MCAT CHEAT SHEET

STUDY TIME

EXAM STRUCTURE

- The exam will have a few questions that are just maths based, but **most of the questions will be word questions** and possibly ask you to explain your answer in words.
- **Most of the questions won't tell you straight out** what skill you need to apply – you'll have to figure it out.
- Because you won't have a calculator, **most of the questions are designed to end up with nice whole number or simple fraction answers – so having no calculator isn't as hard as it sounds!**

HOW TO START A QUESTION

- There are a lot of different ways to phrase the exact same question, so the first thing you'll need to do is **figure out what skill the question is looking for.** To help you do this, when you do past exams and practice questions you should **pay attention to the wording of the questions so that you get good at recognising what to do.**

  If you were given the equation $y = 2x - 1$, these questions would all be asking the same thing:
  - "Find x in terms of y"
  - "Make x the subject of this equation"
  - "Show how you could use this formula to find x"

  All of these mean that you need to rearrange the equation to say "x =" something, so they'd all have the same answer: $x = (y+1)/2$.

- For any word question, **start off by writing an equation from the information in the question.** Make sure you use all the numbers from the question and be clear about what your variables are. This should help you figure out what to do next.

For example, if the question says **"3 adults and 2 children", you should write down 3a + 2c. If it says "Lucy watches Netflix for twice as long as she studies", you'd use N to represent Netflix and S to represent study, and you'd write N = 2S.**

- **If the question is about a shape (such as a rectangle) or a parabola, a good thing to do is to start by drawing a diagram of the situation in the question, and labelling it.** That way you can visualise the situation and see if your answers make sense in context.

CLASSIC QUESTIONS

- **A good skill to have in the bag to get some Merit or Excellence points is forming simultaneous equations – these come up all the time!**

  You can recognise when a question is a simultaneous equation question because there will be two variables, and you'll be told two things about those variables.

  For example, if the question said "Lucy watches Netflix for twice as long as she studies. She studies and watches Netflix for a total of 12 hours" we'd know two things:

  - The time Lucy spent on Netflix is the same as two lots of the time she spent studying, so you'd write N = 2S

- The total time spent on these two things is 12, so you'd write N + S = 12.
- Then, use substitution to solve the equations and figure out how much time Lucy spent on study and Netflix!

- **The MCAT writers loooove to include questions about consecutive numbers.** You will want to be confident writing equations that use these – for example, **if a question involved three consecutive numbers, you'd call those numbers 'x', 'x+1', and 'x+2'.** If the person in the question added these three numbers together you'd then write x + x + 1 + x +2.
- **Another common question is to get you to explain what the variables mean in a particular equation.**

  For example, they could give you a quadratic equation that represents the path of a ball, it could ask you what 'x' and 'y' represent in the equation. You'd need to say that 'y' represents how high above the ground the ball is, and 'x' represents how far along the ball is horizontally from where it started.

- Questions about side lengths of squares and rectangles crop up often as well. **Remember that you get the area of a rectangle by multiplying its two sides length together.**

  For example, if you're told that the area of a rectangle is, say, x2 + 3x + 2, and they ask you for the side lengths, you'll know that you're looking for two things that multiply together to give that quadratic – that's right, you're factorising! In this example, we'd factorise and get (x+2)(x+1), so our rectangle would have sides of x+2 and x+1.

- These rectangle questions are also a prime opportunity to show off your contextual understanding by explaining that a shape can't have a negative side length! **If you get two possible answers and one of them is negative, remember to write down that only the positive one makes sense.**

WHAT IF YOU'RE STILL NOT CONFIDENT ABOUT HOW TO DO A QUESTION?

- You don't have to be an Excellence student to attempt an Excellence question. **Remember, you can get points for getting started on a question** – see if you can write an equation, simplify an expression, or draw a diagram for the question and you might just get some Achieved or Merit marks!

HOW TO PREPARE

- The best way to study for maths is to just practice! **Try redoing old questions that you struggled with the first time,** doing simple algebra questions (even if they're year 10 ones) to practice your basic skills, or changing the numbers in a question to see how the answer changes.
- **Doing past exams is a good idea, but make sure you focus on the 2016 and 2017 papers because the structure of the exam changed in 2016.** There are two versions of each year's exam, so a good idea would be to do one version to figure out your weaker points, study up on those, and then try out the second version to test your new knowledge.
- **You should also make use of marking schedules: if you didn't get an answer right, try to explain to yourself what each step in the answer did and why.** Then, in a day or two, go back and re-try that question to make sure you remember the steps.
- Check out the StudyTime MCAT walkthrough guide to consolidate your knowledge of the skills you need to ace this exam!