



UCAT Question Writer Guide

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Introduction

Welcome to the tutor's guide to writing questions for Mission Medicine! We hope that you find all you need to successfully create questions.

When you come to write your own question using the templates, 'copy' across the relevant templates from the Quicklinks in the 'create' page of the Tutor Portal and 'paste' them into a separate document with the following changes:

1. Go to 'Layout' in the top menu beneath the blue header and select 'Margins' – change to 'narrow'
2. Also, in 'Layout' – change 'Orientation' to 'Landscape'
3. 'Paste' in the template
4. For every new 'sub-question' associated with a stem (i.e. a stem in VR), copy and paste onto a new page
5. Copy and paste the relevant explanation template into a new page after every question
6. When you are finished, save the document as 'section acronym _your initials' i.e. VR_questions_MP' and **submit for review** via the Google form accessible in the **Tutor Portal**
7. The question will either be returned to you with some suggestions or approved and you will be paid for it at the end of the month!

If you have any questions, please contact tutor@missionmedicine.co.uk.

Basic principles:

Every question must:

1. Be entirely your own work and not taken or adapted, either partially or completely from another source
2. Represent the content found in the UCAT
3. Come with a set of answers in the required format
4. Come with an explanation as to how the candidate was supposed to arrive at the right answer (include the technique or strategy used)
5. Not contain any controversial or offensive material
6. To the best of the authors ability be multi-cultural and inclusive
7. Use Arial font



UCAT question types:

There are 5 sections in the UCAT as shown in the diagram below. Each section is further divided into the different subtypes of questions.

For every section, there is an accompanying guide contained in this document.

Each section is coloured coded according to the diagram below.

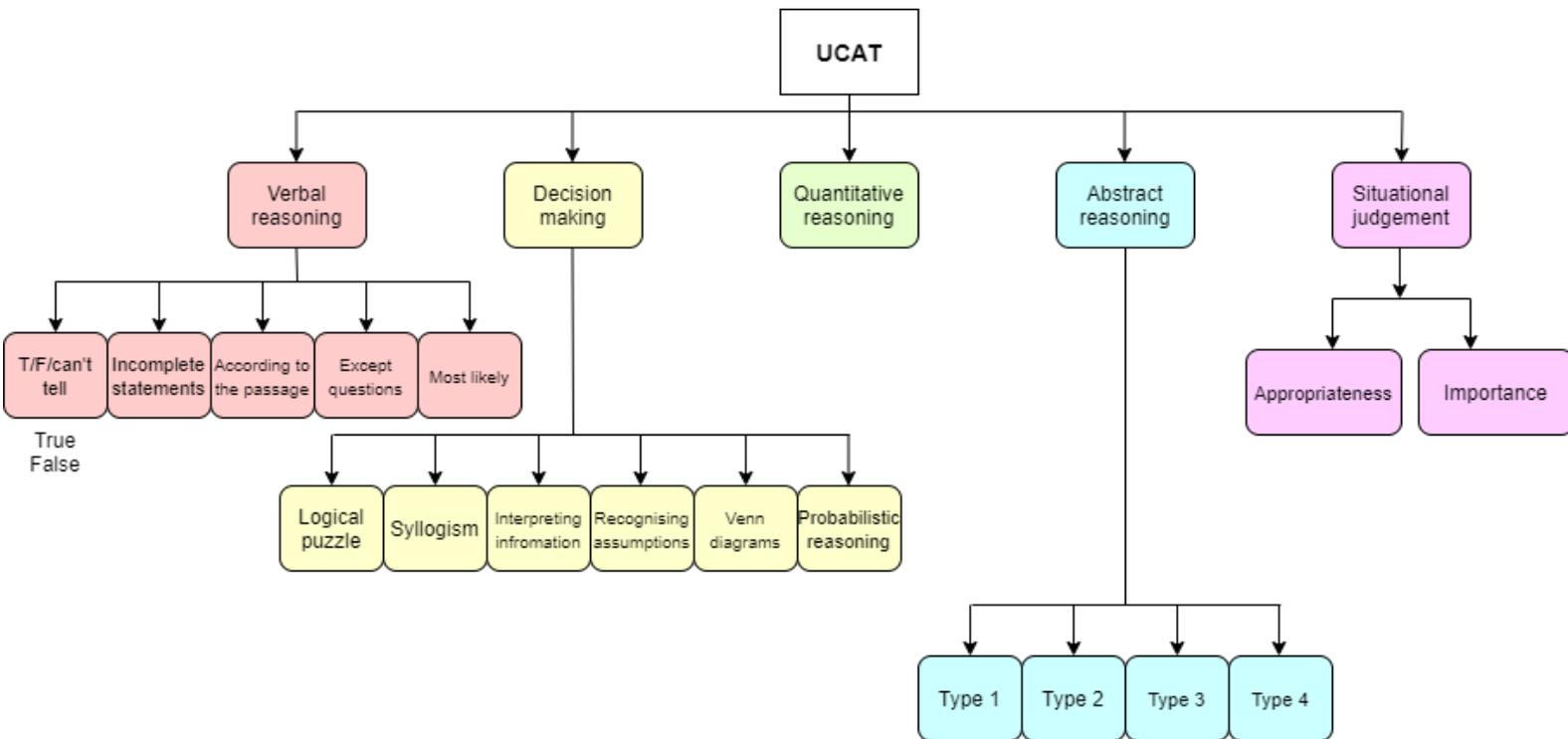


Figure 1: sections and question subtypes



What is a 'question'?

How we define a question for the purposes of submission:

There are slightly different requirements for a question submission, depending on the section you have chosen.

These are outlined below:

Verbal reasoning:

- 1 stem
- 4 sub-questions
- 4 potential answers per sub-question

Decision making:

- 1 stem (in the form of text, tables or other graphics)
- 1 sub-question
- 5 potential answers per sub-question

Quantitative reasoning:

- 1 stem (tables, charts or text)
- 4 sub-questions
- 5 potential answers per sub-question

Abstract reasoning: (depends on type, please see relevant section of this guide)

Type 1: : 2 'sets' of shapes (Set A & Set B) followed by 5 'test shapes'

Each 'test shape' should be in a new template so copy and paste the 'set's across each time!

Type 2: 1 'series' of shapes followed by 4 sets of 4 shapes

Each set of shapes should be in a new template so copy and paste as with Type 1!

Type 3: 1 'statement' of 2 shapes and 1 'statement' of 1 shape followed by 4 shapes

Type 4: as Type 1 but 4 'test shapes' are presented simultaneously

Situational judgment:

- 1 stem
 - 4-6 'responses'
- Each response should be in a new template so copy and paste across the stem each time!



How to write an explanation to a question

We provide templates for explanations for each section on the 'Create' page of the Tutor Portal. Use these to structure your explanations and copy and paste them into the same document as your questions as required.

An explanation requires:

1. The correct answer (in the clearly marked box) e.g. B
2. The **main strategy** used
3. The reason why the other answers are not correct written in the appropriate boxes

An example of an explanation template is shown below:

Verbal reasoning ('according to the stem') 

Correct answer:

<Insert main strategy here>

A. <Insert explanation here>

B. <Insert explanation here>

C. <Insert explanation here>

D. <Insert explanation here>

End Exam [Next](#) 



Verbal reasoning

‘Assesses your ability to read and think carefully about the information presented in stems and to determine whether specific conclusions can be drawn from the information presented’

Essentially, as with most other sections, is testing logical reasoning and also the candidate’s ability to interpret information based on facts from the stem.

Requirements:

- All the information required for the candidate should be within the stem
- Each stem should be linked to 4 sub-questions
- Each stem should be between 250 – 400 words

<i>Format</i> 21 minutes 11 stems 44 MCQs
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How to write a VR question:

1. Pick a topic (can be almost anything), examples include; an event, contemporary issues, history, culture, sport, politics, science etc
 - a. The facts given in the stem do not need to be correct, but they should be plausible.
2. Decide on the main points that will be covered and the opinion that will be conveyed (does not have to, nor should it represent your actual beliefs). i.e. ‘what the author believes’/‘what can be inferred from the text’
3. Write a stem of 250-400 words, split into paragraphs. Each paragraph should illustrate a point.
4. Create 4 questions with 4 answers per question. Use one of the 5 different subtypes for each. Examples for how to start the question are given below.
5. Check to see that the answers you have selected for your questions can definitely be answered entirely with information from the stem.

There are 5 different subtypes of questions:

Each of these subtypes will form the basis of the sentence used as the question. Under each subtype heading are various examples of how to structure your question. Any bullet point in quotation marks is an example start to a question. The list is not exhaustive and you are welcome to be creative as long as the question is in keeping with the UCAT.

True/False/Can’t tell: State a fact relevant to the stem that the candidate will choose between true, false or can’t tell.

Incomplete statements: Not written as questions – must complete the statement



Start each question with a fact or piece of information from the stem that the candidate must complete i.e. 'The Geneva Conventions are designed to:'

- 'One conclusion that can be drawn from the stem is that:'

According to the stem: Must base the answer entirely off the stem

- 'According to the passage, the author believes that...'
- 'Using the information in the passage, which X is best for Y...'
- 'According to the passage, the author most likely agrees that..'
- 'What is the significance of X?'
- 'In X paragraph, the author suggests that..'
- 'What can be inferred from the passage about X?'
- 'the reference to X can best be understood to refer to Y:'

Except question: Weigh up the evidence to reach a conclusion – find the most appropriate answer based on the information in the stem

- Using the information in the stem, the following statements about X are true, except:'

Most likely: Need to weigh up the evidence to reach a conclusion – only one correct answer but the choice may appear less definite and a little more speculative

Combining various pieces of information from the stem to reach the conclusion. Less explicit than the other question subtypes.

- 'If the information in the stem is presumed to be true, which of the following must also be true?'
- 'Using the information in the stem, why has X caused Y?'
- 'Which of these conclusions can be drawn from the stem?'



Decision making

'Assesses your ability to apply logic to reach a decision or conclusion, evaluate arguments and analyse statistical information'

Text, charts, tables, graphs, diagrams.

Requirements:

- The key skill being tested is logical reasoning. All created questions should be able to be solved solely by logic and the content of the question.
- They must be solvable between 30-90 seconds.

Format
31 minutes
29 items

There are 6 question subtypes:

Logical puzzles:

One or more steps of deductive inference is required based on the information requested to arrive at a conclusion.

Information can be given in the form of text, tables or other graphics.

Syllogisms: (subtype 1)

Candidate must evaluate whether each of a series of conclusions arises from a given set of premises.

Some questions can have multiple correct response options.

Responses need to be dragged and dropped. (for the purposes of lessons, arrows can be used on a PowerPoint slide to connect the correct answers)

Questions may use made up words.

Key words to use within the question include; all, some, none, only

Interpreting information:

Information should be presented in various formats e.g., written stems/graphs/charts.

The candidate is required to interpret this to determine which conclusions follow.

Some questions can have multiple correct answer options.

Responses need to be dragged and dropped. (for the purposes of lessons, arrows can be used on a PowerPoint slide to connect the correct answers).

Graphs and charts should contain a lot of information as a 'distractor' (within reason).

The data presented does not have to be plausible.

The conclusions presented do not have to exactly match the content delivered in the stem/graph/chart; i.e. the conclusion must be able to be inferred from the information presented.

Recognising assumptions:



The candidate must evaluate arguments for and against a solution to a problem. The correct answer is the strongest argument.

There is only one correct answer.

The strength of the argument must be based solely on the stem, not based on beliefs or existing knowledge.

Ensure the selected 'strongest argument' is directly connect to the subject matter.

Ensure that weak arguments rely on assumption or opinion.

Provide at least one statement to choose from that is an assumption, not fact.

Venn diagrams:

A Venn diagram should be created from which a candidate is asked to select the best conclusion from a list of statements.

Vice-versa, you can write a stem from which the candidate must interpret as a Venn diagram (as the response options)

Diagrams can be made quickly and easily in <https://app.diagrams.net/> (free to use)

The diagrams are often complex and made of different shapes.

Probabilistic reasoning:

Present the candidate with a very short stem containing statistical information.

The candidate should then select the best response to the question.

This question subtype always requires calculation of probability.

Probability calculation:

Probability of an event = total number of ways it can happen/total number of outcomes

- If it were a die, total ways = 1/total outcomes = 6

Basketball games – 30% chance of winning a game each time = 0.3

Probability of winning both games = $(0.3 \times 0.3 = 0.09)$

Probability of winning the first or a second game = $(2 \times (0.3 \times 0.7)=0.42)$; $0.09 + 0.42 = 0.51$

The probability of losing any game is 0.6 but they get 2 chances to win.

Complement of an event calculation: i.e. if the event is Heads, the complement is Tails (all other outcomes)

Event: rolling a '5' or a '6' with a die

Number of ways it can happen = 2

Total number of outcomes per throw = 6

Therefore, the probability of event A i.e. $P(A): 2/6 = 1/3 = 33.3\%$

The candidate will have access to a basic calculator during the UCAT.



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Quantitative reasoning

*'Assesses the ability of the candidate to use numerical skills to solve problems. Assumes familiarity with numbers to the standard of a good pass at GCSE. However, questions have **less to do with numerical facility and more to do with problem solving**'*

The **main principal** behind question creation is providing the candidate with the relevant information within a certain amount of 'distractors'.

The information can be provided as text or in tables, graphs or charts.

If provided in text, it should be between 30-60 words.

Format

24 minutes

36 questions

40 seconds per question

Unlike other sections, there are 5 answers for the candidate to choose from.

There can be more than 1 question (up to 4) per set of information (e.g. a table) but many questions just have one question per set.

The candidate will have a calculator available, but some questions should be solvable with mental arithmetic.

The questions can be categorised as being one of:

- Percentage & proportion
- Graph
- Tax-based
- Simple arithmetic

The key areas are:

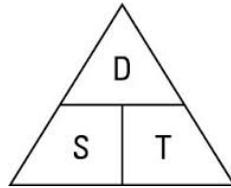
- Percentage
 - Change
 - total change in value divided by old value
 - Reverse
 - 'x' percentage rise; $(x/1+x/100)$
 - 'x' percentage fall; $(x/1-x/100)$
 - Equivalence to decimals
 - $0.2 = 20\%$
- Proportionality
 - Direct (the 'constant of proportionality' is the value that relates the 2 amounts)
 - \propto = symbol for directly proportional
 - i.e. paid £20/hour for tutoring, work 5 hours = £100
 - So the constant of proportionality is 20
 - Inverse (one value decreases at the same rate that the other increases)
 - i.e. speed and travel time; as speed increases, travel time decreases
- Rates



Figure: calculator used during UCAT (may appear differently during exam)



- Speed



$$D = S \times T$$

$$S = D \div T$$

$$T = D \div S$$

- Rates of flow
- Averages
 - Means
 - Combined samples
 - Predictive use
- Area and volume
- Fractions and decimals
- Probability
- Tax

Below is a rough guide on how to create tables, graphs and charts for quantitative reasoning questions:

All tables, charts and graphs in the exam are black and white or greyscale. We will not accept colour.

A table should look roughly like one of the following: (there is plenty of variety in the exam)

There should always be 2 or more columns. (most tables have 3 or more)

Tables do not have to have a title.

Headers do not have to be in bold, it varies in the exam.

Can be very simple:

Number of deer hunted at different forests

Forest	Number of deer	Number of females
Grizedale		
New forest		
Hackfall		
Ashdown		

Or more complex:

		How punters voted in August				
Party:		C	LD	L	MRLP	
How punters voted in May	C					April totals
	LD					
	L					
	MRLP					
		August totals				

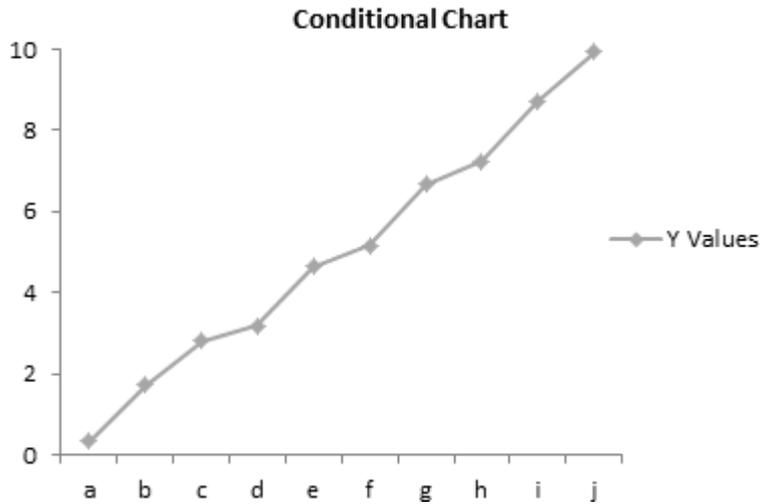
Or anywhere in between!



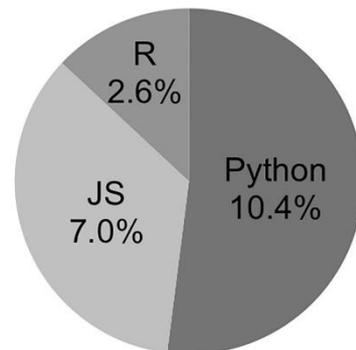
A graph should look roughly like this: (graphs can be made in excel, but keep the aesthetic the same) – click [here](#) for a guide on making excel graphs

A graph can be one of: line chart, bar chart, pie chart (commonality in descending order)

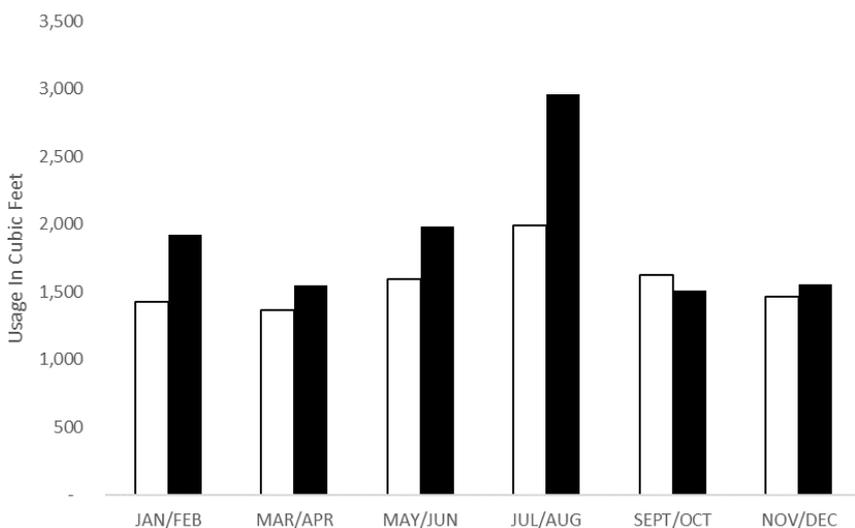
The graphs can be more complex than the examples given below, but they must be in keeping with the UCAT exam as a whole.



Searches



Water Usage Chart By BIMonthly Billing Cycle





Abstract reasoning

'Assesses the ability of the candidate to identify patterns amongst abstract shapes where irrelevant and distracting material may lead to incorrect conclusions'

Key pattern characteristics used to 'code' the questions are:

- Opposites
- Reflection
- Symmetry
- Position
- Enclosure
- Mirror image
- Adjacent
- Rotation
- Shape
- Shading
- Equivalence
- Ratios

Format
13 minutes
55 MCQs

'Coding' the question is referring to the pattern in the question that the candidate must identify to obtain the correct answer.

Remember a candidate only has 1 minute per set, so each question must be within the acceptable range of difficulty (this is one of the factors we use to review questions for appropriateness).

There are 4 subtypes:

Type 1: two 'sets' of shapes (Set A & Set B) followed by 5 'test shapes'
The candidate must decide if the 'test' shapes fit Set A, Set B or neither set.

Type 2: a 'series' of shapes that alternate from one box to the next. The candidate needs to state which of the 4 shapes would follow in the sequence.

Type 3: a 'statement' of two sets of shapes where one has been changed to create a new set

Type 4: similar to type 1, but the candidate is presented with 4 'test shapes' simultaneously and will need to decide which one of the four belongs to Set A or Set B. i.e. 'best fit'



Situational judgement test

'Measures the candidate's capacity to understand real world situations and identify critical factors and appropriate behaviour in dealing with them'

The candidate is assessed for:

- Integrity
- Perspective taking
- Resilience
- Adaptability
- Team involvement

Format
26 minutes
22 stems

Therefore, any question that is created, should reflect one or more of the above themes.

All responses can be rated using each rating once, more than once or not at all. i.e. all responses could be 'very appropriate'.

Each response option should be written with the view they will be judged independently from the other options presented within the scenario.

All questions should be written irrelevant of timeframe as this is how they should be interpreted.

The scenario stem should be between 80 – 200 words.

There can be between 2-6 responses per stem.

If a 'response' is to a person, it should be assumed each response is said politely and recorded as such at the end of the question;
e.g. 'Assume that each of the following responses would be said politely.'

Each stem should be finished with a separate sentence, depending on the question type, of either:

- How appropriate are each of the following responses... in this situation?
- How important to take into account are the following considerations for/by.... When deciding how to respond to the situation?
- Choose the one most appropriate action and the one least appropriate action that.... Should take in response to this situation.

There are 3 question subtypes:

Appropriateness or importance (subtypes 1 and 2)

The candidate must decide on the appropriateness/importance of possible actions, the questions must either:



Ask the candidate to rate the **appropriateness/importance** of each of four response options associated with a scenario

Most and least (subtype 3)

Ask the candidates to choose the most and least appropriate response to the scenario from 3 possible options.

The format of this subtype involves dragging and dropping the answers into the relevant box (for the purposes of tutor sessions, this can be achieved in PowerPoint with arrows)



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