



***Dental  
Admission Test  
(DAT)***

Duke Pre-Dental Society

# What we'll be covering

1. What is the DAT?
2. What topics are covered on the DAT?
3. What are the best resources to use when preparing?
4. Should I self-study or take a Kaplan course?
5. How/when do I start?

# Dental Admission Test (DAT)

- 4 Hour 15 Minute Computer-Based Exam
- Four Sections

Dental Admission Test	
Optional Tutorial	15 minutes
<b>Survey of Natural Sciences</b>	<b>90 minutes</b>
<b>Perceptual Ability Test</b>	<b>60 minutes</b>
Optional Break	15 minutes
<b>Reading Comprehension Test</b>	<b>60 minutes</b>
<b>Quantitative Reasoning Test</b>	<b>45 minutes</b>
Optional Post Test Survey	15 minutes

- Scores Range from 0 - 30
  - National Average For Sections: ~17 - 18
  - Competitive Scores: 20+

# Survey of Natural Sciences

- 100 questions in 90 minutes
- Subjects
  - Biology (40 questions)
  - General Chemistry (30 questions)
  - Organic Chemistry (30 questions)

NO 2 HB

# Biology

- What is Covered

## **Biology (40)**

*Cell and Molecular Biology* - origin of life, cell metabolism (including photosynthesis/enzymology, cellular processes, thermodynamics, organelle structure and function, mitosis/meiosis, cell structure, and experimental cell biology

*Diversity of Life: Biological Organization and Relationship of Major Taxa* (Six-Kingdom, Three-Domain System) – plantae, animalia, protista, fungi, eubacteria (bacteria), archae, etc.

*Structure and Function of Systems* - integumentary, skeletal, muscular, circulatory, immunological, digestive, respiratory, urinary, nervous/senses, endocrine, reproductive, etc.

*Developmental Biology* - fertilization, descriptive embryology, developmental mechanisms, and experimental embryology

*Genetics* - molecular genetics, human genetics, classical genetics, chromosomal genetics, and genetic technology

*Evolution, Ecology, and Behavior* - natural selection, population genetics/speciation, cladistics, population and community ecology, ecosystems, and animal behavior (including social behavior).

# Biology

- Classes to take (Duke)
  - Bio 101L, Bio 102L, Bio 107, Bio 119, Bio 151D/Bio 151L/Evanth 133L
- Resources
  - AP Biology Books (Cliffs, Princeton Review, etc.)
  - Schaum's
  - Examkracker's MCAT Biology
  - Kaplan Biology for Overview
  - Campbell's Biology Textbook

# General Chemistry

- What is Covered?

## **General Chemistry (30)**

*Stoichiometry and General Concepts* - percent composition, empirical formulae, balancing equations, moles and molecular formulas, molar mass, density, and calculations from balanced equations

*Gases* - kinetic molecular theory of gases, Dalton's, Boyle's, Charles's, and ideal gas law

*Liquids and Solids* - intermolecular forces, phase changes, vapor pressure, structures, polarity, and properties

*Solutions* - polarity, properties (colligative, non-colligative), forces, and concentration calculations

*Acids and Bases* - pH, strength, Brønsted-Lowry reactions, and calculations

*Chemical Equilibria* - molecular, acid/base, precipitation, calculations, and Le Chatelier's principle

# General Chemistry

- What is Covered? (continued)

*Thermodynamics and Thermochemistry* - laws of thermodynamics, Hess's law, spontaneity, enthalpies and entropies, and heat transfer

*Chemical Kinetics* - rate laws, activation energy, and half-life

*Oxidation-Reduction Reactions* - balancing equations, determination of oxidation numbers, electrochemical calculations, and electrochemical concepts and terminology

*Atomic and Molecular Structure* - electron configuration, orbital types, Lewis-Dot diagrams, atomic theory, quantum theory, molecular geometry, bond types, and sub-atomic particles

*Periodic Properties* - representative elements, transition elements, periodic trends, and descriptive chemistry

*Nuclear Reactions* - balancing equations, binding energy, decay processes, particles, and terminology

*Laboratory* - basic techniques, equipment, error analysis, safety, and data analysis



# General Chemistry

- Classes to take (Duke)
  - Chem 31L
- Resources
  - Kaplan DAT Book
  - Schaum's
  - Examkracker's MCAT General Chemistry
  - AP Chemistry
  - Zuhmdahl's Chemical Principles for Reference

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# Organic Chemistry

- What is Covered?

## **Organic Chemistry (30)**

*Mechanisms: Energetics, and Structure* - elimination, addition, free radical, substitution mechanisms, and other

*Chemical and Physical Properties of Molecules* - spectroscopy ( $^1\text{H}$  NMR,  $^{13}\text{C}$  NMR, infrared, and multi-spectra), structure (polarity, intermolecular forces (solubility, melting/boiling point, etc.), and laboratory theory and techniques (i.e. TLC, separations, etc.)

*Stereochemistry (structure evaluation)* - chirality, isomer relationships, and conformations

*Nomenclature* - IUPAC rules and functional groups in molecules

*Individual Reactions of the Major Functional Groups and Combinations of Reactions to Synthesize Compounds* - alkene/alkyne, aromatic, substitution/elimination, aldehyde/ketone, carboxylic acids and derivatives, and other For each area listed above, the following sub-areas apply: general, one-step, and multi-step.

*Acid-Base Chemistry* - ranking acidity/basicity (structure analysis and pH/pKa data analysis), and prediction of products and equilibria

*Aromatics and Bonding* - concept of aromaticity, resonance, atomic/molecular orbitals, hybridization, and bond angles/lengths.

# Organic Chemistry

- Classes to take (Duke)
  - Chem 151L, Chem 152L
- Resources
  - Kaplan DAT Book
  - Examcracker's MCAT Organic Chemistry
  - DATDestroyer
  - Loudon's Organic Chemistry Textbook for Reference

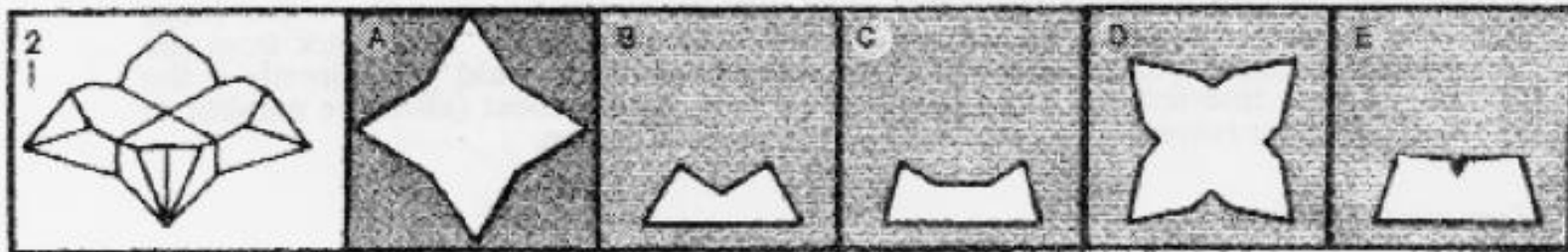
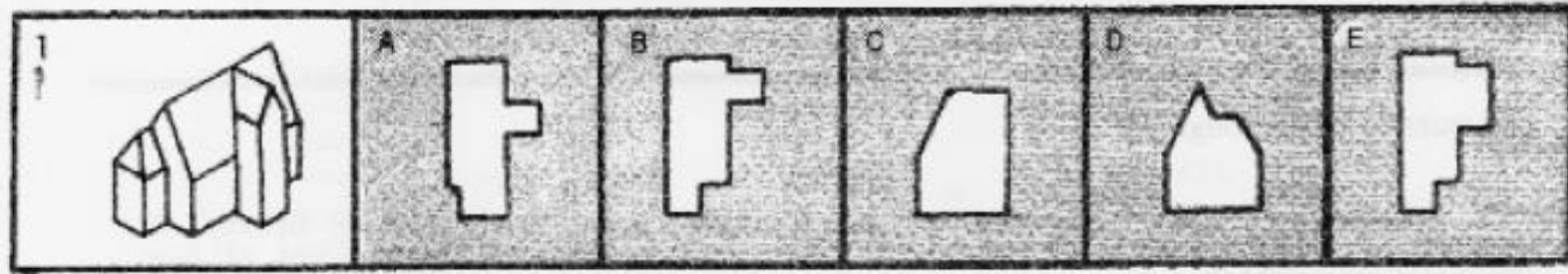
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# Perceptual Abilities Test (PAT)

- 90 questions in 60 minutes
- Six Subtests (15 questions each)
  - Apertures
  - View Recognition
  - Angle Discrimination
  - Paper Folding
  - Cube Counting
  - 3D Form Development

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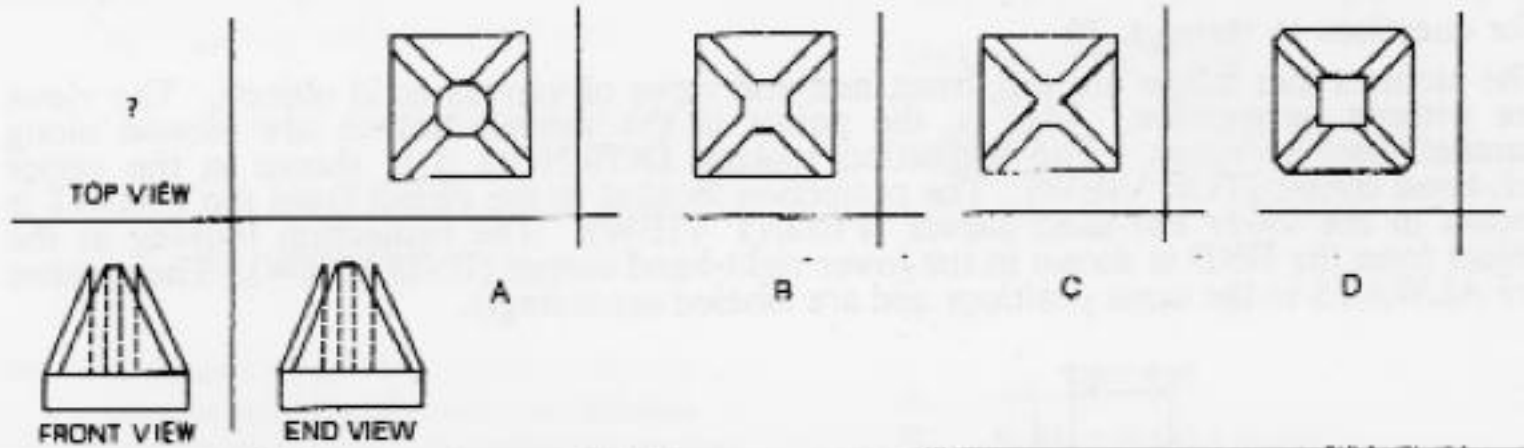
# Apertures



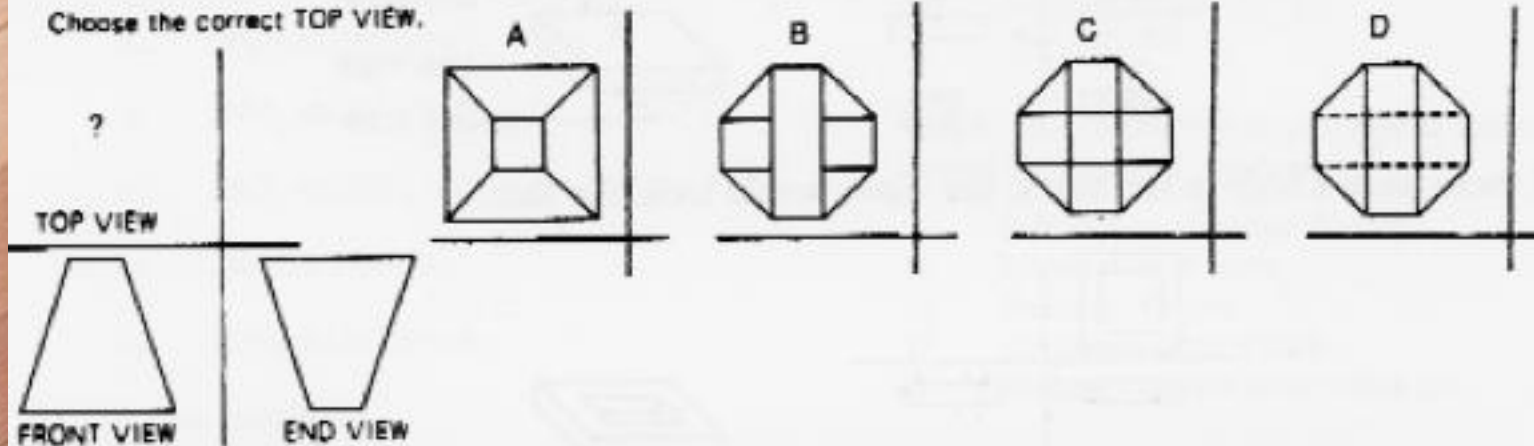
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# View Recognition

Choose the correct TOP VIEW.



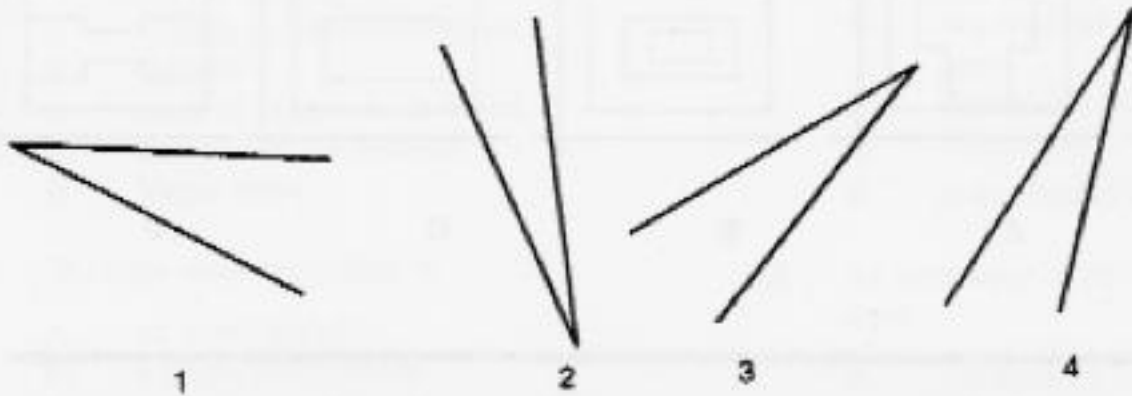
Choose the correct TOP VIEW.



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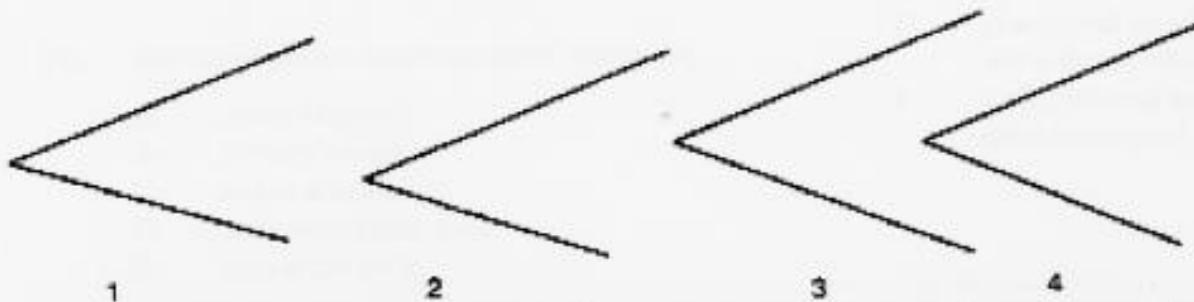
# Angle Discrimination

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- (A) 2 - 1 - 3 - 4
- (B) 2 - 1 - 4 - 3
- (C) 1 - 2 - 3 - 4
- (D) 2 - 4 - 3 - 1

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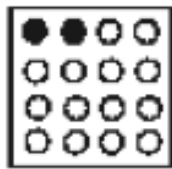
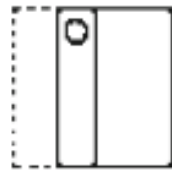
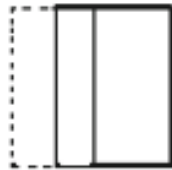


- (A) 2 - 4 - 1 - 3
- (B) 4 - 3 - 2 - 1
- (C) 1 - 2 - 3 - 4
- (D) 3 - 2 - 1 - 4

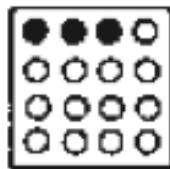
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# Paper Folding

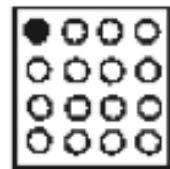
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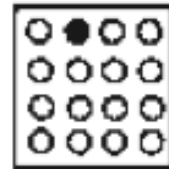
A



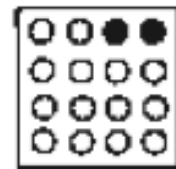
B



C

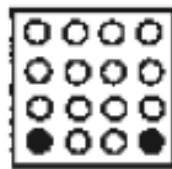
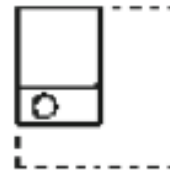
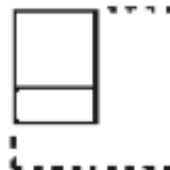


D

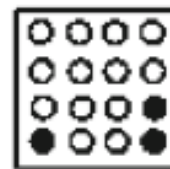


E

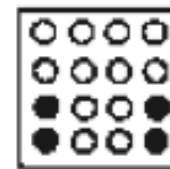
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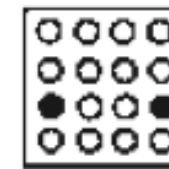
A



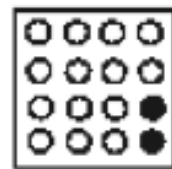
B



C



D



E

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# Cube Counting

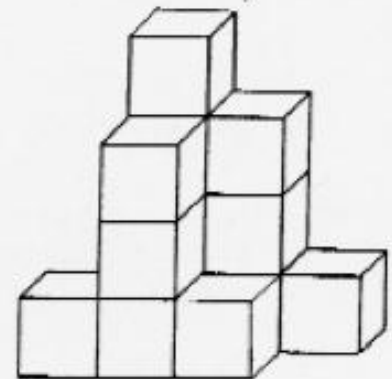
62. In Figure A, how many cubes have two of their exposed sides painted?

- A. 1 cube
- B. 2 cubes
- C. 3 cubes
- D. 4 cubes
- E. 5 cubes

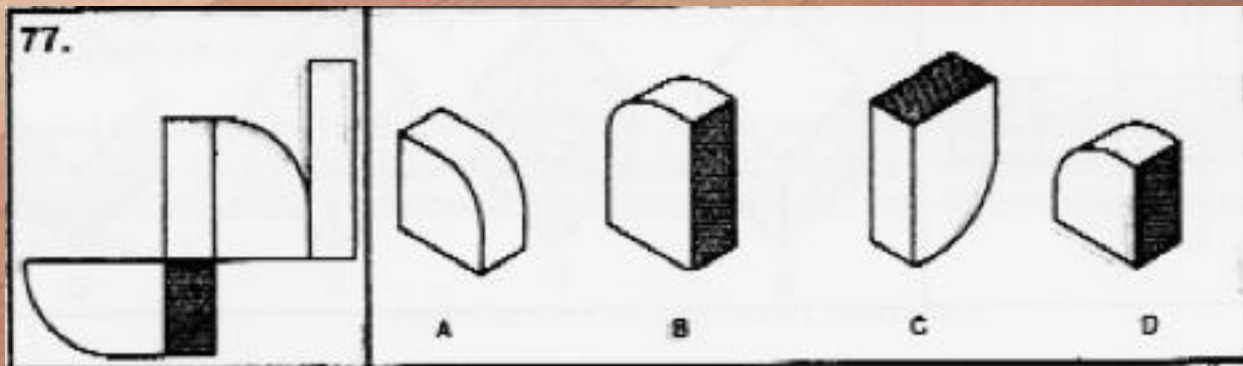
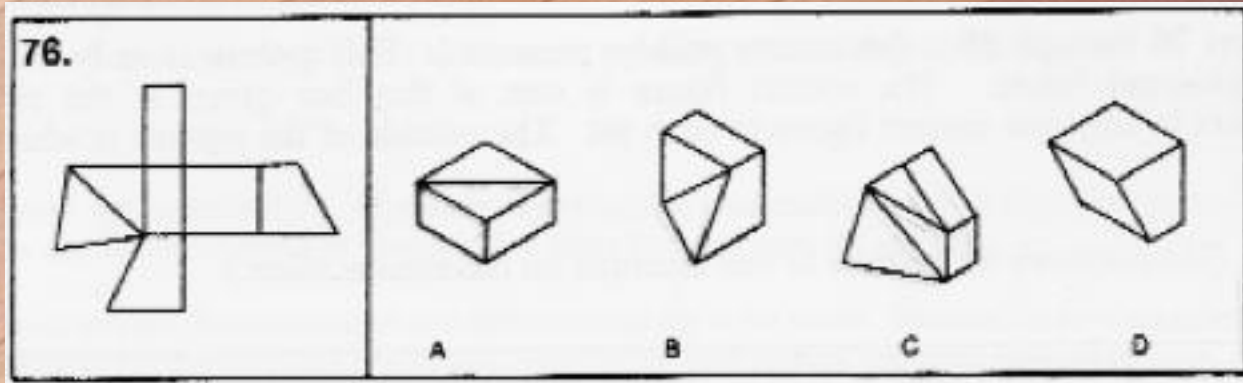
63. In Figure A, how many cubes have three of their exposed sides painted?

- A. 1 cube
- B. 2 cubes
- C. 3 cubes
- D. 4 cubes
- E. 5 cubes

FIGURE A



# 3D Form Development



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# Perceptual Abilities Test (PAT)

- Resources
  - Crack DAT PAT
  - TopScore
  - DAT Achiever
  - Practice problems from any written DAT prep books

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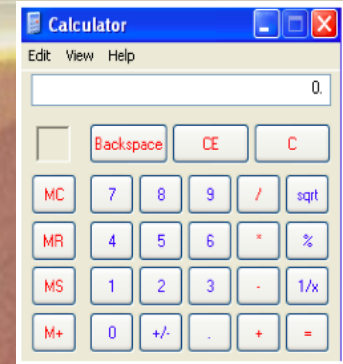
# Reading Comprehension

- 50 questions in 60 minutes
- Three reading passages on scientific topics
- Reading Comprehension Strategies:
  - Just Do It
  - Search and Destroy
  - Do Two and Gamble on Third
- How to Prepare:
  - Read scientific journals like Science or Nature online
  - Take Practice RC tests on the computer (DAT Achiever, TopScore)

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# Quantitative Reasoning

- 40 questions in 45 minutes
- Calculator Available
- What is Covered?



*Mathematical Problems - Algebra* (equations and expressions, inequalities, exponential notation, absolute value, ratios and proportions, and graphical analysis); *Numerical calculations* (fractions and decimals, percentages, approximations, and scientific notation); *Conversions* (temperature, time, weight, and distance); *Probability and Statistics*; *Geometry*; and *Trigonometry*

*Applied Mathematics (Word) Problems*

- Resources
  - Barron's SAT II Math
  - Kaplan DAT
  - Crack DAT Math

# Other Resources

- Full Length Exams!
  - DAT Avengers
  - Topscore
  - Kaplan DAT Book & CD
  - Barron's DAT
  - ADA Sample Test
- More Practice Questions
  - DAT Destroyer
  - Crack DAT PAT
- Kaplan DAT course

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# Self-Study or Kaplan?

- Are you disciplined?
- Can you study consistently on your own schedule?
- Do you learn more efficiently by yourself?
- If you answered no to any/all of these questions, then consider taking a Kaplan course

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# Study tips

- Start at LEAST 2 months prior!
- Find your study zone
- Space out your material
  - One subject at a time (at first)
- Focus on the sciences
- Take lots of practice exams
- Read, test, review

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## Example Study Schedule (2 months)

- Week 1-2: review biology
- Week 3: review gen chem, skim bio
- Week 4: review orgo, skim gen chem/bio
- Week 5: review mostly orgo, math, skim gen chem/bio
  - Start PAT practice
  - Take your first practice DAT exam

## Example Study Schedule (2 months)

- Week 6: skim all study material
  - Take 2 practice exams; test and review
- Week 7-8: TEST TEST TEST

NO 2 HB

A yellow pencil with a black eraser and a black band that says "NO 2 HB" is positioned vertically on the left side of the image. To its right is a transparent, rectangular object, possibly a piece of glass or a clear plastic sheet, which is slightly tilted. The background is a wooden surface with a vertical grain pattern. The text "Thanks for listening! Any Questions?" is written in a bold, black, italicized font across the center of the transparent object.

***Thanks for listening!  
Any Questions?***

NO 2 HB