MCAT Memorization

Today's Info Session

- Welcome to this Info Session!
- Introduction
- Nature of Learning
- How to prep
  - Brain = screwdriver
  - Strategies for dealing with specific areas
  - How to tackle Psych
- How Can Next Step Help?
- Questions?

Next Step TEST PREP

MCAT

Medical College Admission Test

WHAT IS YOUR NEXT STEP?

Introduction

Hi, I'm Phil!

- MCAT Content writer
- Tutored and taught for 9+ years
- Attended University of Nebraska Medical Center as an MD/PhD student.

✓ Next Step is a team of test prep and educational experts committed to excellence.

Understanding the test

Exam Overview		
Section	**# of Questions**	**Time Allotted**
Examinee Agreement		8 minutes
Tutorial (optional)		10 minutes
Chemical and Physical Foundations of Biological Systems	59	95 minutes
Break (optional)		10 minutes
Critical Analysis and Reasoning Skills	53	90 minutes
Mid-Exam Break (optional)		30 minutes
Biological and Biochemical Foundations of Living Systems	59	95 minutes
Break (optional)		10 minutes
Psychological, Social, and Biological Foundations of Behavior	59	95 minutes
Void Question		5 minutes
Satisfaction Survey (optional)		5 minutes
Total Content Time		6 hours | 15 minutes
Total "Seated" Time*		**Approx. 7 hours | 33 minutes**

**Total seated time does not include check-in time on arrival at the test center.*

MCAT: a test like no other

Subjects Tested

Next Step TEST PREP

Chemical and Physical Foundations

- 30% general chemistry
- 25% physics
- 25% biochemistry
- 15% organic chemistry
- 5% biology

Bio and Biochemical Foundations

- 65% biology
- 25% biochemistry
- 5% organic chemistry
- 5% general chemistry

Psychological and Sociological Foundations

- 65% psychology
- 30% sociology
- 5% biology

Brief Neuroscience interlude

Stuff that your brain wants to learn:

- Navigation
- Facial recognition
- Gossip???

Stuff that your brain DOESN'T want to learn:

- Lists of facts
- Piles of numbers and letters

Memorizing MCAT Science: Techniques

Mnemonics

- *Useful for?*

Formula sheets and practice questions

- *Useful for?*

Study sheets

- *Useful for?*

Flowcharts

- *Useful for?*

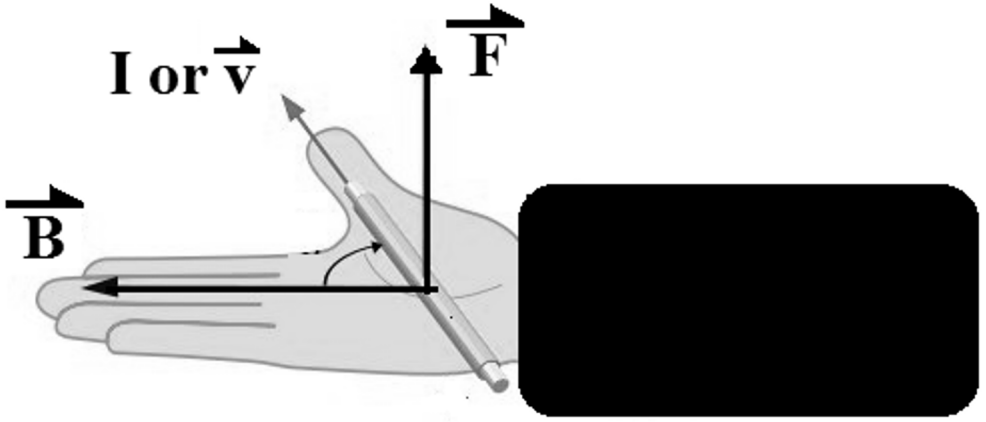
Flashcards

- *Useful for?*

Visual learning

- *Useful for?*

1 H 1.008																	2 He 4.00
3 Li 6.94	4 Be 9.01											5 B 10.81	6 C 12.01	7 N 14.01	8 O 16.00	9 F 19.00	10 Ne 20.18
11 Na 22.99	12 Mg 24.31											13 Al 26.98	14 Si 28.09	15 P 30.97	16 S 32.07	17 Cl 35.45	18 Ar 39.95
19 K 39.10	20 Ca 40.08	21 Sc 44.96	22 Ti 47.88	23 V 50.94	24 Cr 52.00	25 Mn 54.94	26 Fe 55.85	27 Co 58.93	28 Ni 58.69	29 Cu 63.55	30 Zn 65.39	31 Ga 69.72	32 Ge 72.61	33 As 74.92	34 Se 76.96	35 Br 79.90	36 Kr 83.80
37 Rb 85.47	38 Sr 87.62	39 Y 88.91	40 Zr 91.22	41 Nb 92.91	42 Mo 95.94	43 Tc (98)	44 Ru 101.1	45 Rh 102.9	46 Pd 106.4	47 Ag 107.9	48 Cd 112.4	49 In 114.8	50 Sn 118.71	51 Sb 121.75	52 Te 127.60	53 I 126.90	54 Xe 131.29



Spaced repetition!

Mnemonic Devices

Mnemonics

- *Good ones are outrageous, naughty, or related to people you know (or all 3!)*
- *Can be visual, auditory, kinesthetic*
- *You should create a new mnemonic every other week*

Examples:

The classification hierarchy for living things:

King Phillip Comes Over For Good Sushi

(Kingdom, Phylum, Class, Order, Family, Genus, Species)

The elements that are diatomic gases at standard conditions:

Have No Fear Of Ice Cold Beer

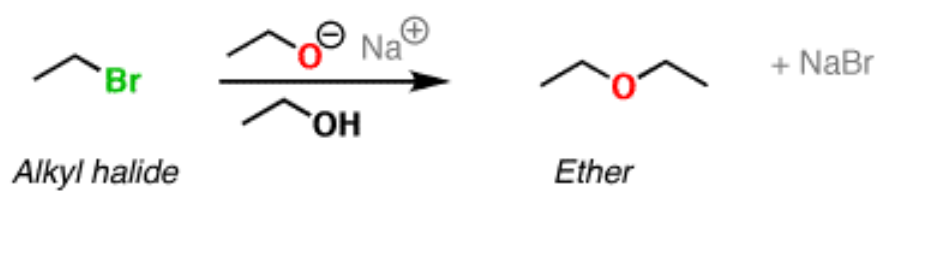
(H_2 N_2 F_2 O_2 I_2 Cl_2 $Br_{2)}$

Or memorize it phonetically *"huh-noff cull-bree": H_2 N_2 O_2 F_2 Cl_2 Br_2 I_2*

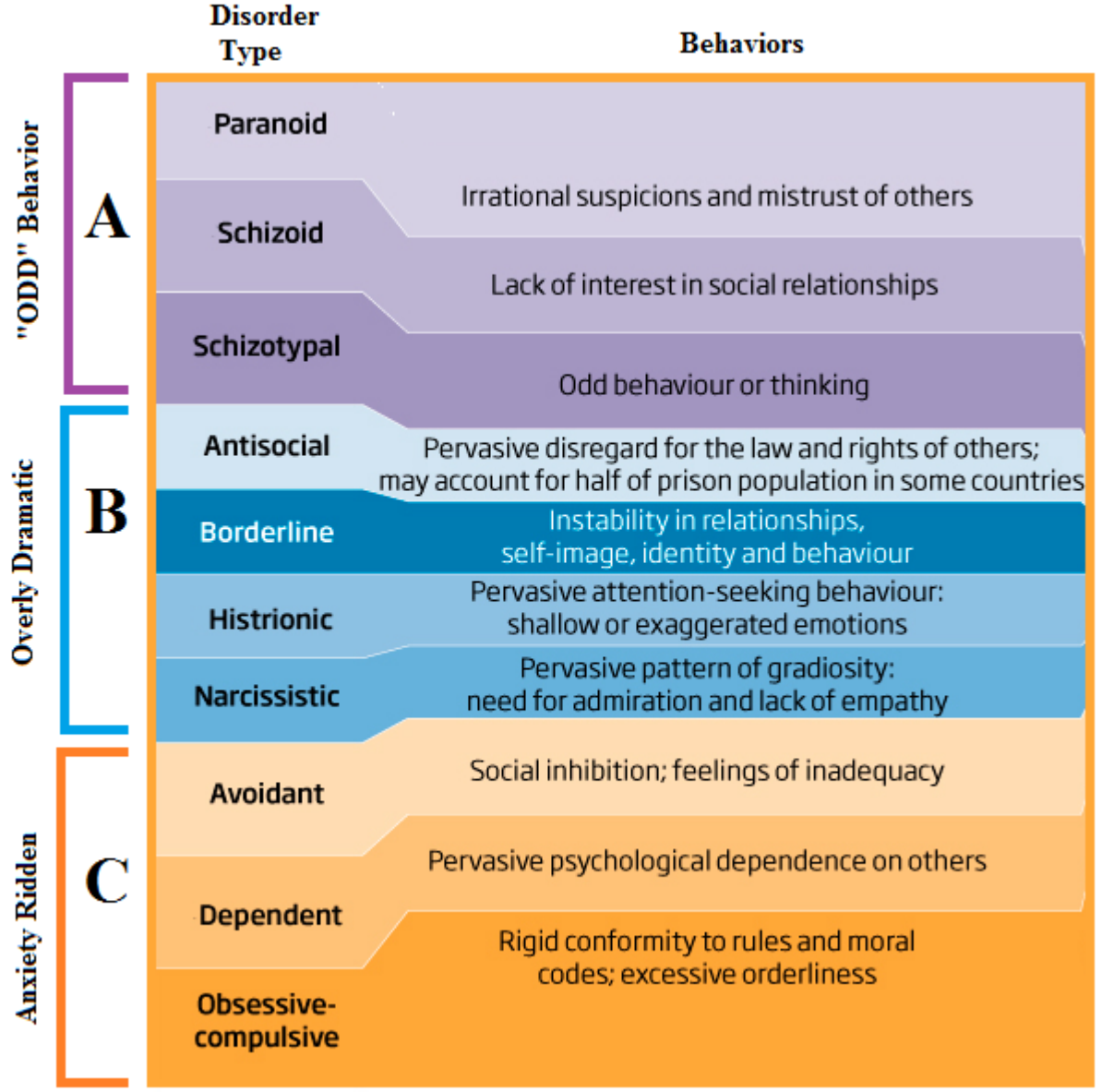
Mnemonic Devices

When to Use:	Method:	Example:
For information involving key words	Acronym - an invented combination of letters with each letter acting as a cue to an idea you need to remember.	***AMPLE GiFTs – is an acronym for the anterior pituitary hormones (ACTH, MSH, prolactin, LH, beta-endorphin, GH, FSH, TSH).***
For information involving key words	Acrostic - an invented sentence where the first letter of each word is a cue to an idea you need to remember.	***Eat Tender Chicken Chunks Elegantly is an acrostic to remember Proteases in the Duodenum:*** ***Enterokinase, Trypsin, Chymotrypsin, Carboxypeptidase and Elastase.*** ***FOL(d)M(a)PS - Ovarian Cycle: Follicular phase, Ovulatory phase, and Luteal phase.*** ***Menstrual Cycle: Menstrual flow, Proliferative phase, and Secretory phase.*** ***SEVEN UP - Path of Sperm in the Male Reproductive Tract:*** ***Seminiferous tubules, Epididymis, Vas deferens, Ejaculatory Duct, N(Nothing), Urethra and Penis.*** ***LAb RAt – to remember the bicuspid valve of the left atrium and the tricuspid valve of the right atrium.*** ***SNoW DRoP – Lab techniques and the material they use. Southern blot, DNA; Northern blot, RNA, Western blot, protein***

Mnemonic Devices

When to Use:	Method:	Example:
For remembering information items	Loci Method- Imagine placing the items you want to remember in specific locations in a room with which you are familiar.	***To remember the path of the blood: The door to your house is the SVC/IVC entry to the right atrium. As you walk through the house, each door will serve as a valve and the room will serve as the next chamber.***
For ordered or unordered lists	Chaining- Create a story where each word or idea you have to remember will cue the next idea you need to recall.	***Williamson-ether synthesis: Throw a magic wand and your favorite brand of beer into a wishing well, bring up the bucket to find angel wings***  ***WELL is reminiscent of "WILLiamson", the magic wand is a long alkyl chain with Br-and reminding you it ends in a halide, the beer is the alcohol, and the pair of wings represents the ether product***

Personality Disorders Worksheet Exercise



Why is an MCAT study plan important?

- Studying and practicing for the MCAT tend to be doable...

  ...but when you factor in planning as well, it can get stressful!

- This is especially true if you:
  - Work full-time
  - Are also taking college courses
  - Have a weak content background or specific MCAT needs

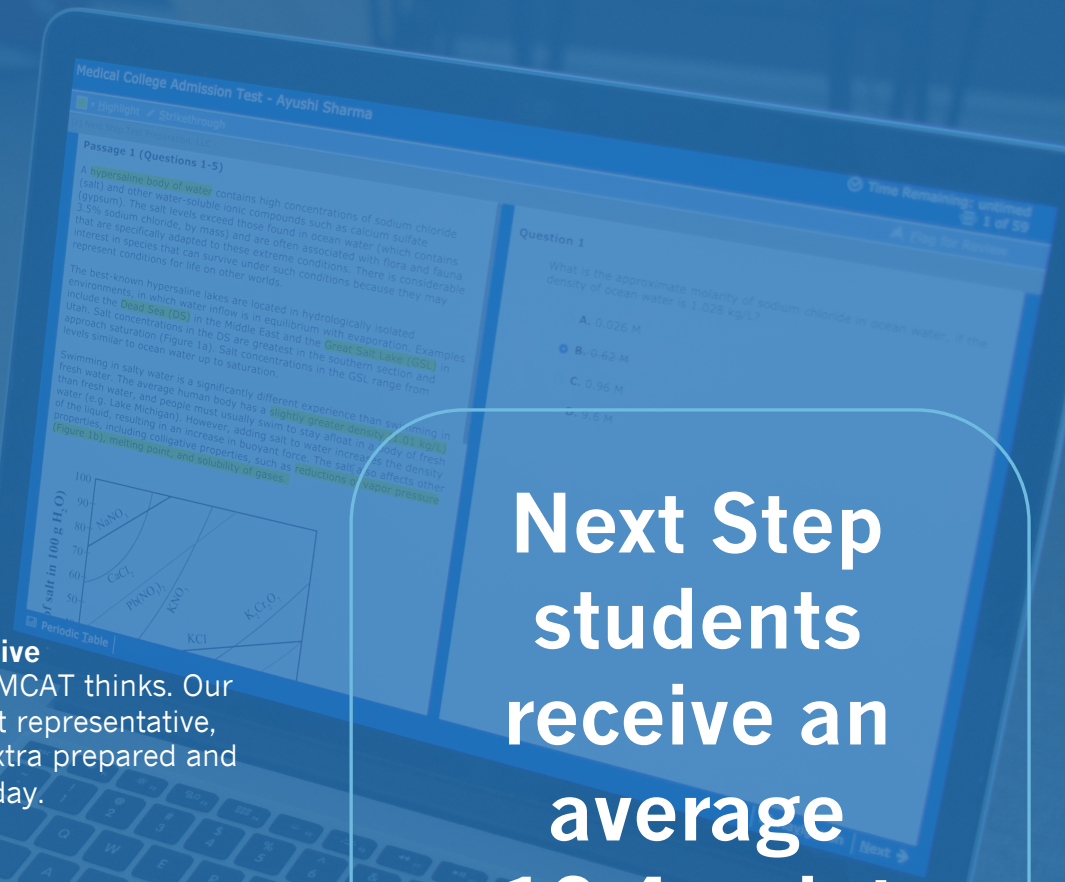
What makes Next Step so effective?

Customizable to You
With a highly customizable study planner tool, live-online office hours 5 days/week at no extra charge, plus hundreds of on-demand video explanations, you can truly tailor your MCAT prep

99th Percentile Instructors
Our online course was created by 524+ scoring instructors & more than 50 of our tutors have scored 520+ on the MCAT

Most Representative
Next Step teaches you how the MCAT thinks. Our exams & interface are the most representative, after the AAMC, so you will be extra prepared and confident on test day.

Score Increase Guarantee
Because we're so confident in our methodology, we guarantee that your score will increase or your money back.



Next Step students receive an average 10.4-point score increase.

Don’t take our word for it.

Hear what past students have said.

“Next Step is an invaluable resource, they truly have the best strategies in regards to approaching each section of this test.” – T.D.

“Next Step helped me take my score from a 496 to a 523!! That's 35th percentile to 99th! Every service they offer is top notch and definitely helps you prepare for the MCAT” - Gus

“This course has significantly improved the way I approach the exam, how I study, and has given me great support with any questions I have had along the way.” - Tyler

Over 80,000 students have used Next Step in their MCAT journey.

The Best MCAT Prep Course

Everything you need to crush the MCAT.

- Hundreds of hours of video lessons and content review
- 99th+ Percentile Instructors
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- 9 MCAT Books (updated for 2020!)
- Qbank with 2000+ questions
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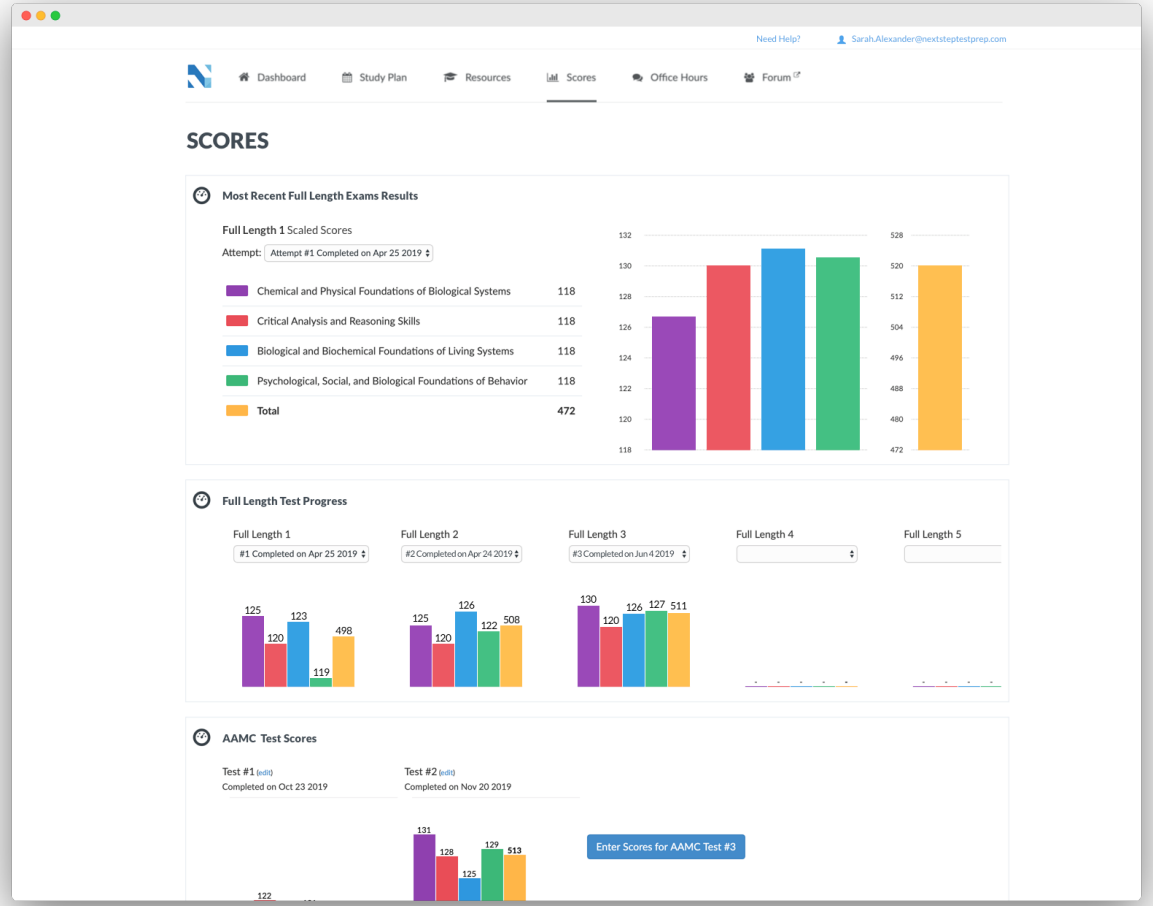
- 6 months access, with free extension for another 6 months, if needed.
- Score Increase Guarantee



Raise your score or get your money back.

Guaranteed.

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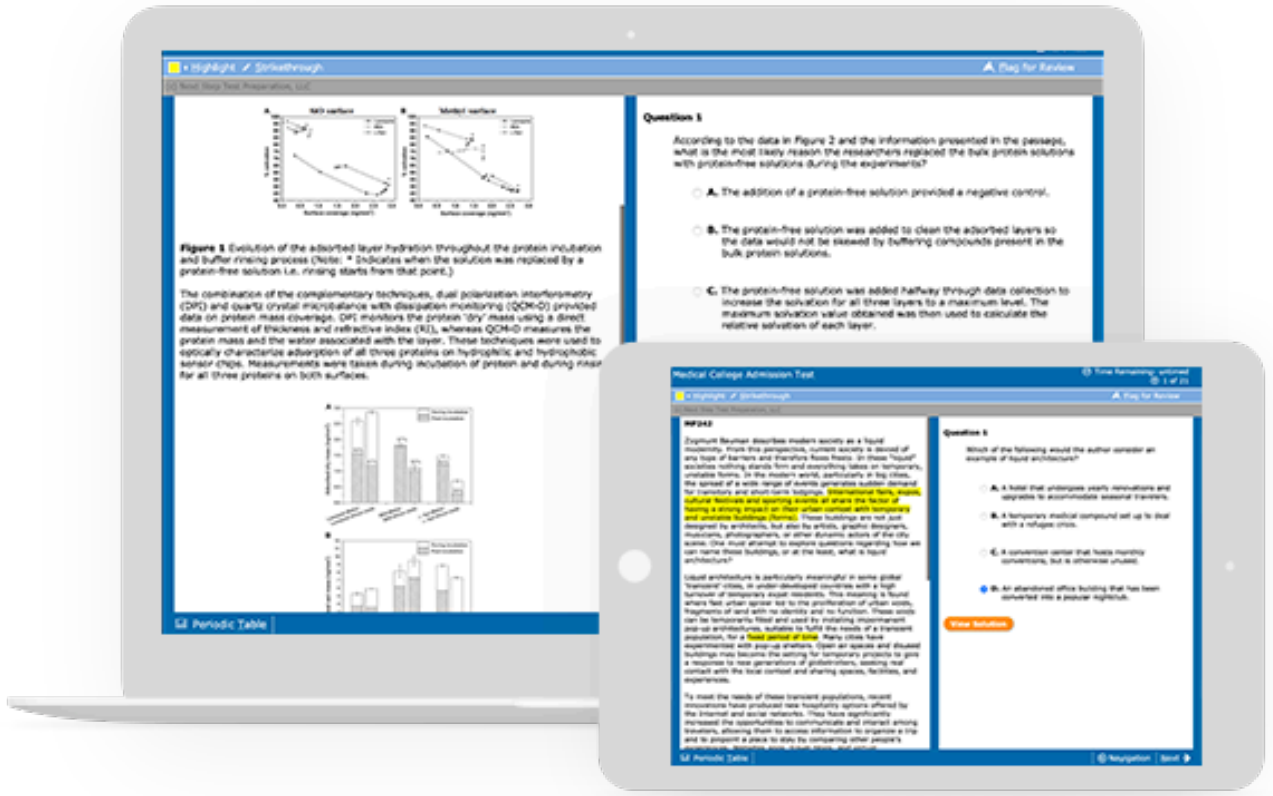
The **most** representative practice exams after the AAMC.

- **Continually updated for MCAT changes**
- **The most realistic test day experience you can get**

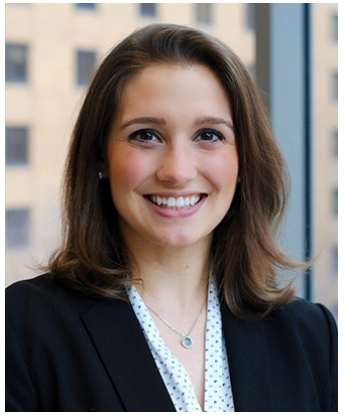


Representative practice matters!

Private Tutoring

Customized help from real MCAT experts!

- **Get matched with a 520+ premium tutor through a personalized matching process**
- **Study with a flexible plan created for your unique needs**

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Get your MCAT prep toolkit!

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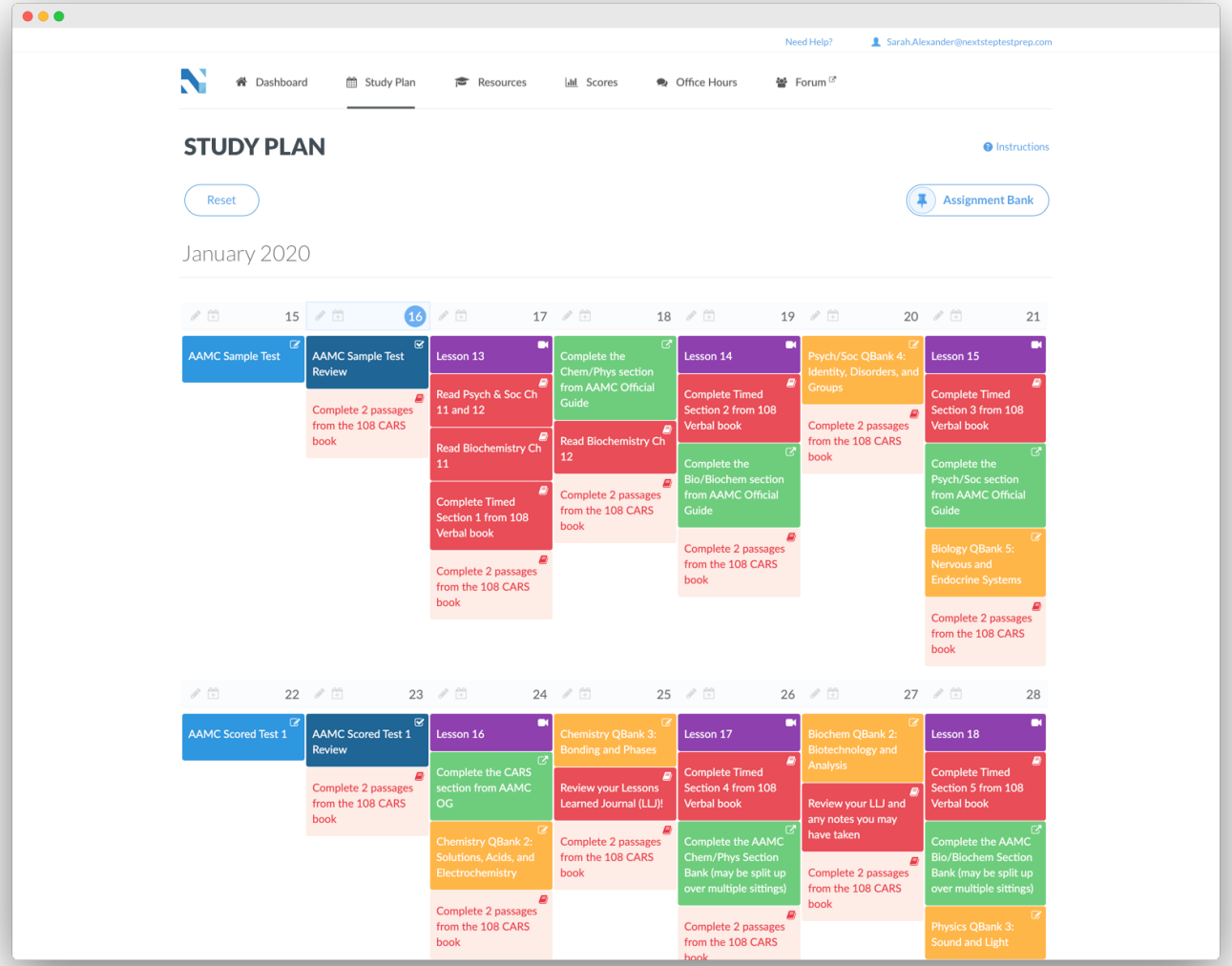
  - Half-Length Diagnostic
  - Full-Length Exam
  - Content Review Videos
  - Advanced Study Planner Tool
  - & More!



Start your MCAT journey here!

NextStep

A Blueprint Test Prep Company

Get Solid Advice for Your Next Step

CALL 888-530-6398 FOR A FREE CONSULT

Electricity and Magnetism

$F = kQ_1Q_2 / r^2$

$F = qVB\sin\theta$

$F = iLB\sin\theta$

$V = IR$

$P = IV$

$R = \rho L / A$

$V_{rms} = V_{max} / \sqrt{2}$

$I_{rms} = I_{max} / \sqrt{2}$

Resistors in series:

$R_{tot} = R_1 + R_2 \ldots$

Resistors in parallel:

$1/R_{tot} = 1/R_1 + 1/R_2 \ldots$

Capacitors in series:

$1/C_{tot} = 1/C_1 + 1/C_2 \ldots$

Capacitors in parallel:

$C_{tot} = C_1 + C_2 \ldots$

$C = Q/V$

$Energy = (1/2)QV$

$F = qE$

$V = Ed$

$Energy = qEd$

$E = kQ/r^2$

$Energy = kQq/r$

$V = kQ/r$

$\Delta G = -nFE$

$E_{cell} = E_{cath} - E_{an}$

Waves

$v = f\lambda$

$T = 1/f$

Light

$n_1\sin\theta_1 = n_2\sin\theta_2$

$\sin\theta_c = n_2/n_1$

$E = hf$

$m = -d_i / d_o$

$P = 1/f$

$f = (1/2)r$

$n = c/v$

$1/f = 1/d_i + 1/d_o$

Sound

$d\beta = 10 \log (I/I_o)$

$L = n\lambda/2$ (n=1, 2…)

$L = n\lambda/4$ (n=1,3…)

$f_{beat} = |f_1 - f_2|$

$f = f_e[v \pm v_d]/[v \pm v_s]$

Fluids

$\rho = m/V$

$P = F/A$

$P = P_{atm} + \rho gd$

$F_b = \rho gV$

$Q = Av$

$P + \rho gy + (1/2)\rho v^2 = constant$

Gases

$PV = nRT$

Boyle: $PV = k$

Guy-Lussac: $P/T=k$

Charles: $V/T=k$

Avogadro: $n/V=k$

$R_1/R_2=\sqrt{(m_2/m_1)}$

$P_A = X_A \times P_{tot}$

Solutions

$pH=pK_a+\log (A^-/HA)$

$M = mol / L$

$m = mol / kg$

$N = M \times \#$ of H^+

$pH = - \log [H^+]$

$M_iV_i = M_fV_f$

$\Pi = MRT$

$\Delta T_f = ik_fm$

$\Delta T_b = ik_bm$

$X_A = mol_A / mol_{tot}$

Thermo

$\Delta U = Q - W$

$\Delta U = (3/2)nRT$

$W = P\Delta V$

$Q = mc\Delta T$

$Q = mH_L$

$\Delta G = \Delta H - T\Delta S$

$\Delta H_{rxn} = \Delta H_{prod} - \Delta H_{react}$

Kinematics

$v_f = v_o + at$

$d = v_ot + (1/2)at^2$

$v_f^2 = v_o^2 + 2ad$

$a_c = v^2 / r$

$F_c = mv^2 / r$

$v_x = v_o\cos\theta$

$v_y = v_o\sin\theta$

Mechanics

$F = ma$

$F_{a\ on\ b} = -F_{b\ on\ a}$

$F_{fric} = \mu F_N$

$F_g = GM_1m_2 / r^2$

$F_g = mg$

$F = kx$

$\tau = rF\sin\theta$

$P = W/t$

$W = Fd\cos\theta$

$E_K = (1/2)mv^2$

$U = mgh$

$U = - GM_1m_2 / r$

Inclined Plane

$F_{incline} = mg\sin\theta$

$F_N = mg\cos\theta$

$F_{fric} = \mu mg\cos\theta$

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