


## Levels of Learning: Different Types of Test Questions

College-level exams generally include questions at more than one level. For example, some questions will require straight-forward recall of a fact, some questions will ask for the explanation of a concept, and other questions will require the application of what was learned to a new situation. When studying for an exam, it's important to practice answering all the types of questions that will appear on the test.

increasing complexity



Learning task	Typical words in the question	Example from a history class	Example from a biology class	Example from a math class
<b>Remember:</b> Recall fundamental knowledge – concrete facts, dates, definitions, etc.	define, identify, label, match, name, recall, recognize, sort	When was the 4th Amendment ratified?	What is DNA?	What is the difference-quotient definition of the derivative?
<b>Comprehend/Understand:</b> Give the meaning and/or significance of facts, events, and so forth. Be able to explain or summarize them.	discuss, explain, generalize, give examples, interpret, restate, summarize	What is the meaning of the 4th Amendment?	Explain the role of DNA in protein synthesis.	What does the derivative represent with respect to the graph of the original function?
<b>Apply:</b> Use your understanding of a subject to address a new situation.	apply, demonstrate, hypothesize, imitate, predict, relate, show, solve, use	What sorts of realities may have gone into drafting the 4th Amendment?	What would happen if a point mutation turned an amino acid codon into a stop codon?	Find the equation of the tangent line to the graph of $f(x) = x^2$ , at the point $(1, f(1))$
<b>Analyze:</b> Compare one subject's parts, characteristics, overall meaning, and so forth, with another's.	analyze, break down, contrast, discriminate, outline	What may be some common issues between Amendments 3, 4, and 5?	Why does it matter that DNA is antiparallel?	What does each term in the difference-quotient definition of the derivative represent graphically?
<b>Evaluate:</b> Critique or judge a subject, based on its own attributes, and on the ways in which it compares with other subjects.	argue, assess, compare, decide, evaluate, persuade, rate, support, verify	Which Amendment is most relevant to modern society?	Develop an argument against splicing insecticidal genes into the corn genome.	Why is the derivative also said to represent “instantaneous rate of change” and how does this definition compare with the “slope of a tangent line” definition?
<b>Create:</b> Design or invent a new model, scenario, or project based on the subject you've learned.	adapt, combine, compose, design, imagine, plan, synthesize, transform	Argue for or against warrantless wiretapping, based on the 4th Amendment.	Propose a single-gene splice that would create an interesting fish for the pet trade.	The commonly used difference-quotient definition is not unique. Give another representation for the notion of the derivative and sketch a graph labeling the parts of this representation.

## Now it's your turn ...

Use what you know about levels of learning to a) prepare for a test, and b) analyze your results.

Learning task	<b>Before the test: self-test</b> What sorts of questions do you expect on the test? Find/create/share questions at each of those levels.	<b>After the test: analyze</b> Go through your returned test and identify the level of each question.
Remembering		
Understanding		
Applying		

These types of questions are more likely to show up on college-level tests.

## NOW WHAT?

1. Try to answer the questions. Which levels do you find most difficult?
2. Match how you study to the level. For example:
  - *To remember:* make flash cards or create mnemonics.
  - *To understand:* summarize key concepts or teach the material to a friend.
  - *To apply:* see if you can use what you've learned to solve problems.
3. For all levels, practice producing (i.e., writing, saying, explaining, diagramming) information, not just looking it over in your notes.
4. Distribute your studying over several days or weeks.

1. Look for any patterns in the questions you answered correctly to determine your strengths.
2. Then look for any patterns in the questions you missed: Do they tend to be at a particular level? Are they from a particular source (lecture, book, discussion section, homework, etc.)?
3. Identify what levels and/or sources to focus your attention on for future exams. Make a plan for how you will study next time.