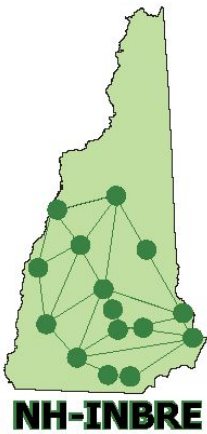


# Medical School Mentoring



## Session: All About the MCAT

Presented by: The NH-INBRE Alumni Network

January 28th, 2025

# About Us - NH INBRE Alumni Network & Mentoring Programs

New Hampshire INBRE (IDeA Network of Biomedical Research Excellence) is a program funded by the National Institutes of Health to develop a coordinated network of biomedical research and research training in New Hampshire.

In 2021, the NH INBRE Director of Biomedical Workforce Development implemented a [one-on-one mentoring program for INBRE students](#) to be paired with INBRE alumni.

Alumni mentoring provides career and academic guidance to current students on a volunteer basis.

In 2022, following the INBRE annual conference, two INBRE alumni recognized an urgent need to provide mentorship support for the numerous pre-med majors at the partner schools.

In 2023, the Medical School Mentoring program was launched for all pre-med students at the partner schools.

Medical School Mentors are current medical students that are either INBRE alumni or volunteers from the lead partner schools.

**Lead Partners:**

Geisel School of Medicine at Dartmouth  
University of New Hampshire at Durham

**Partner Institutions:**

Colby-Sawyer College  
Community College System of New Hampshire (CCSNH)  
Franklin Pierce University  
Keene State College  
New England College  
Plymouth State University  
Saint Anselm College  
University of New Hampshire at Manchester

**Associated Members:**

Rivier University



# Medical School Mentoring Program: Goals

- Provide resources, information, and support to students who are on their journey to become physicians.
- To **supplement** the pre-med advising at the NH INBRE partner schools.
- Establish more networking relationships within the INBRE community and beyond.



# Mentor Introductions



**Haley:** Gap Year (M2/M3 year)  
Stritch School of Medicine  
Loyola University of Chicago  
Took MCAT in August 2021



**Libby:** 4th year at Lake Erie  
College of Osteopathic Medicine  
(LECOM) Elmira, NY  
Took MCAT in June 2020  
St. Anselm '19



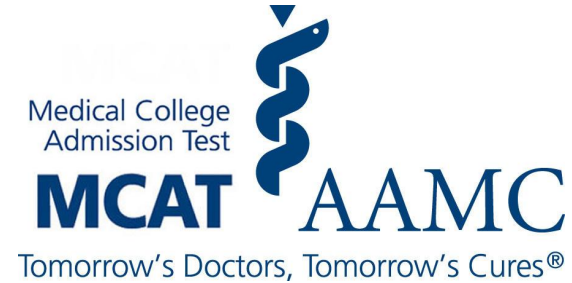
**Caitlyn:** MS3  
St George's University School of  
Medicine  
Took MCAT in June 2021

# What is the MCAT?

## MCAT= Medical College Admissions Test

- Standardized, multiple choice test
- Required by almost all US medical schools (MD and DO programs)
- Developed by testmaker from Association of American Medical Colleges (AAMC) to provide schools with a common measure to compare applicants
- 230 questions total over four sections (more on that in a minute)
- 6 hours and 15 minutes of test taking time (7 hours and 30 minutes total with break time included)
- Administered via computer at a certified testing center:

<https://wsr.pearsonvue.com/testtaker/registration/SelectTestCenterProximity/AAMC?conversationId=573185>



**Table 1. Mean Importance Ratings of Academic, Experiential, Demographic, and Interview Data Used by Admissions Committees to Make Decisions About Which Applicants Receive Interview Invitations and Acceptance Offers<sup>1</sup>**

Mean Importance Ratings <sup>2</sup>	Academic Metrics	Experiences	Demographics	Other Data
Highest Importance Ratings (≥ 3.0)	<ul style="list-style-type: none"> <li>GPA: cumulative biology, chemistry, physics, and math</li> <li><b>MCAT total score</b></li> <li>GPA: grade trend</li> <li>GPA: cumulative total</li> <li>GPA: cumulative total from postbaccalaureate premedical program</li> <li><b>MCAT total score trend</b></li> <li>Completion of premedical course requirements</li> </ul>	<ul style="list-style-type: none"> <li>Community service/volunteer: medical/clinical</li> <li>Community service/volunteer: not medical/clinical</li> <li>Physician shadowing/clinical observation</li> <li>Leadership</li> </ul>	<ul style="list-style-type: none"> <li>U.S. citizenship/permanent residency (public)<sup>3</sup></li> <li>State residency (public)<sup>3</sup></li> <li>Rural/urban, underserved background</li> </ul>	<ul style="list-style-type: none"> <li>Interview results<sup>4</sup></li> </ul>
Medium Importance Ratings (≥ 2.5 and < 3.0)	<ul style="list-style-type: none"> <li>Completion of challenging upper-level science courses</li> <li>GPA: cumulative “all other” (not biology, chemistry, physics, and math)</li> </ul>	<ul style="list-style-type: none"> <li>Paid employment: medical/clinical</li> <li>Research/lab</li> <li>Other extracurricular activities</li> <li>Military service</li> </ul>	<ul style="list-style-type: none"> <li>Race/ethnicity</li> <li>U.S. citizenship/permanent residency (private)<sup>3</sup></li> <li>Parental education/occupation/socioeconomic status (SES)</li> </ul>	
Lowest Importance Ratings (< 2.5)	<ul style="list-style-type: none"> <li>Degree from graduate or professional program</li> <li>Completion of challenging nonscience courses</li> <li>Selectivity of undergraduate institution(s)</li> <li>Undergraduate major</li> </ul>	<ul style="list-style-type: none"> <li>Teaching/tutoring/teaching assistant</li> <li>Paid employment: not medical/clinical</li> <li>Intercollegiate athletics</li> <li>Honors, awards, recognitions</li> <li>Conferences attended, presentations, posters, publications</li> </ul>	<ul style="list-style-type: none"> <li>First-generation immigrant status</li> <li>Fluency in multiple languages</li> <li>Gender</li> <li>English language learners</li> <li>State residency (private)<sup>3</sup></li> <li>Legacy status</li> <li>Community college attendance</li> <li>Age</li> </ul>	

Data from the AAMC

# The MCAT is important

- It is very important (but it’s not your entire application)
- There are few numeric indicators on medical school applications other than MCAT and GPA so admissions teams rely on them to help narrow down applicants
- Numbers get you “through the door”
- MCAT score has been shown to correlate with Step 1 and COMLEX Level 1 scores



# How much does it cost?

MCAT® scheduling fees for all 2025 testing dates.

## Registration Fees (in USD)

Registration Fees*	
Standard Registration	\$345
Fee Assistance Program Registration	\$140

\* Examinees testing outside the US, Canada, or US Territories will be charged a \$120 International fee in addition to the initial registration fee. International fees are non-refundable upon registration cancellation.

**10 days prior to exam day is the last day you can schedule an exam.**

- This only covers the test and sending your score to schools
- Preparatory materials will cost extra

## Rescheduling/Cancellation Fees

### Rescheduling and Cancellations (in USD)

Standard Change Fees	Date and/or Test Center Reschedule Fee	Cancellation Refund
60 or more days before exam	\$50	\$170
30-59 days before exam	\$100	\$170
10-29 days before exam	\$200	\$0

Fee Assistance Program Change Fees	Date and/or Test Center Reschedule Fees	Cancellation Refund
60 or more days before exam	\$20	\$70
30-59 days before exam	\$40	\$70
10-29 days before exam	\$80	\$0

# MCAT Overview

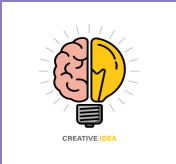
**Psych/Soc**  
25.0%



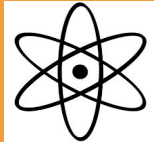
**Bio/Bio Chem**  
25.0%



**CARS**  
25.0%



**Chem/Physics**  
25.0%



# What are the four sections?

## **Biological and Biochemical Foundations of Living Systems** 59 Questions – 95 minutes

Solve problems by combining knowledge of biological and biochemical concepts with scientific inquiry and reasoning skills.

Foundational concepts 1-3

- Intro Biology: ~65%
- Biochemistry (first semester): ~25%
- General Chemistry: ~5%
- Organic Chemistry: ~5%

## **Chemical and Physical Foundations of Biological Systems** 59 Questions – 95 minutes

Solve problems by combining knowledge of chemical and physical foundational concepts with scientific inquiry and reasoning skills.

Foundational concepts 4-5

- General Chemistry: ~30%
- Biochemistry (first semester): ~25%
- Intro Physics: ~25%
- Organic Chemistry: ~15%
- Intro Biology: ~5%

## **Psychological, Social and Biological Foundations of Behavior** 59 Questions – 95 minutes

Solve problems by combining knowledge of foundational concepts with scientific inquiry and reasoning skills.

Foundational concepts 6-7

- Intro Psychology: ~65%
- Intro Sociology: ~30%
- Intro Biology: ~5%

## **Critical Analysis and Reasoning Skills (CARS)** 53 Questions – 90 minutes

Verbal reasoning test to assess ability to comprehend what you read (everything you need to know to answer test questions are in the passages!!)

Skills:

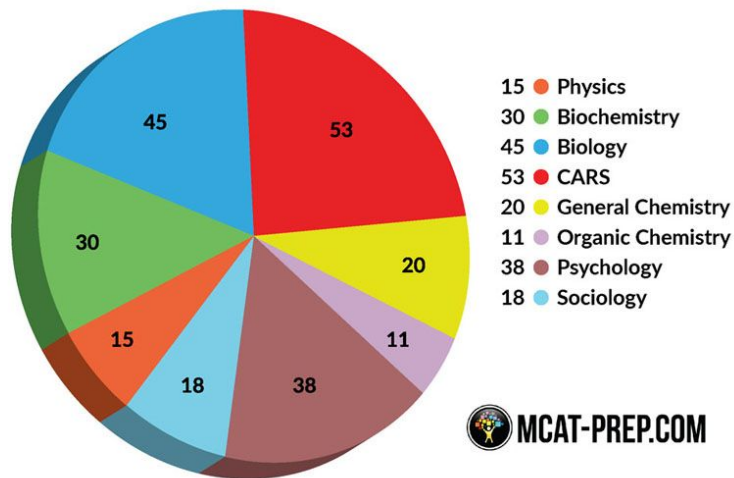
Passage Content:

- |                         |                              |
|-------------------------|------------------------------|
| • Humanities: ~50%      | • Reasoning Beyond Text: 40% |
| • Social Sciences: ~50% | • Reasoning Within Text: 30% |
|                         | • Comprehension: ~30%        |

# MCAT Content

## MCAT Question Breakdown

Total Number of Questions: 230



### Biology:

- Cardiovascular Systems
- Cells
- Digestive Systems
- Embryogenesis and Development
- Endocrine Systems
- Excretory Systems
- Genetics and Evolution
- Immune Systems
- Nervous Systems
- Musculoskeletal Systems
- Reproduction
- Respiratory Systems

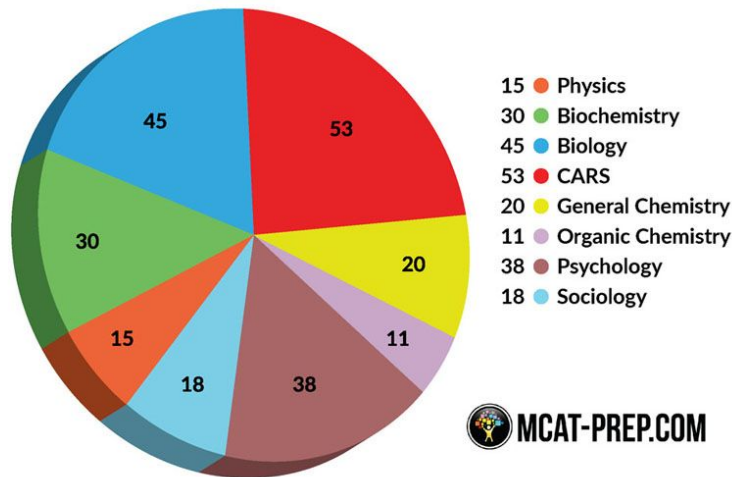
An approximate breakdown of the number of MCAT questions on the MCAT exam.  
Total time is 6 hours and 15 minutes (excluding breaks).

*Numbers by topic aren't exact and can vary somewhat*

# MCAT Content

## MCAT Question Breakdown

Total Number of Questions: 230



An approximate breakdown of the number of MCAT questions on the MCAT exam.  
Total time is 6 hours and 15 minutes (excluding breaks).

*Numbers by topic aren't exact and can vary somewhat*

### Chemistry: General, Organic, & Biochemistry

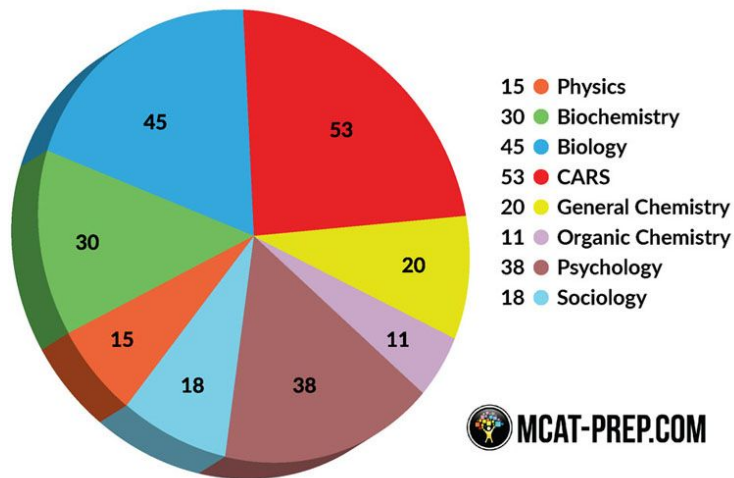
- Acids and Bases
- Atomic Structure
- Bonding and Chemical Interactions
- Chemical Kinetics
- Electrochemistry
- Equilibrium
- Solutions
- Stoichiometry
- The Gas Phase
- Thermochemistry
- RedOx Reactions
- Alcohols and Ethers
- Aldehydes and Ketones
- Bonding
- Carboxylic Acids and Derivatives
- Isomers
- Laboratory Techniques and Separations
- Nitrogen-Containing Compounds
- Nomenclature
- Nucleophiles and Electrophiles
- Phosphorus-Containing Compounds
- RedOx reactions
- Spectroscopy
- Amino Acids, Peptides and Proteins
- Biological Membranes
- Carbohydrate metabolism
- Carbohydrate structure
- DNA & RNA
- Enzymes
- Lipids and lipid metabolism
- Nonenzymatic proteins
- Regulation of metabolism

*Often questions apply chemistry to biological systems*

# MCAT Content

## MCAT Question Breakdown

Total Number of Questions: 230



An approximate breakdown of the number of MCAT questions on the MCAT exam.  
Total time is 6 hours and 15 minutes (excluding breaks).

*Numbers by topic aren't exact and can vary somewhat*

### Physics: Often applied to biological/medical settings

- Atomic and Nuclear Phenomena
- Circuits
- Electrostatics
- Fluids
- Kinematics
- Light and Optics
- Magnetism
- Thermodynamics
- Units and Dimensional Analysis
- Waves and Sound
- Work and Energy

### Psychology:

- Cognition and Consciousness
- Identity and Personality
- Language Development
- Learning and Memory
- Motivation and Emotion
- Neurobiology
- Psychological Disorders
- Sensation and Perception

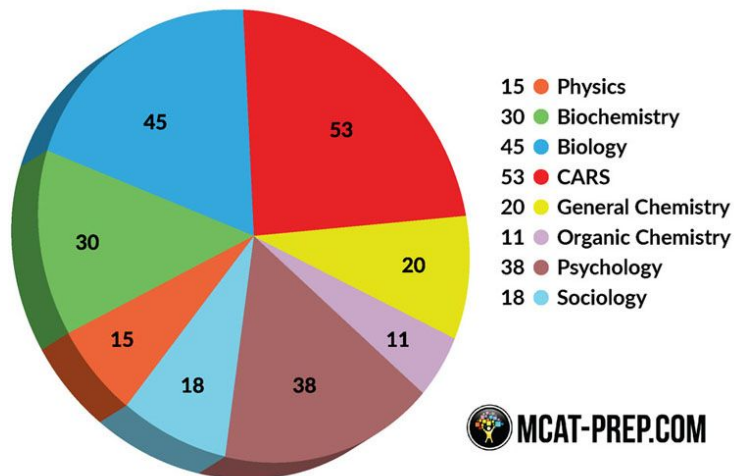
### Sociology:

- Social Interaction
- Social Processes and Behavior
- Social Structure and Stratification
- Social Thinking and Attitudes

# MCAT Content

## MCAT Question Breakdown

Total Number of Questions: 230



An approximate breakdown of the number of MCAT questions on the MCAT exam.  
Total time is 6 hours and 15 minutes (excluding breaks).

*Numbers by topic aren't exact and can vary somewhat*

### Critical Analysis and Reasoning Skills (CARS):

- All passage-based questions designed to test your reading comprehension, ability to interpret information, and logical reasoning
- Similar to SAT/other college admission reading comprehension assessments

### What you don't see... **Math!**

- No specific math section on MCAT
- But there is math all over the MCAT
- Mathematical principles you should be comfortable with:
  - Basic arithmetic
  - Algebra
  - Exponents
  - Exponentials
  - Trigonometry
  - Geometry
  - Statistics
  - Unit conversions
- No calculator allowed
- Scrap paper/small whiteboard is available

# Style of Questions

There are 59 questions in each of the three science sections of the MCAT. In each section, **15 questions are discrete while 44 questions are based on passages** (10 passages per science section 4-6 questions per passage).

## Passage Based

The screenshot shows the MCAT Full Length Practice Test interface for Chemistry/Physics. The top bar includes the test name, a timer (01:34:02), and question progress (4 of 69). Below the navigation bar, the question is identified as "Question 4" under "Passage 1 (Questions 1-5)". The passage text describes an experiment to simulate early Earth conditions for the Strecker synthesis of amino acids. It details the reaction of formaldehyde and hydrogen cyanide to form glycine, including chemical equations for the steps and the overall mechanism. The question asks which factor would increase the yield of carboxylic acid. The interface includes a "Pause" button, a "Flag for Review" button, and a "Periodic Table" button at the bottom.

MCAT Full Length Practice Test — Chem/Phys

Time Remaining: 01:34:02  
4 of 69

Highlight Strikethrough

Pause

Flag for Review

Passage 1 (Questions 1-5)

To test how amino acids first appeared on this planet, an experiment was set up to simulate the conditions thought to have existed on early Earth.  $\text{H}_2\text{O}$ ,  $\text{CH}_4$ ,  $\text{NH}_3$ , and  $\text{H}_2$  were all introduced into a sterile arrangement of sealed flasks and tubes. Liquid water evaporated in one compartment as "lightning" was induced between a pair of electrodes. The water vapor then cooled and condensed in a connected section, which fed back to the first compartment, until a dynamic equilibrium was reached.

After two weeks of continuous operation, roughly 2% of the carbon in the system was in the form of amino acids, with glycine being the most abundant. The following steps are believed to account for the formation of the key intermediates, formaldehyde and hydrogen cyanide:

Step 1:  $\text{CO}_2 \rightleftharpoons \text{CO} + \text{O}$   
Step 2:  $\text{CH}_4 + 2[\text{O}] \rightarrow \text{CH}_2\text{O} + \text{H}_2\text{O}$   
Step 3:  $\text{CO} + \text{NH}_3 \rightleftharpoons \text{HCN} + \text{H}_2\text{O}$   
Step 4:  $\text{CH}_4 + \text{NH}_3 \rightleftharpoons \text{HCN} + 3\text{H}_2$

**Mechanism 1**  
Via the Strecker Synthesis, glycine can then form as follows:  
Step 5:  $\text{CH}_2\text{O} + \text{HCN} + \text{NH}_3 \rightleftharpoons \text{NH}_2\text{-CH}_2\text{-CN} + \text{H}_2\text{O}$   
Step 6:  $\text{NH}_2\text{-CH}_2\text{-CN} + 2\text{H}_2\text{O} \rightleftharpoons \text{NH}_3 + \text{NH}_2\text{-CH}_2\text{-COOH}$

**Mechanism 2**  
Several other amino acids were also observed to form. Of the chiral amino acids, both enantiomers were created in a racemic mixture, though in most biological systems L-amino acids are used exclusively for protein synthesis.  
Simple sugars also formed in the same environment. Once formaldehyde is present to react with  $\text{H}_2\text{O}$ , it does so according to the Butlerov reaction:

Figure 1. Formation of carbohydrates from aqueous formaldehyde

MCAT Kaplan Practice Test

Periodic Table Previous Navigation Next

## Discrete Questions

The screenshot shows the Medical College Admission Test interface. The top bar includes the test name, a timer (00:46:59), and question progress (12 of 30). Below the navigation bar, a notice states "Questions 11-13 do not refer to a passage and are independent of each other." The question is identified as "Question 12" and includes a diagram of two pressure-volume (P-V) loops for the left ventricle during the cardiac cycle. The diagram shows two patients, 1 and 2, with different systolic pressures and diastolic pressures. The question asks which statement is true regarding the change in systolic pressure, diastolic pressure, or work done by the left ventricle for each patient. The interface includes a "Pause" button, a "Flag for Review" button, and a "Periodic Table" button at the bottom.

Medical College Admission Test

Time Remaining: 00:46:59  
12 of 30

Highlight Strikethrough

Pause

Flag for Review

Questions 11-13 do not refer to a passage and are independent of each other.

**Question 12**  
The figure shown below shows the pressure and volume changes of the left ventricle during the cardiac cycle for two different patients.

Left Ventricular Pressure

Left Ventricular Volume

Which of the following is true?

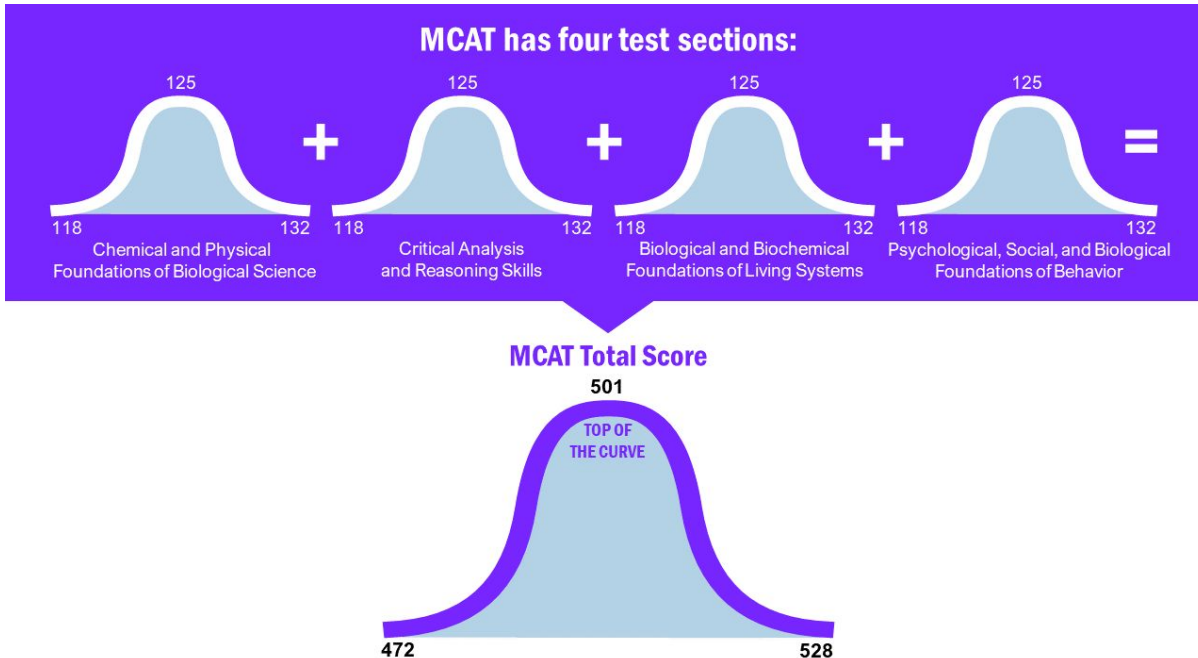
A. The change in systolic pressure in patient 1 is greater.  
 B. The change in diastolic pressure in patient 1 is greater.  
 C. The work done by patient 2's left ventricle is greater.  
 D. The work done by patient 1's left ventricle is greater.

Periodic Table Previous Navigation Next

CARS section has 9 passages and all questions are passage-based 5-7 questions per passage\*

# How is the MCAT scored?

The grading is based on the number of questions answered correctly and there is no penalty for either a question left blank or an incorrect answer



## Percentiles

Total Score	Percentile Rank
472	<1
473	<1
474	<1
475	<1
476	1
477	1
478	1
479	2
480	3
481	4
482	4
483	6
484	7
485	8
486	9
487	11
488	13
489	15
490	17

Total Score	Percentile Rank
491	19
492	21
493	24
494	27
495	29
496	32
497	35
498	38
499	42
500	45
501	48
502	52
503	55
504	58
505	62
506	65
507	69
508	72
509	75

Total Score	Percentile Rank
510	78
511	81
512	84
513	86
514	88
515	90
516	92
517	94
518	95
519	96
520	97
521	98
522	99
523	99
524	100
525	100
526	100
527	100
528	100

# MCAT “averages”

**Remember:** Averages mean people scored above and below that number.

**Good target score: 509-511 for MD schools**

There is no set passing score - you will be evaluated based on your overall application.

Some schools may have a cut off-go to their specific school website for more information.

## What is a Good MCAT Score?

Average MCAT Score:

**500** or 125 per section



Average score for admitted students:

**508** or 125-127 per section



Good score for top medical schools:

**515-520**



Good score for DO programs:

**502-506**



Mag<sup>✓</sup>sh

511.5

Average MCAT for Applicants Entering Allopathic Medical Schools

503

Average MCAT for Applicants Entering Osteopathic Medical Schools

528

Highest MCAT Score

Average MCAT Score

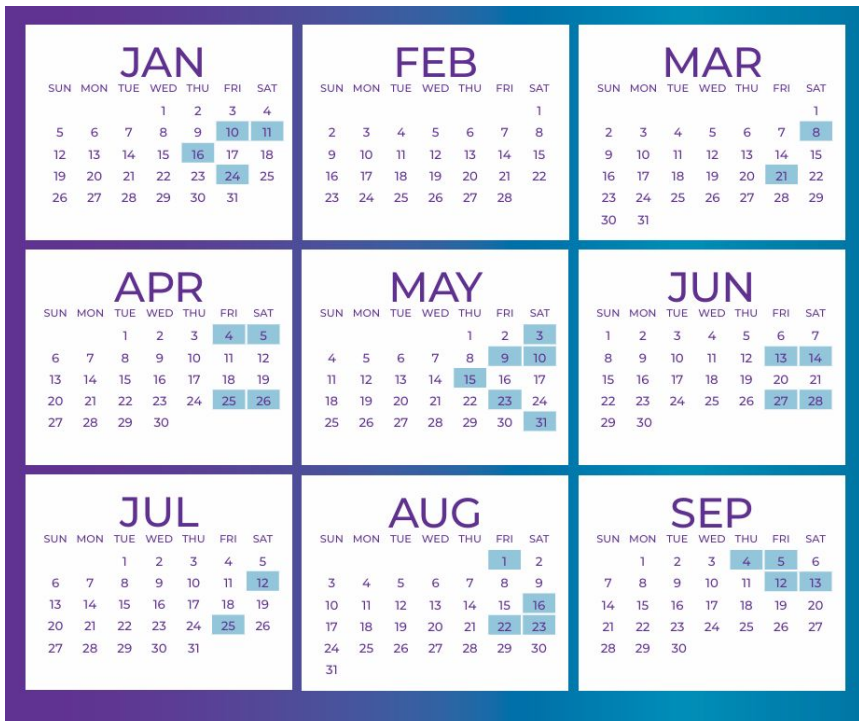
MedEdits  
Medical Admissions

# Take away: A high score on the MCAT will have a positive impact on your med school application (but it is not everything)

**Table 2. Percentage and Number of 2018, 2019, and 2020 Applicants Accepted Into at Least One Medical School, by MCAT Total Score and Undergraduate GPA Ranges**

GPA Total	MCAT Total										
	472-485	486-489	490-493	494-497	498-501	502-505	506-509	510-513	514-517	518-528	All
<b>3.80-4.00</b>	1% 2/151	2% 5/302	7% 47/713	18% 291/1,603	30% 996/3,357	44% 2,484/5,687	59% 5,132/8,663	73% 7,239/9,885	81% 7,144/8,873	87% 7,871/9,087	65% 31,211/48,321
<b>3.60-3.79</b>	1% 4/370	1% 7/583	5% 57/1,229	11% 277/2,446	23% 964/4,196	32% 2,049/6,336	46% 3,702/7,975	62% 4,929/7,932	72% 3,858/5,347	79% 2,556/3,253	46% 18,403/39,667
<b>3.40-3.59</b>	1% 5/592	2% 12/785	3% 48/1,502	10% 259/2,584	18% 727/4,004	26% 1,291/5,045	36% 2,047/5,686	49% 2,427/4,905	61% 1,695/2,776	70% 957/1,374	32% 9,468/29,253
<b>3.20-3.39</b>	<1% 3/709	1% 7/786	2% 32/1,375	7% 145/2,038	14% 404/2,820	22% 683/3,135	29% 883/3,023	40% 932/2,315	49% 590/1,203	57% 287/506	22% 3,966/17,910
<b>3.00-3.19</b>	<1% 4/803	1% 4/705	2% 18/948	6% 82/1,370	14% 220/1,595	21% 340/1,641	26% 397/1,530	33% 363/1,084	43% 197/455	54% 121/223	17% 1,746/10,354
<b>2.80-2.99</b>	1% 4/612	1% 3/515	2% 11/633	4% 26/669	11% 82/745	17% 129/758	22% 126/586	26% 95/361	31% 55/179	45% 33/73	11% 564/5,131
<b>2.60-2.79</b>	0% 0/456	2% 5/307	1% 3/349	5% 16/344	11% 40/378	15% 43/282	21% 43/203	23% 30/128	37% 22/59	19% 3/16	8% 205/2,522
<b>2.40-2.59</b>	0% 0/316	0% 0/159	2% 3/176	3% 5/154	5% 7/129	10% 10/100	15% 15/64	24% 9/38	33% 6/18	--	5% 57/1,162
<b>2.20-2.39</b>	0% 0/197	0% 0/78	0% 0/81	3% 2/61	12% 5/43	11% 4/36	16% 5/31	14% 3/22	--	--	4% 24/557
<b>2.00-2.19</b>	0% 0/95	0% 0/28	3% 1/32	0% 0/13	--	10% 1/10	--	--	--	--	2% 4/202
<b>Less than 2.00</b>	0% 0/48	--	0% 0/10	--	--	--	--	--	--	--	1% 1/82
<b>All</b>	1% 22/4,349	1% 44/4,257	3% 220/7,048	10% 1,103/11,291	20% 3,445/17,274	31% 7,034/23,031	44% 12,350/27,772	60% 16,028/26,676	72% 13,572/18,920	81% 11,831/14,543	42% 65,649/155,161

# When is the MCAT offered in 2025?



\*The highlighted dates above indicate the U.S. MCAT test dates.  
 For Canadian and international test dates, please visit [students-residents.aamc.org/mcatregister](https://students-residents.aamc.org/mcatregister).  
 Note: The MCAT exam is not offered in February or October through December 2025.  
 Standard start time will be 8 a.m. each day.

Exam Date	Score Release
Jan. 10	Feb. 11
Jan. 11	Feb. 11
Jan. 16	Feb. 18
Jan. 24	Feb. 28
March 8	April 8
March 21	April 22
April 4	May 6
April 5	May 6
April 25	May 28
April 26	May 28
May 3	June 3
May 9	June 10
May 10	June 10
May 15	June 17
May 23	June 24
May 31	July 1
June 13	July 15
June 14	July 15
June 27	July 29
June 28	July 29
July 12	Aug. 12
July 25	Aug. 26
Aug. 1	Sept. 3
Aug. 16	Sept. 16
Aug. 22	Sept. 23
Aug. 23	Sept. 23
Sept. 4	Oct. 7
Sept. 5	Oct. 7
Sept. 12	Oct. 14
Sept. 13	Oct. 14

**Note:** scheduling an MCAT exam with accommodations may have different deadlines and protocols.

# When to take the MCAT?

## When to take the MCAT:

- After dedicated studying
- When do you want to attend medical school?
  - Gap year?
  - No gap year?
- Do you want room to be able to retake if needed?
- Medical schools see all scored MCATs you have taken

## Testing Restrictions:

- 24-hour waiting period after you take an MCAT exam before you can register for another
- You may attempt the exam no more than **3** times in a testing year
- No more than 4 times in 2 consecutive testing years
- No more than 7 times in your lifetime

Registration for the July-September 2025 test dates will open Wednesday Feb. 19th 2025 at noon ET

**Website to register for the exam:**

<https://students-residents.aamc.org/register-mcat-exam/register-mcat-exam>

<https://students-residents.aamc.org/fee-assistance-program/2025-fee-assistance-program-essentials>

# Fee Assistance Program Benefits

- Each Fee Assistance Program award includes access to the Medical School Admission Requirements,
- reduced fees for MCAT registration
- waived MCAT Official Prep subscription product fees
- assistance in paying for an updated psychoeducational or medical evaluation (if required to support an MCAT accommodation application)
- waived AMCAS application fees for one application cycle
- waived fees for AAMC PREview® exam registration
- discounted ERAS® application fees.

<https://students-residents.aamc.org/fee-assistance-program/2025-fee-assistance-program-essentials>

# Suggested Resources

AAMC website account MCAT Official Prep Hub

- Free Resources:
  - MCAT Essentials 2023\*
  - Study Guide
  - Free Scored Practice exam
  - Free unscored sample exam
- Other Free Resources:
  - Khan Academy MCAT Video series
- Practice Questions:
  - UWorld, MCAT books
- Courses:
  - Princeton Review\*, Kaplan, Magoosh, Blueprint

*Course	Starting score	Final Score
515+	500 or >500	At least 515
515+	<500	At least 15 point increase

- Felipe
  - AAMC official Materials
  - ExamCrackers Books and Questions
  - Jack Westin CARS question of the day
  - Comprehensive Anki Deck from reddit
- Libby
  - Princeton Review Course
    - Classes, Diagnostics, Practice Questions & Full length practice exams (4 AAMC and 5 Course)
  - Kaplan MCAT Books
  - MileDown's anki deck & 90 page review PDF
    - Updated version ankipalace.com featured deck
- Abby
  - Kaplan MCAT Books
  - AAMC 2 free practice tests (can buy more)
  - Question of the day (I used <https://mcatquestion.com/>, but there are multiple)

# The AAMC website will be your best friend when applying to medical school and taking the MCAT

The screenshot shows the AAMC website's navigation menu for 'Students & Residents'. The menu is organized into six columns: 'Choosing a Medical Career', 'Applying to Medical School', 'Attending Medical School', 'Applying to Residency', 'Training in a Residency or Fellowship', and 'Quick Links'. The 'Applying to Medical School' column is the active section, and within it, the 'TAKING THE MCAT® EXAM' sub-section is highlighted with a red border. This sub-section includes links for 'About the MCAT® Exam', 'Prepare for the MCAT® Exam', 'Register for the MCAT® Exam', 'MCAT® FAQ', 'MCAT® Exam with Accommodations', and 'COVID 19 and the MCAT® Exam'. Other sub-sections include 'PREPARING FOR MEDICAL SCHOOL', 'UNDERSTANDING THE PROCESS', and 'APPLYING TO MEDICAL RESEARCH PROGRAMS'.

AAMC.ORG | STUDENTS & RESIDENTS | CAREERS IN MEDICINE | AAMC STORE | SIGN IN

AAMC | Students & Residents

Search

Choosing a Medical Career | **Applying to Medical School** | Attending Medical School | Applying to Residency | Training in a Residency or Fellowship | Quick Links

**PREPARING FOR MEDICAL SCHOOL**

- What to Expect in Medical School
- Getting Organized
- Getting Experience
- Paying for Medical School
- Medical Career Fairs
- Building a Support Network
- Postbaccalaureate Programs
- AAMC PREview™ Professional Readiness Exam

**TAKING THE MCAT® EXAM**

- About the MCAT® Exam
- Prepare for the MCAT® Exam
- Register for the MCAT® Exam
- MCAT® FAQ
- MCAT® Exam with Accommodations
- COVID 19 and the MCAT® Exam

**UNDERSTANDING THE PROCESS**

- Medical School Admission Requirements™
- Deciding Where to Apply
- Understanding the Application Process
- Applying to Medical School with AMCAS®
- Fee Assistance Program
- Medical School Interviews

**APPLYING TO MEDICAL RESEARCH PROGRAMS**

- Applying to MD/PhD Programs
- Applying to PhD Programs

Website: <https://students-residents.aamc.org>

A red 3D arrow pointing to the right, with the word "EXAMPLES" written in white, bold, uppercase letters in the center. The arrow has a slight shadow and a 3D effect, appearing to be a ribbon or a thick arrow. The background is plain white.

**EXAMPLES**

# Example Passage: Biological and Biochemical Foundations of Living Systems

The myocellular transmembrane  $\text{Na}^+$  gradient is important for proper cellular function. During septic shock, disruption of  $\text{Na}^+$  homeostasis often occurs and leads to decreased membrane potential and increased intracellular  $\text{Na}^+$ . It has been found that failure of cellular energy metabolism is a common symptom in septic patients who do not respond to therapeutics. Because normal intracellular levels of  $\text{Na}^+$  are maintained by the  $\text{Na}^+\text{K}^+$  ATPase, it is important to understand how metabolic energy production is linked to cation transport.

Researchers are interested in whether the energy used for ion transport is derived from glycolysis or oxidative phosphorylation. This information would provide a better understanding of myocellular damage that occurs during critical illness. Experiments were conducted to evaluate the effects of glycolytic inhibition on cellular  $\text{Na}^+$  and  $\text{K}^+$  concentrations and lactate production in rat skeletal myocytes.

Rat skeletal muscle fibers were extracted and incubated in normal media (control), glucose-free media ( $\text{G}(-)$ ), and glucose-free media with various concentrations of the glycolytic inhibitor iodoacetate (IAA). IAA directly prevents the formation of 1,3-bisphosphoglycerate. After one hour in the media, the muscle tissues were assayed for intracellular  $\text{Na}^+$  and  $\text{K}^+$  content and lactate production. Cellular viability was determined by measuring the amount of lactate dehydrogenase (LDH) released, as LDH release is an indicator of cell death. The results are displayed in Figure 1.

<https://students-residents.aamc.org/prepare-mcat-exam/mcat-sample-question-guide>

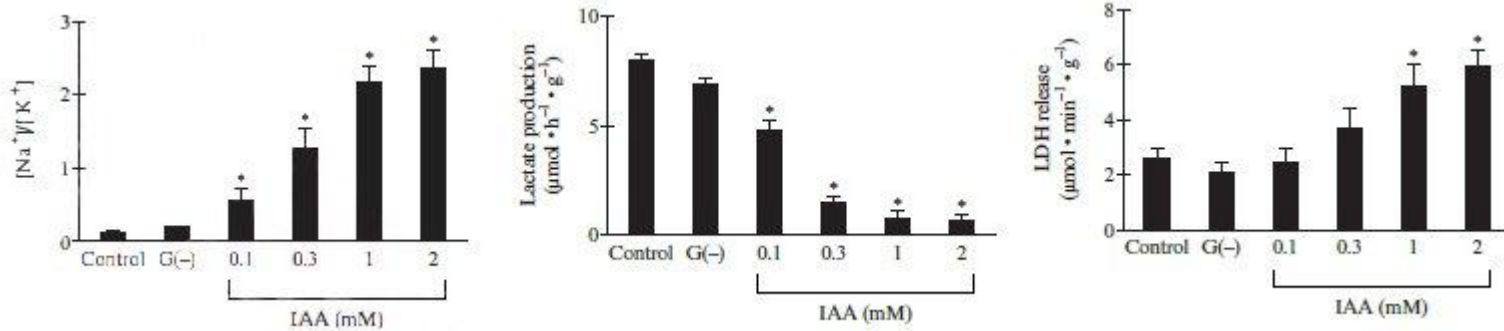
# Example Passage: Biological and Biochemical Foundations of Living Systems

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<https://students-residents.aamc.org/prepare-mcat-exam/mcat-sample-question-guide>



**Figure 1** Effects of glycolytic inhibition on intracellular Na<sup>+</sup> and K<sup>+</sup> content and lactate production with cellular viability measured by LDH release. (Note: The \* indicates p < 0.05 versus control.)

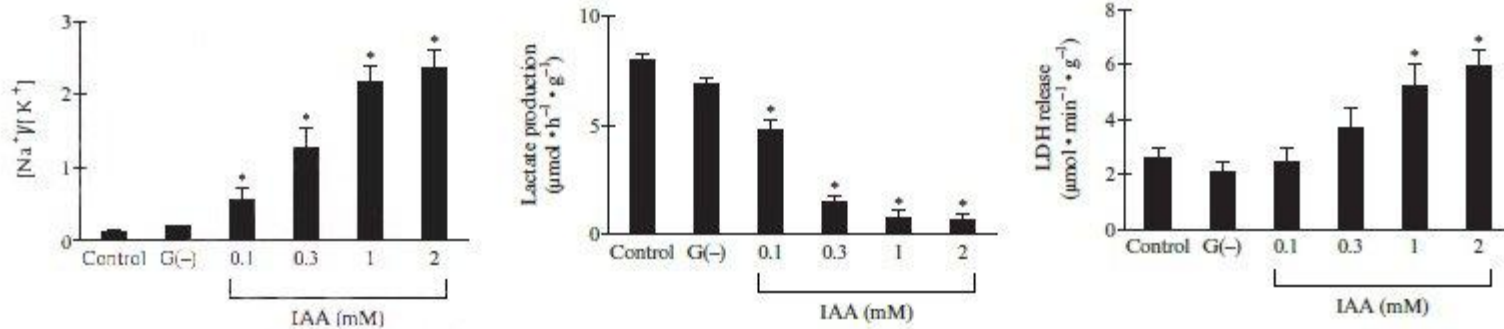
The researchers also examined the effect disruption of oxidative phosphorylation had on Na<sup>+</sup> and K<sup>+</sup> content. Inhibition of oxidative phosphorylation was caused by carbonyl-cyanide m-chlorophenylhydrazone (CCCP), an ionophore that allows protons to move freely through membranes. No correlation between Na<sup>+</sup> and K<sup>+</sup> content and oxidative phosphorylation was found.

Adapted from: Okamoto K, Wang W, Rounds J, Chambers EA, Jacobs DO. ATP from glycolysis is required for normal sodium homeostasis in resting fast-twitch rodent skeletal muscle. *The American Journal of Physiology-Endocrinology and Metabolism*. 2001 Sept;281(3):E479-88.

# Question 1

1. The researchers chose a concentration of 0.3 mM IAA as the working concentration for any additional studies instead of 1 mM or 2 mM. What is the likely reason for this?

- A) The lower concentration of IAA gave the largest Na<sup>+</sup> response.
- B) Higher concentrations induced significant cytotoxicity.
- C) The solubility of IAA was not high enough.
- D) The researchers were trying to mimic control conditions as closely as possible.



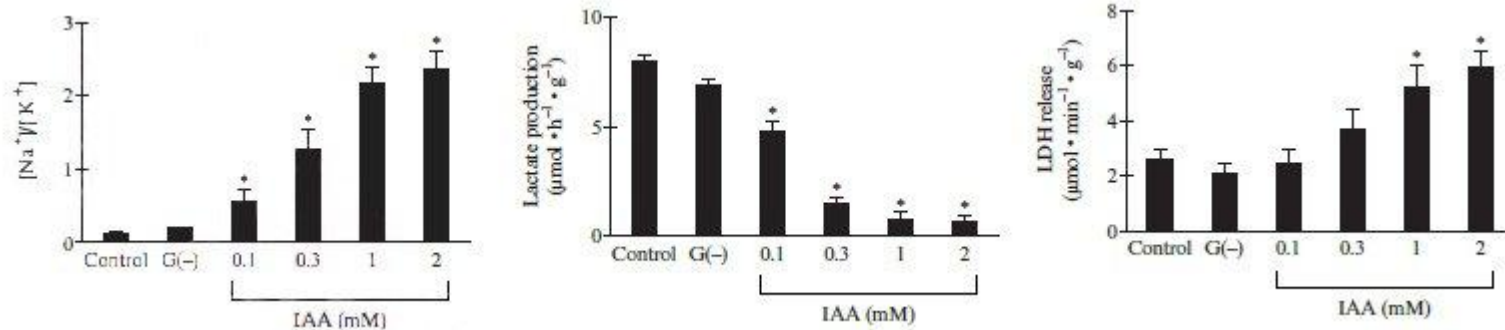
**Figure 1** Effects of glycolytic inhibition on intracellular Na<sup>+</sup> and K<sup>+</sup> content and lactate production with cellular viability measured by LDH release.

(Note: The \* indicates p < 0.05 versus control.)

# Answer to Question 1

Correct Answer is **B** Higher concentrations induced significant cytotoxicity.

**Rationale:** This question requires the test taker to apply knowledge about cytotoxicity and cell lysis to the design of an experiment described in the passage. In particular, the examinee should understand that conducting an experiment where the level of IAA was cytotoxic to the cells (when compared to control conditions) would not be desirable for understanding the role of glycolysis in establishing ion concentration gradients, as these cells would lose membrane integrity and undergo lysis. Therefore, the experimental design should not use an IAA concentration that results in significantly increased cell lysis.



**Figure 1** Effects of glycolytic inhibition on intracellular Na<sup>+</sup> and K<sup>+</sup> content and lactate production with cellular viability measured by LDH release.

(Note: The \* indicates p < 0.05 versus control.)

# Question 2

**2. The information in the passage suggests that glycolysis:**

- A) is important for maintaining normal  $\text{Na}^+$  and  $\text{K}^+$  levels in skeletal muscle.
- B) facilitates membrane permeability in skeletal muscle.
- C) impedes the function of the  $\text{Na}^+$  and  $\text{K}^+$  ATPase in skeletal muscle.
- D) is regulated by the  $\text{Na}^+$  and  $\text{K}^+$  ATPase in skeletal muscle.

# Answer to Question 2

Correct Answer is **A** is important for maintaining normal  $\text{Na}^+$  and  $\text{K}^+$  levels in skeletal muscle.

**Rationale:** This question requires the test taker to apply knowledge about glycolysis to the experimental data from Figure 1. In particular, the trend in the data that shows increasing concentration of IAA results in a higher ratio of the concentration of  $\text{Na}^+$  to  $\text{K}^+$  than observed in the control sample must be correlated with role of IAA in the disruption of glycolysis. This is further supported by the drop in lactate production shown in Figure 1 at higher concentrations of IAA, because IAA prevents the formation of NADH, which is used when pyruvate is reduced to lactate. The combination of the proposed role of IAA and the results from Figure 1 lead the test taker to the conclusion that glycolysis is important to the  $\text{Na}^+\text{K}^+$  ATPase and, therefore, important to the maintenance of the concentration ratio of  $\text{Na}^+$  to the  $\text{K}^+$ .

# Discrete Question

1. Place the following terms in order building out from the most basic informational subunit to the entire genetic unit:

I. Chromosome

II. DNA

III. Chromatin

IV. Nucleosome

- A. II, I, IV, III
- B. III, IV, II, I
- C. II, IV, III, I
- D. II, III, IV, I
- E. IV, III, II, I

# Discrete Question

1. Place the following terms in order building out from the most basic informational subunit to the entire genetic unit:

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IV. Nucleosome

A. II, I, IV, III

B. III, IV, II, I

C. II, IV, III, I

D. II, III, IV, I

E. IV, III, II, I

# Discussion: How did the mentors study for their MCAT?





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# How did we study for the MCAT? Extra slide

- Libby

- The Princeton Review Course Live Online 510+ Guarantee
  - Classes, Diagnostics, Practice Questions & Full length practice exams (AAMC, Course, TPR)
- 9 Practice Exams
  - 4 AAMC and 5 Course
- Started Studying in November 2019
- Last day of Review course April 6th MCAT scheduled for May 9th
  - COVID cancellation of this test date
- First practice exam 11/18→6/5 Real MCAT

- Abby

- Original plan: Start studying 6 months in advance and work my way through all Kaplan books steadily
- Was doing MCAT Q of the day for 6 months, but life got in the way of other plans
- What actually happened: 5 weeks of dedicated 8-10 hours studying daily
  - Looked at how long each subject book was and made study schedule with ~2 hour blocks per subject
  - Skipped content I felt comfortable with (ex: psychology)
- Took 4 practice tests (1 per week after first couple weeks) with realistic timing/breaks

- Caitlyn

- Content review with Kaplan books
- Made a study schedule
  - Based on subject density and my own knowledge (more time for physical sciences than CARS)
- Balanced my knowledge with a friend
- Questions and flashcards for every subject
  
- Tips: Life gets in the way! (COVID) make a plan early on and set deadlines
- Know your own strengths and weaknesses and don't study what you already know
- If you don't read a lot, or are ESL, reading more in general can help you save time