

Mcat Cheat Sheet

FORCES - MCAT PHYSICS

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F = Force unit: N = Newtons = $kg \cdot \frac{m}{s^2}$

$$F = m a \rightarrow \frac{kg}{m/s^2} \rightarrow \frac{m}{t} \rightarrow \frac{kg \cdot m}{s \cdot s} \rightarrow \frac{kg \cdot m}{s^2}$$

Weight + Gravity

$a_g = g$ near earth's surface $\sim 10 m/s^2$

Weight $W = F_g = m a_g = mg$

Far from surface

$$F = G \frac{m_1 m_2}{r^2} \quad F \propto \frac{1}{r^2} \quad \begin{matrix} \uparrow F \rightarrow \downarrow r^2 \\ \downarrow F \rightarrow \uparrow r^2 \end{matrix}$$

MCAT provided

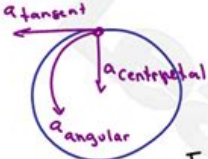
Equilibrium

$$\begin{cases} \sum F = ma \\ \sum F_x = ma_x \\ \sum F_y = ma_y \end{cases} \quad F_{net} = \sqrt{\sum F_x^2 + \sum F_y^2}$$

Friction

$F_f = \mu N$
 μ_s = Static f = prevents motion $0 \leq f_s \leq \mu_s N$
 μ_k = kinetic f = slows object in motion $f_k = \mu_k N = \mu_k \cdot mg$

Centripetal Motion

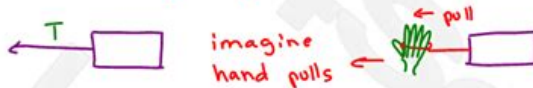


F_c keeps object on circular path

$$a_c = \frac{v^2}{r} \quad F_c = m a_c \rightarrow m \frac{v^2}{r}$$

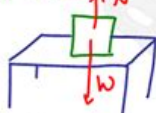
$$F_c = m \frac{v^2}{r} \rightarrow \frac{kg \cdot m^2}{s^2} \cdot \frac{1}{m} \rightarrow \frac{kg \cdot m}{s^2} = N$$

Tension $T \rightarrow$ pulling force

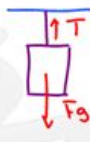


Free body Diagrams

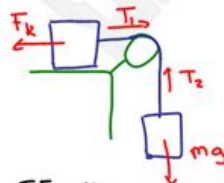
N = Normal force
 keeps it 'normal'



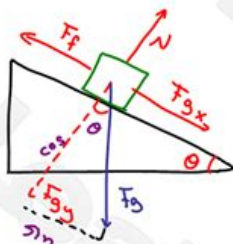
$$\sum F = 0$$



$$\sum F = 0$$



$$\sum F = ma$$



* exception: $a_x = \sin \theta$
 $a_y = \cos \theta$

$$\sum F = m a_x = mg \sin \theta - F_f$$

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MCAT Cheat Sheet: The Ultimate Guide to Mastering the MCAT Exam

The Medical College Admission Test (MCAT) is a crucial step for aspiring medical students in the United States and Canada. This standardized exam assesses a candidate's knowledge in the sciences, critical analysis, and reasoning skills. Preparing for the MCAT can be daunting due to the vast amount of material covered and the exam's significant implications for your future. This article aims to provide a comprehensive MCAT cheat sheet that will help streamline your study process and enhance your performance on the exam.

Understanding the MCAT Format

Before diving into study material, it's essential to understand the structure of the MCAT. The exam consists of four main sections:

1. Chemical and Physical Foundations of Biological Systems

- This section tests your knowledge of chemistry, physics, and biology.
- Topics include:
 - Biochemistry
 - General chemistry
 - Organic chemistry
 - Physics

2. Critical Analysis and Reasoning Skills (CARS)

- This section evaluates your reading comprehension and analytical skills.
- Focuses on:
 - Understanding complex texts
 - Analyzing arguments
 - Evaluating evidence

3. Biological and Biochemical Foundations of Living Systems

- This section emphasizes biology and biochemistry.
- Key topics include:
 - Cellular biology
 - Molecular biology
 - Genetics

4. Psychological, Social, and Biological Foundations of Behavior

- This section assesses your understanding of psychological and sociocultural factors.
- Areas of focus include:
 - Developmental psychology
 - Social psychology
 - Behavioral science

Each section is scored on a scale of 118 to 132, with a total score ranging from 472 to 528.

Key Study Strategies

Effective preparation is essential for success on the MCAT. Here are some strategies to help you maximize your study efforts:

1. Create a Study Schedule

- Develop a timetable that spans several months leading up to the exam.
- Allocate specific times for each subject area.
- Include breaks and review periods.

2. Use High-Quality Study Materials

- Invest in reputable MCAT prep books and online resources.
- Consider enrolling in prep courses if you need more structure.

3. Utilize Practice Tests

- Take full-length practice exams to familiarize yourself with the test format.
- Analyze your performance to identify areas needing improvement.
- Simulate test conditions to build stamina.

4. Focus on Active Learning

- Engage with the material through practice questions and flashcards.
- Consider teaching concepts to others to reinforce your understanding.
- Join study groups for collaborative learning.

5. Review Regularly

- Schedule periodic reviews of previously studied material.
- Use spaced repetition techniques to enhance retention.

Essential MCAT Topics to Review

While the MCAT covers a wide array of subjects, certain topics tend to be more heavily tested. Here's a breakdown of some essential areas to focus on:

1. Biology

- Cell structure and function
- Human anatomy and physiology
- Genetics and evolution

2. Chemistry

- Chemical reactions and stoichiometry
- Thermodynamics and kinetics
- Organic chemistry mechanisms

3. Physics

- Mechanics (forces, motion, energy)
- Waves and optics
- Electricity and magnetism

4. Psychology and Sociology

- Major psychological theories and concepts
- Social behavior and group dynamics
- Cultural influences on behavior

Quick Reference MCAT Cheat Sheet

Creating a quick reference cheat sheet can help you recall essential concepts during your studies. Here's a concise overview of key points to include:

1. Formulas and Constants

- Ideal Gas Law: $PV = nRT$

- Newton's Second Law: $F = ma$
- Wave Speed Formula: $v = f\lambda$

2. Biological Processes

- Cellular Respiration:
- Glycolysis → Krebs Cycle → Electron Transport Chain
- Mitosis and Meiosis:
- Mitosis (somatic cells) vs. Meiosis (gametes)

3. Important Reactions in Organic Chemistry

- SN1 vs. SN2 Reactions:
- SN1 (unimolecular nucleophilic substitution) is 2 steps; SN2 (bimolecular) is 1 step and involves inversion.
- Functional Groups:
- Alcohols, carboxylic acids, amines, ethers, etc.

4. Psychological Theories

- Maslow's Hierarchy of Needs: Physiological, Safety, Love/Belonging, Esteem, Self-Actualization
- Piaget's Stages of Cognitive Development:
- Sensorimotor, Preoperational, Concrete Operational, Formal Operational

Test Day Tips

The day of the exam can be stressful, but proper preparation can alleviate anxiety. Here are some tips to keep in mind:

1. Get Plenty of Rest

- Ensure a good night's sleep before the exam.
- Avoid cramming the night before.

2. Eat a Healthy Breakfast

- Opt for a balanced meal that sustains energy.
- Avoid heavy or greasy foods that may cause fatigue.

3. Arrive Early

- Allow yourself ample time to reach the testing center.

- Familiarize yourself with the environment to reduce anxiety.

4. Manage Your Time

- Monitor the clock during the exam to ensure you complete all sections.
- Don't linger too long on difficult questions; mark them and return later if time permits.

5. Stay Calm and Focused

- Practice relaxation techniques, such as deep breathing, if you start to feel overwhelmed.
- Maintain a positive mindset throughout the exam.

Conclusion

Preparing for the MCAT requires dedication, organization, and strategic study techniques. By utilizing this MCAT cheat sheet, you'll have a structured approach to your studies, making it easier to retain important information and perform well on test day. Remember that success on the MCAT is not just about hard work; it's about smart study habits, understanding the exam format, and practicing effectively. Good luck!

Frequently Asked Questions

What is an MCAT cheat sheet?

An MCAT cheat sheet is a condensed study guide that summarizes key concepts, formulas, and information from the subjects covered in the MCAT exam, helping students review efficiently.

What topics should be included in an MCAT cheat sheet?

An effective MCAT cheat sheet should include topics from Biology, Chemistry, Physics, Psychology, Sociology, and Critical Analysis and Reasoning Skills (CARS), along with important formulas and definitions.

How can I create my own MCAT cheat sheet?

To create your own MCAT cheat sheet, identify the most challenging concepts for you, summarize them in your own words, include diagrams or charts for visual aids, and keep it concise for quick reference.

Are there any free MCAT cheat sheets available online?

Yes, there are several free MCAT cheat sheets available online from various educational resources and test prep companies that provide summaries and tips for each subject area.

How should I use an MCAT cheat sheet effectively?

Use your MCAT cheat sheet as a quick reference tool during your study sessions, to reinforce concepts you've learned, and as a last-minute review resource before the exam.

Can an MCAT cheat sheet replace comprehensive study materials?

No, an MCAT cheat sheet should not replace comprehensive study materials; it is meant to complement your study efforts by summarizing and reinforcing key concepts.

What is the best format for an MCAT cheat sheet?

The best format for an MCAT cheat sheet is one that is visually organized, possibly in bullet points or tables, making it easy to skim and find information quickly.

How often should I update my MCAT cheat sheet during my study prep?

You should update your MCAT cheat sheet regularly as you progress in your studies, adding new insights, clarifications, and removing information that you have mastered.

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