MCAT Talk

Stevens Health Professions Club

Attendance QR:

What is the MCAT?

- The MCAT is the medical college acceptance test
- It is a standardized, multiple choice exam that is required for almost every medical college in the United States and Canada.
- The exam has 4 sections, and each section is graded on a scale from 118 to 132. Exam scores range from 472 to 528.
- There are two 10 minute breaks and one 30 minute lunch break

Breakdown of the Exam

Section 1: Chemical And Physical Foundations Of Biological Systems
- 59 Questions, 95 minutes
- 44 passage questions for 10 passages, 15 discrete questions
- Subject Breakdown:
    25% Biochemistry
    30% General Chemistry
    15% Organic Chemistry
    25% Physics
    5% Biology

Section 2: Critical Analysis and Reasoning Skills
- 53 questions, 90 minutes
- 9 passages: 50% Social Sciences, 50% Humanities

Breakdown of the Exam

Section 3: Biological And Biochemical Foundations Of Living Systems
- 59 Questions, 95 minutes
- 44 passage questions for 10 passages, 15 discrete questions
- Subject Breakdown:
    25% Biochemistry
    65% Biology
    5% Organic Chemistry
    5% General Chemistry

Section 4: Psychological, Social, and Biological Foundations of Behavior Section
- 59 Questions, 95 minutes
- 44 passage questions for 10 passages, 15 discrete questions
- Subject Breakdown:
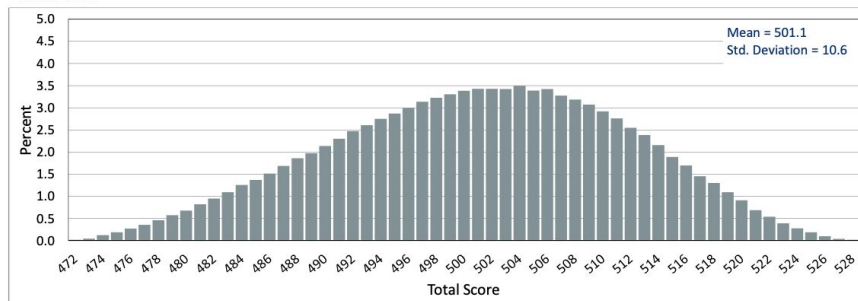   65% Psychology
    30% Sociology
    5% Biology

Score Breakdown

Summary of MCAT Total and Section Scores
Percentile Ranks in Effect May 1, 2020 – April 30, 2021
N = 273,860

MCAT Total

Mean = 501.1
Std. Deviation = 10.6

Total Score	Percentile Rank	Total Score	Percentile Rank	Total Score	Percentile Rank
472	<1	491	20	510	80
473	<1	492	22	511	82
474	<1	493	25	512	85
475	<1	494	28	513	87
476	1	495	30	514	89
477	1	496	33	515	91
478	2	497	37	516	93
479	2	498	40	517	94
480	3	499	43	518	96
481	4	500	46	519	97
482	5	501	50	520	98
483	6	502	53	521	98
484	7	503	57	522	99
485	8	504	60	523	99
486	10	505	64	524	100
487	11	506	67	525	100
488	13	507	70	526	100
489	15	508	74	527	100
490	17	509	77	528	100

Question Examples

Previous Passage

Passage 1 (Questions 1-5)

Alzheimer's disease (AD) is characterized by progressive memory loss and cognitive impairments, and is the most common form of dementia in the elderly. The main feature of AD is cognitive deficits and short term memory loss. Pathologically, AD is characterized by extracellular plaques at neuronal junctions, composed of amyloid-β 40 and 42 (Aβ40/Aβ42) peptides and the build-up of intracellular neurofibrillary tangles (NFTs), often resulting in cell death.

Humanin (HN), a 24 amino acid polypeptide, firstly identified from an occipital lobe of an AD patient, was shown to exert protective effects against AD-related neurotoxicity. As the strongest HN derivative developed so far, colivelin (CLN) is composed of a potent HN derivative named AGA-(C8R)HNG17 (AGA-HNG) attached to the C terminus of activity-dependent neurotrophic factor (ADNF), thus it may have both HN and ADNF activity, both of which have been shown have neuroprotective effects.

In a study, CLN was tested for its protective effect in a transgenic AD mouse model. The mice were divided into four equal groups: AD group, AD+CLN group, and AD+AGA-HNG+ADNF group, and wide type (WT) mice were used as normal control (NC) group. Mice were then subjected to a maze test with a learning and testing phase while being supplied with controlled levels of CLN and AGA-HNG/ADNF. Escape latency was recorded as the time from being placed into the maze to escape. Retention of spatial learning was assessed 24 h after the last training trial. The measurement of the escape times is represented in Figure 1.

80

NC

Periodic Table

group, and AD+AGA-HNG+ADNF group, and wide type (WT) mice were used as normal control (NC) group. Mice were then subjected to a maze test with a learning and testing phase while being supplied with controlled levels of CLN and AGA-HNG/ADNF. Escape latency was recorded as the time from being placed into the maze to escape. Retention of spatial learning was assessed 24 h after the last training trial. The measurement of the escape times is represented in Figure 1.
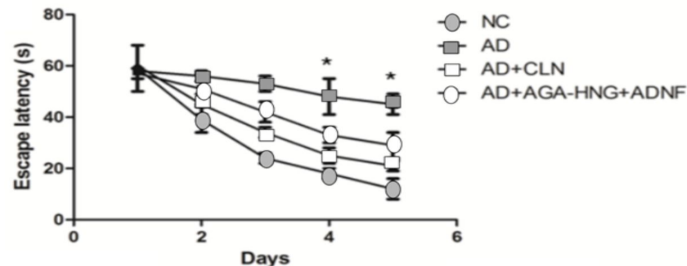

Figure 1: Escape latency of mice after different treatments.

Compared to wild-type mice, the genetically modified AD mice were more likely to exhibit which expression levels of Aβ40 and NFTs?

☐ A. Increased levels of Aβ40 and NFTs in the brain

☐ B. Decreased levels of Aβ40 and NFTs in the brain

☐ C. Increased levels of NFTs, but decreased levels of Aβ40

☐ D. Decreased levels of NFTs but increased levels of Aβ40

Question Examples

In glycolysis, an equilibrium is established between the products and reactions. What is the Keq expression for this equation, which is shown below?

Glucose + 2NAD+ + 2 Pi + 2 ADP → 2 pyruvate + 2 ATP + 2 NADH + 2 H_2O
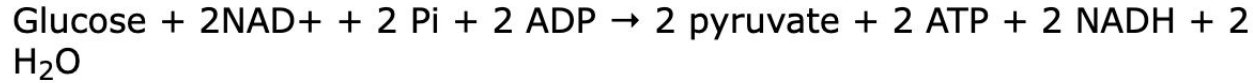
☐ **A.** Keq = $[pyruvate]^2[ATP]^2[NADH]^2$/[glucose] $[NAD+]^2[Pi]^2[ADP]^2$

☐ **B.** Keq = $[pyruvate]^2[ATP]^2[NADH]^2[H_2O]^2$/[glucose] $[NAD+]^2[Pi]^2[ADP]^2$

☐ **C.** Keq = [(2)pyruvate][(2)ATP][(2)NADH]/[glucose] [(2)NAD+][(2)Pi][(2)ADP]-

☐ **D.** Keq = [(2)pyruvate][(2)ATP][(2)NADH][(2)H_2O]/[glucose] [(2)NAD+][(2)Pi][(2)ADP]

Our Experiences with the Exam

Mariam
- Study schedule (summer)
  - Wake up 9 am
  - Content review, a few chapters per day (first 1.5 months)
  - 2-3 CARS Passages
  - Flash cards
  - Practice questions
  - Towards the 1.5 month, took a practice exam every week
- Study schedule (school)
  - Plan is to study during any available time this semester but save majority of it for winter break and beginning of next semester
  - Flash cards/ practice problems/ practice exams
- Resources
  - Kaplan Review Books, Anki, Jack Westin (CARS), AAMC official materials, Khan Academy (Psych/Soc review doc)
- Timeline
  - Mid May- June: content review
  - July: practice problems and flashcards
  - July- August: practice, weekly exams, next day was a thorough review

Our Experiences with the Exam

Nick
- Study schedule (summer)
  - Wake up 7 am lift and eat breakfast
  - Flashcards 9-12 and then eat lunch and rest
  - Specific Subject Review 1-4 and then rest and eat dinner
  - Practice Problems of the specific subject 6-9 and then sleep/repeat
- Study schedule (school)
  - Been doing 90-120 minutes of flashcards since September 20th
  - Plan is to study during any available time this semester but save majority of it for next semester
- Resources
  - Uworld, Princeton Review Books, Kaplan, Khan Academy, Anki
- Timeline
  - All of June: content review
  - All of July: practice problems and flashcards
  - Up until exam: Alternating days of practice exam and the next day would be reviewing the prior days exam

Our Experiences with the Exam

Katherine
- Study schedule (summer)
  - 9 am wake up
  - Flashcards
  - Exercise / walk around / lunch
  - Practice problems
  - Review wrong answers & content

- Study schedule (school)
  - Study during any available time
  - Flashcards whenever I can & Practice problems when I have longer periods of time to sit down

- Resources
  - Anki
  - UWorld
  - AAMC practice exams
  - Khan Academy
  - Kaplan Books

- Timeline
  - May-June = Content review / practice problems
  - July = Practice problems → full length exams
  - End of August = Exam (practice exam every week)

One Final Thing

- For anyone who is taking the MCAT or thinking about taking it this Winter/Summer, HPAC will be hosting the MCAT MAX Bootcamp on <u>November 5th from 10am-2pm.</u>
- According to Professor Muisener "The MCAT boot camp will include tips and tricks, how to manage stress, a review and we will be distributing the Barron's guide to the MCAT."

HPAC
(HEALTH PROFESSIONS ADVISORY COMMITTEE)
PRESENTS

MCAT BOOTCAMP

10am - 2pm
Gateway South, room 122

Jumpstart your MCAT preparation with techniques and dialogue from alumni and Dr. Donald Lombardi
- Lunch Provided -

DAT Talk

Stevens Health Professions Club

What is the DAT?

- The DAT is required for all Dental School applicants
- The test takes 4.5 hours and is offered year round
- One must wait 60 days between testing attempts
- The exam has four sections
- There is one 30 minute break in between the first and second section
- Results are reported as scale scores (not raw or percentile scores)
- The scores range from 1 to 30

Breakdown of the Exam

Four sections of the exam are:
- ❖ Survey of the Natural Sciences
  - ● Biology (40 items)
  - ● General Chemistry (30 items)
  - ● Organic Chemistry (30 items)
- ❖ Perceptual Ability (90 items)
  - ● 6 subtests: apertures, view recognition, angle discrimination, paper folding, cube counting, 3D form development
- ❖ Reading Comprehension (50 items)
  - ● 3 reading passages on various scientific topics
- ❖ Quantitative Reasoning (40 items)
  - ● Mathematical problems
  - ● Applied mathematics (word problems)
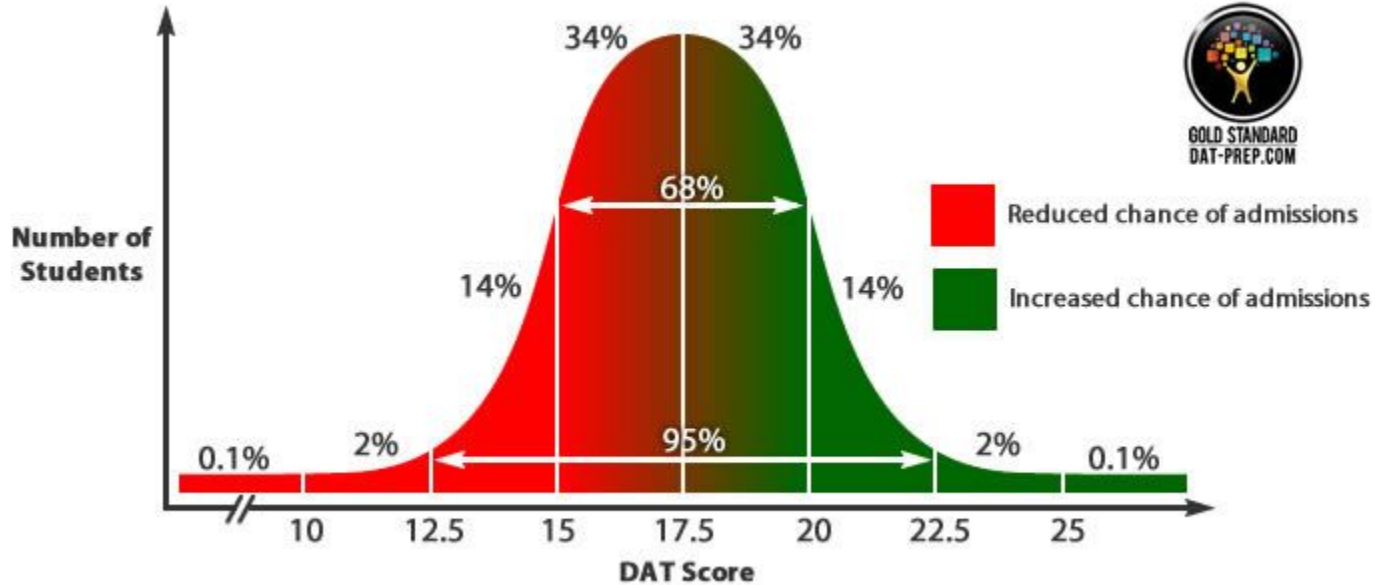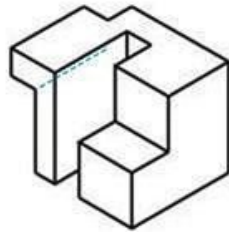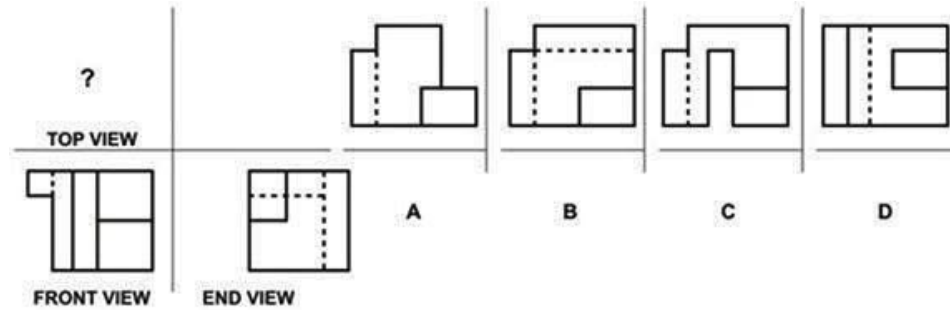
Score Breakdown

Figure 1: Typical Overall DAT Score Distribution (Approx.); No. of Test Administrations Annually = 13 000 (Approx.)

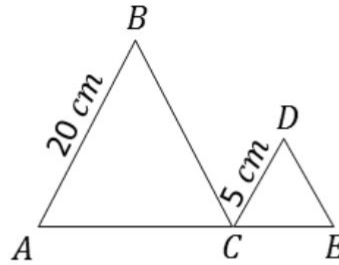# Question Examples

Perceptual Ability:

Question Examples

Quantitative Reasoning:

Triangles ΔABC and ΔCDE are similar.

TestPrep-Online

20 cm

5 cm

B

D

A   C   E

If $\overline{AB}$ is 20 cm and $\overline{CD}$ is 5 cm, what is the ratio of the area of CDE to ABC?

☐ A. 1 : 16
☐ B. 1 : 4
☐ C. 2 : 1
☐ D. 8 : 1

Mentor and Mentee Reveal

Mentors:

- Nick Housel
- Scott Serafin
- Katherine Ho
- Paulina Georgoutsos
- Malak Aziz
- Vrinda Modi
- Alexis Pope
- Emily Lynch

Mentees:

Lilya Eid, Aidan Robinson, Sophia Donskoy, Naomi Chan-Sia

Anusha Qaisar, Emily Miller

David Keyser, Darius Marian, Sophia Mains, Kaitlyn Tsai

Disha Sanghavi, Savanna Fiscus, Isabel Vogel

Luke Rimmo Loyi Lego, Sarah Peneiras, Alyeah McAllister

Maya Lapinski, Mollie Good, Gabriella Cardoza

Sayumi Baduge, Katarina Nikiforouk, Tyler Swintosky, Smera Venkateswar

Abigail (Abby) Thomas, Maggie Previglian, Sakura Helm