 – 18.72

QR3-2 The correct answer is B: 3.8 km.
Calculation required: 24 –15 = 39, 39 ÷ 5.2 = 7.5, 7.5 × 0.5

QR3-3   The correct answer is D: 15.
Calculation required: 24 ÷ 2.8 = 8.57. 8.57 × 500 = 4285, 4285 ÷ 4.8 = 892 seconds

QR3-4   The correct answer is D: 27°C.
Calculation required: Height reached = 5 × 60 × 4.8 = 1440m, Temp change = (1440 ÷ 500) × 5.2 = 14.976, 14.976 + 12

QR3-5   The correct answer is C:
The second balloon took 80% of the time that the first balloon did. Calculation required: $\frac{100}{125} \times 100 = 80$

QR3-6   The correct answer is D:
16.13°F. Calculation Required: If 0°C at 0 metres = (0 x 1.8) + 32 = 32°F at 0 metres, then -2.8°C at 500 metres = -(2.8 x 1.8) + 32 = 26.96°F at 500 metres.
The rate of decrease of temperature is therefore: 32°F - 26.96°F = 5.04°F per 500 metres.
Conversion to °F per mile: 1600/500 = 3.2. 5.04 x 3.2 = 16.13°F per mile.

Quantitative Reasoning – QR4 Concrete

QR4-1   Correct answer is E: Rough.
Calculation required: $\frac{4}{13} \times 100$ = 30.8%.

QR4-2   Correct answer is B: 1.54m³.
Calculation required:
9 × 4 × 0.15 = 5.4, $5.4 \times \frac{2}{7}$

QR4-3   Correct answer is A: 1:3.
Calculation required:
2240:1680 × 4 = 2240:6720

QR4-4   Correct answer is C: 399.
Calculation required:
$\frac{2}{11} \times 3.5 = 0.636$, 0.636 × 2240 =
1425, 1425 ÷ 25 × 7

QR4-5   Correct answer is B: 9%.
Calculation required:
2 × 2240 + 2 × 1600 + 3 × 1680 = 12720, 4480 ÷ 25 × 7 = 1254.4 litres

Total mass = 13974.4 kg $\frac{1254.4}{13974.4} \times 100$

QR4-6   Correct answer is D: 1:1.59.
Calculation required: 25 ÷ 2240 = 0.01116..m³
7 litres = 0.007m³, 0.007:0.01116

Quantitative Reasoning – QR5 Motorboats

QR5-1   Answer: B.
Deposit for Type D motorboat on Sundays = 95 + 5 × 95/100 = 95 + 4.75 = £99.75.

Total cost of renting a Type D motorboat for 6 hours on a Sunday = Deposit + Cost per hour × number of hours = £99.75 + £100 × 6 = £99.75 + £600 = £699.75.

QR5-2   Answer: C.
Total cost of renting a Type C motorboat for x hours = Deposit + Cost per hour × number of hours = £100 + £75x

Or, £325 = £100 + £75x
Or, £75x = £325 - £100 = £225
Or, x = 225/75 = 3.

QR5-3   Answer: B.
Total cost of renting a Type E motorboat for 1 hour = Deposit + Cost per hour × 1

Deposit = £100
240 = 100 + Cost per hour of Type E motorboat
Or, Cost per hour of Type E motorboat = 240 – 100 = £140
Cost per hour of Type C motorboat = £75
Required ratio = £75: £140 = 15:28.

QR5-4   Answer: C.
Total cost of renting a Type A motorboat for 3 hours = Deposit + Cost per hour × number of hours

For a Type A motorboat, if the deposit is x, then $135 = x + 2 \times 25$
Or, $135 = x + 50$
Or, $x = 135 - 50 = £85$
Therefore, Total cost of renting a Type A motorboat for 3 hours on Monday = $85 + 3 \times 25 = £160$
Total cost of renting a Type C motorboat for 2 hours on Tuesday = $100 + 75 \times 2 = £250$
Percentage increase in Alan's total cost from Monday to Tuesday = $(£250 - £160) \times 100/£160 = 56.25\%$.

Abstract Reasoning – AR1
Rules
Set A
There are two circles each with two tangents. Other shapes are irrelevant

Set B
There is one circle with two lines transecting it. Other shapes are irrelevant.

AR1-1   Correct answer: Neither
Only one circle has two tangents so not A, one circle only has one line transecting it so not B. Therefore neither.

AR1-2   Correct answer: Neither
Two circles but only with one tangent each so not A, one circle only has one line transecting it so not B. Therefore neither.

AR1-3   Correct answer: Neither
One circle with one tangent so not A, one circle only has one line transecting it so not B. Therefore neither.

AR1-4   Correct answer: A
Two circles with two tangents so A.

AR1-5   Correct answer: A
Two circles with two tangents so A.

AR1-6   Correct answer: A
Two circles with two tangents so A.

AR1-7   Correct answer: B
One circle with two lines transecting it so B

AR1-8   Correct answer: B
One circle with two lines transecting it so B

AR1-9   Correct answer: B
One circle with two lines transecting it so B

AR1-10   Correct answer: A
Two circles with two tangents to A.

Abstract Reasoning – AR2
Rules
Set A
There are 2 pairs of shapes.

If the shapes are unshaded then the pairs are in an ×. If one pair is shaded then the pairs are in a +

Set B
There are 2 pairs of shapes.

If the shapes are all shaded then the pairs are in a +. If one pair is shaded then the pairs are in an ×

AR2-1   Correct answer: A
2 pairs of shapes, all unshaded, in an ×

AR2-2   Correct answer: N
2 pairs of shapes, all unshaded, in a +

AR2-3   Correct answer: B
2 pairs of shapes, one pair shaded, in an ×

AR2-4   Correct answer: A
2 pairs of shapes, one pair shaded, in a +

AR2-5   Correct answer: B
2 pairs of shapes, both pairs shaded, in a +

AR2-6   Correct answer: N
2 pairs of shapes, both pairs shaded, in an ×

AR2-7   Correct answer: B
2 pairs of shapes, one pair shaded, in an ×

AR2-8   Correct answer: N
2 pairs of shapes - but one pair shaded on non opposite arms of the ×

Abstract Reasoning – AR3
Rules
Set A
Total number of spots is an ODD number, and larger number of spots is above.

Set B
Total number of spots is an EVEN number, and larger number of spots is below.

AR3-1   Correct answer: A
A is correct. Total number of spots = 3. Larger number of spots (2) is above.

AR3-2   Correct answer: C
C is correct. Total number of spots = 13. Larger number of spots (7) is above.

AR3-3   Correct answer: B
B is correct. Total number of spots = 9. Larger number of spots (5) is above.

AR3-4   Correct answer: A
A is correct. Total number of spots = 10. Larger number of spots (7) is below.

AR3-5   Correct Answer: D
D is correct. Total number of spots = 12. Larger number of spots (8) is below.

AR3-6   Correct answer: C
C is correct. Total number of spots = 12. Larger number of spots (7) is below.

Abstract Reasoning – AR4
Rules
Set A Rule
Regardless of the nature of the shapes themselves there must be an equal number of black and shaded shapes but the combined total is always at least one more than the total number of white shapes

Set B Rule
Regardless of the nature of the shapes themselves there must be an equal number of black and white shapes but the combined total is always at least one fewer than the total number of shaded shapes.

AR4-1   Answer Neither
More black shapes than either white or shaded so cannot be either.

AR4-2   Answer A
One black and one white but only one shaded so cannot satisfy B. One shaded and one black (= 2 shapes) which is one more than the white shape so must be A.

AR4-3   Answer B
2 black and 2 white (= 4 shapes) and 5 shaded shapes so must be B.

AR4-4   Answer A
Equal number of black and shaded (=4) but only 1 white so must be A.

AR4-5   Answer B
2 black and 2 white (= 4) and 5 shaded so must be B.

Abstract Reasoning - AR5

Correct answer: D

The shading of the column has the sequence: black, shaded, white; white, black, shaded; shaded, white, black and then repeats. The shading of the L shape from the top has the sequence: shaded, cross, diagonal cross, white. In each square, the box at the end of the L shape moves to the top box and the shading sequence continues.

So, the next square should have the column shading as white, black, shaded. The L shape should be in the order of shaded, cross, diagonal cross, white.

Abstract Reasoning - AR6

Correct answer: D

The single shape changes to the opposite side of the box (top to bottom) and changes to the small shape that is inside another shape (square to circle). The two shapes attached to the lines swap from left to right.

So, the square at the bottom should move to the top and become a circle. The two kite shapes should swap, with the circle inside the kite being on the left.

Situational Judgement - SJ1

SJ1-1   Correct answer: C
This response isn't the most appropriate – it shows a lack of insight by Sehn about his understanding of the placement, and offers no solution to the problem. This course of action does not have severe consequences.

SJ1-2   Correct answer: B
Although this is an appropriate course of action, it does not deal with the fact that Sehn is still being asked to carry out personal tasks.

SJ1-3   Correct answer: A
This is the most appropriate course of action, given that Margaret was unlikely to have assigned Sehn to the placement. The academic tutor has overall responsibility for work-based placements and, as the administrator, they should be made aware of the problem.

Situational Judgement - SJ2

SJ2-1   Correct answer: A
This is a sensitive issue, but one that must be corrected at the first opportunity. To correct Dr Mitchell immediately in front of the patient may serve to undermine their trust in his professional skills. Waiting until the patient has left (assuming no treatment is due to be carried out, or drugs prescribed) is the best course of action. Dr Mitchell will then need to re-confirm with the patient at the next available opportunity.

SJ2-2   Correct answer: D
This is an inappropriate course of action that is not consistent with open and honest practice. Altering notes in this way is ground for gross professional misconduct.

SJ2-3   Correct answer: B
This is a reasonable course of action, and may serve to clarify the patient's response. However, it may also affect the patient/doctor relationship and so waiting to discuss it with Dr Mitchell afterwards is preferable.

SJ2-4   Correct answer: D
This is an inappropriate course of action. Without seeking further clarification from Dr Mitchell, Gemma is not making an informed judgement, and this may be detrimental to the doctor/patient relationship.

Situational Judgement - SJ3
SJ3-1   Correct answer: C
This option is inappropriate – it discredits Jerome's observation. This course of action does not have severe consequences.

SJ3-2   Correct answer: B
This is an appropriate course of action, although Rio, as the group leader, should be managing the situation.

SJ3-3   Correct answer: C
This option is inappropriate, as Rio should be managing the situation and this matter does not, at this stage, involve the academic tutor. No attempt has been made at resolution. This course of action does not have severe consequences.

SJ3-4   Correct answer: A
This would be entirely appropriate, in order to gather a consensus opinion about Elizabeth's behaviour. Part of working as a team is the ability to share concerns.

SJ3-5   Correct answer: A
This would also be entirely appropriate, as the concern should be raised with all individuals concerned. There should be opportunity for those individuals to defend any such allegations and to improve performance, where necessary. These options will result in local resolution before the matter needs to be taken further.

Situational Judgement - SJ4
SJ4-1   Correct answer: A
Assuming that the student is able to contact her supervisor to re-arrange, the importance of the meeting is very worthy of consideration. This could be a meeting about compromised patient care, for example.

SJ4-2   Correct answer: A
In order to act professionally, the student should ensure open and timely communication with her supervisor. To not consider whether or not she can contact the supervisor to re-arrange would be considered poor practice.

SJ4-3   Correct answer: A
It may be that there is no need to re-arrange her pre-existing meeting if clinical availability is likely to present itself again. This is about forward planning, time-management and maintaining existing commitments.

SJ4-4   Correct answer: B
The student must accept responsibility for developing her own professional development. Given that she has already identified that this session would be of value to her learning and development, the opinion of the supervisor becomes less (but still) important.

Situational Judgement - SJ5

SJ5-1   Correct answer: D

Although there may be apparent consequences for raising an issue with the senior doctor, the overriding consideration should be that of the patient. Assessments should be marked professionally and objectively – this is not an important consideration.

SJ5-2   Correct answer: A

The patient's safety and wellbeing should be the main concern at all times.

SJ5-3   Correct answer: B

This may be true, and may be important when deciding how to respond. However, it is based on an assumption and so is not a very important consideration.

SJ5-4   Correct answer: B

This may be true and so it is important to take it into account, however, as Cameron has received a direct complaint from a patient, this should be followed up regardless of who can support or refute it.

Situational Judgement - SJ6

SJ6-1   Correct answer: B

The General Medical Council requires students to work "…within the limits of their competence, training and status as medical students." A medical student is not qualified to discuss the possible outcomes of the patient's blood test nor what the future may hold for the patient. However, it is correct for a student to explain his role to the patient, so that the patient understands the student's position. In this situation, where a patient is concerned or worried about their health, the medical student should acknowledge the patient's concerns and advise the patient to address their concerns with a more appropriate member of staff.

SJ6-2   Correct answer: A

On any occasion that a patient is concerned or worried about their health, this should be acknowledged by any person involved with their care. Although the medical student is not yet qualified to address the patient's concerns directly, by acknowledging them and giving the patient the option to raise them with the senior doctor, the student is assuring the patient that he is being listened to and that his concerns are being taken seriously.

SJ6-3   Correct answer: B

The senior doctor has overall responsibility for the care of the patient and in this case would be the most appropriate member of staff to address the patient's concerns directly. However, ideally the student should also indicate that they empathise with the patient about their concerns.

SJ6-4   Correct answer: D

The General Medical Council requires students to work "…within the limits of their competence, training and status as medical students." A medical student is not qualified to discuss the possible outcomes of the patient's blood test nor what the future may hold for the patient. By telling the patient not to worry, the student is inappropriately (and perhaps falsely) reassuring the patient. A student should acknowledge the patient's concern and indicate that they empathise with the patient about their concerns.

Notes

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Step-by-step guide

You may find this step-by-step guide helpful in planning for your test.

Check

- ☐ Which universities require the test and their entry criteria
- ☐ The location of test centres
- ☐ Whether you are eligible to take the extended UKCATSEN test
- ☐ Whether you are eligible for a bursary and then apply by 5pm on 21 September 2016

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- ☐ You should register for the test between 3 May and 5pm on 21 September 2016

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- ☐ You need to book your test before midday on 4 October 2016. We recommend you book as early as possible
- ☐ Familiarise yourself with how to reschedule or cancel your test and read our refund policy

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- ☐ Use the Candidate Preparation Toolkit for definitive information and advice about the test plus hundreds of official practice questions
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- ☐ Find out what to expect at a UK Pearson Professional Test Centre
- ☐ Read the statement on unprofessional behaviour and the UKCAT examination rules
- ☐ Familiarise yourself with what to do if something goes wrong either before or during your test
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☐ Take your test between 1 July and 5 October 2016 – no exceptions!

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