AP® Calculus AB Contents

Curricular Requirements

CR1a The course is structured around the enduring understandings within Big Idea 1: Limits.
- See pages 1, 2

CR1b The course is structured around the enduring understandings within Big Idea 2: Derivatives.
- See pages 2, 6

CR1c The course is structured around the enduring understandings within Big Idea 3: Integrals and the Fundamental Theorem of Calculus.
- See pages 7, 8

CR2a The course provides opportunities for students to reason with definitions and theorems.
- See page 4

CR2b The course provides opportunities for students to connect concepts and processes.
- See page 3

CR2c The course provides opportunities for students to implement algebraic/computational processes.
- See page 9

CR2d The course provides opportunities for students to engage with graphical, numerical, analytical, and verbal representations and demonstrate connections among them.
- See pages 2, 3, 9

CR2e The course provides opportunities for students to build notational fluency.
- See page 8

CR2f The course provides opportunities for students to communicate mathematical ideas in words, both orally and in writing.
- See pages 1, 2, 3, 5

CR3a Students have access to graphing calculators.
- See page 1

CR3b Students have opportunities to use calculators to solve problems.
- See page 2

CR3c Students have opportunities to use a graphing calculator to explore and interpret calculus concepts.
- See page 4

CR4 Students and teachers have access to a college-level calculus textbook.
- See page 1

AP CALCULUS AB SYLLABUS

Textbook Requirement

Throughout the syllabus, a parenthetical and italicized section from the following textbook is referenced for each bullet:

Larson, Ron and Bruce Edwards. *Calculus of a Single Variable*. 10th ed. Boston: Brooks/Cole, 2013. **[CR4]**

All students are required to have a copy of this text. Students who cannot afford to buy a text may borrow one after meeting with the business office. It must then be returned on the last day of classes.

Graphing Calculator Requirement

All students are required to have a graphing calculator on the first day of class. Students who cannot afford a calculator will be provided with a TI-83 to use for the academic year. It must be returned on the last day of classes. **[CR3a]**

> **[CR4]** — Students and teachers have access to a college-level calculus textbook.
>
> **[CR3a]** — Students have access to graphing calculators.

BIG IDEA 1: LIMITS

Limits [CR1a: limits]

A. Investigate limits using the following:

- Tables *(1.2 Finding Limits Graphically and Numerically)*
- Graphs *(1.2 Finding Limits Graphically and Numerically)*
- Analysis (e.g., direct substitution, factor and reduce, rationalize, special limits, and squeeze theorem) *(1.3 Evaluating Limits Analytically)*

Activity: Once students understand limits, they are given an oral quiz that is presented to the entire class. Each student is given a separate problem. Students must describe how to find a limit for the given function (which may be presented algebraically, graphically, or numerically) and explain what the limit means in the context of the problem. **[CR2f: oral]**

> **[CR1a]** — The course is structured around the enduring understandings within Big Idea 1: Limits.
>
> **[CR2f]** — The course provides opportunities for students to communicate mathematical ideas in words, both orally and in writing.

B. Infinite limits

- Limits that approach $\pm\infty$ *(3.5 Limits at Infinity)*
- Limits as x approaches $\pm\infty$ *(1.5 Infinite Limits)*
- Emphasize graphical (asymptotes), numerical, and analytical approaches to such limits *(3.5 Limits at Infinity and 1.5 Infinite Limits)*
- Discuss asymptotes/unbounded behavior in terms of graphical behavior as well as in terms of limits *(3.5 Limits at Infinity and 1.5 Infinite Limits)*
- Compare unbounded growth and rates of change (e.g., polynomial vs. exponential growth, etc.) *(3.5 Limits at Infinity and 1.5 Infinite Limits)*

Activity: Students are grouped in pairs. One student is given a function and asked to analytically determine its limit. The other student graphs the function on a calculator and determines the limit by inspecting the graph. **[CR3b]** They then share answers and explain how they arrived at their solutions. For the next problems, students switch so that each takes a turn using the calculator. This is especially useful in visualizing the ways in which various limits do not exist.

> **[CR3b]** — Students have opportunities to use calculators to solve problems.

C. Continuity [CR1a: continuity]

- Discuss intuitive approach to continuity *(1.4 Continuity and One-Sided Limits)*
- Define in terms of limits; Discuss graphical, numerical, and analytical interpretations using a variety of activities and examples *(1.4 Continuity and One-Sided Limits)*
- Removable and non-removable discontinuities *(1.4 Continuity and One-Sided Limits)*
- Intermediate Value Theorem *(1.4 Continuity and One-Sided Limits)*
- Extreme Value Theorem *(1.4 Continuity and One-Sided Limits)*

Activity: Continuity is discussed, and, in a subsequent lab, students are given a set of functions, some presented as formulas and some as graphs. **[CR2d: analytical, graphical]** Students discuss the continuity of each function with members of their group. **[CR2f: oral]** Then as a group, students write a "question" for another group, asking the other group to create a function satisfying continuities and discontinuities at certain values. They may include certain limits they want to exist and other qualities they want the function to possess. The other group creates this function, presents it to the class, and leads a discussion around their solution.

Activity: Students are given a worksheet to help them discover the IVT and EVT. They are given two points and asked to create a continuous function passing through them, then respond to questions such as, "Given a y value of 4, is there a corresponding x value?" or "Must your function have a max? Why or why not?" The questions guide students to discover the IVT and EVT for their graph. They are given the same two points and asked to draw a function which is not continuous, but passes through both points, and asked to respond to the same questions. Students complete an "exit" ticket where they submit written statements of both theorems in their own words and describe real-world examples of each. At the start of the next class, a few students are chosen to present their exit ticket answers to their classmates as a way of reviewing the previous day's lesson. **[CR2f: oral]**

Evaluation: One quiz, one test, weekly free response questions, daily homework, and daily classwork.

> **[CR1a]** — The course is structured around the enduring understandings within Big Idea 1: Limits.
>
> **[CR2d]** — The course provides opportunities for students to engage with graphical, numerical, analytical, and verbal representations and demonstrate connections among them.
>
> **[CR2f]** — The course provides opportunities for students to communicate mathematical ideas in words, both orally and in writing.

BIG IDEA 2: DERIVATIVES

Derivatives and Rates of Change [CR1b: derivatives]

A. What is a rate of change?

- Average rate of change vs. instantaneous rate of change, and how instantaneous rate of change is the limit of the average rate of change *(2.1 The Derivative and Tangent Line Problem)*
- Relate graphically to slope

B. Finding slopes of tangent lines using two limits

$\lim_{h\to 0}\frac{f(x+h)-f(x)}{h}$

$\lim_{x\to a}\frac{f(x)-f(a)}{x-a}$ *(2.1 The Derivative and Tangent Line Problem)*

Activity: Students display a graph on their computer, "draw" in a secant line, and animate the picture to see how the secant lines morph into the tangent line as h approaches 0.

Activity: Students are each given one of the two definitions of the derivative. From this limit they must orally explain what the limit represents. That is, they must state that it is the derivative, tell the function that is being differentiated, and give the point (if applicable) at which it is being differentiated.

C. Derivative

- Introduce the term "derivative" and connect to the above limits *(2.1 The Derivative and Tangent Line Problem)*
- Practice calculating derivatives using the definition *(2.1 The Derivative and Tangent Line Problem)*
- Understand what it means to take a derivative at a point (slope of a curve) *(2.1 The Derivative and Tangent Line Problem)*
- Estimate and calculate derivatives using a table, including vertical and horizontal tangents and tangents that do not exist *(2.1 The Derivative and Tangent Line Problem and 2.2 Basic Differentiation Rules and Rates of Change)*
- Estimate and calculate derivatives using a graph, including vertical and horizontal tangents and tangents that do not exist *(2.1 The Derivative and Tangent Line Problem and 2.2 Basic Differentiation Rules and Rates of Change)*
- Interpret the meaning of derivative in various word problems – how to look at the "units" in the word problem and explain orally and in writing what they mean in relation to the derivative (e.g., feet/hour, coffee beans/year, etc.); Explore how the derivative at a point can be used to predict the cost (etc.) of producing the next object *(Use past Free Response Questions)*
- Local linear approximation *(Use past Free Response Questions)*

Activity: Students are given a lab in which they must calculate derivatives using the definition, tables, and graphs. **[CR2d: analytical, numerical, graphical]** Real-life examples are also included, and students must clearly interpret the derivative's meaning using the proper units. Students discuss their answers in pairs.

Activity: Several worksheets are given to students with four "boxes." A function is listed at the top of the page. In each box, the student must express both the function and its derivative using algebra, a table, and graphs, and then describe the connection between the function and its derivative in complete sentences. **[CR2b] [CR2d: graphical, analytical, numerical, verbal] [CR2f: written]**

[CR1b] — The course is structured around the enduring understandings within Big Idea 2: Derivatives.

[CR2d] — The course provides opportunities for students to engage with graphical, numerical, analytical, and verbal representations and demonstrate connections among them.

[CR2b] — The course provides opportunities for students to connect concepts and processes.

[CR2f] — The course provides opportunities for students to communicate mathematical ideas in words, both orally and in writing.

D. Differentiability

- Investigate what it means for a function to be differentiable
- Local linearity
- Differentiability as compared to continuity
- Piecewise functions
- Understand differentiability using limits (analytically), graphs, tables (numerically), and be able to explain why functions are not differentiable both orally and in written words

Activity: Students are given a lab in which they must use their calculators to explore the local linearity of functions to try to determine their differentiability. **[CR3c]** They then discuss the continuity of the same functions. The lab guides them to the conclusion that differentiability implies continuity; however, continuity does not necessarily imply differentiability. **[CR2a]**

Evaluation: Two quizzes, daily homework, free-response questions, and daily classwork.

> **[CR3c]** — Students have opportunities to use a graphing calculator to explore and interpret calculus concepts.

> **[CR2a]** — The course provides opportunities for students to reason with definitions and theorems.

Differentiation Rules and Motion on a Line

A. Constant and power rules

- Find the derivatives of basic functions and notice patterns in order to develop these rules

Activity: Students use the calculator to look at a function and its derivative on the same axis in order to connect the power rule to its graphical counterpart.

B. Derivatives of trigonometric functions (sine and cosine)

- Look at these graphically, numerically, and using the definition

C. Product and quotient rules

- Develop rules from the limit definition
- Use these rules to find the derivatives of the other trigonometric functions

Activity: The product and quotient rules are proven in a traditional manner after following an activity that asks students to use their calculators to consider a function, $h(x)$, that is approximated by the product of the local linear approximations of two other functions, f and g, in an attempt to discover the formula for the product rule before it's analytic proof. **[CR3c]** When they determine the product of these approximations and consider its derivative at a point a, they have essentially derived the product rule. Students use linear approximations as a way of comprehending nonlinear functions.

> **[CR3c]** — Students have opportunities to use a graphing calculator to explore and interpret calculus concepts.

D. Higher ordered derivatives

- Use correct notation and interpret such derivatives
- Calculate derivatives at specific points using calculators

E. Chain rule

- Understand the rule
- Distinguish chain rule problems from the ones students have previously seen

F. Motion on a line

- Understand a vector quantity
- Velocity
- Speed
- Acceleration
- Speeding up and slowing down
- Displacement vs. total distance
- Move left/right, changing direction
- Discuss these concepts from an analytical perspective, and look at them graphically and numerically (tables); Relate them to the physics course and compare the terms as they are used by "lay people" (e.g., accelerate means speed up) vs. the terms as they are used in science and mathematics

Activity: Working in pairs, students are given past free-response questions. These questions require students to answer velocity/acceleration problems – both given graphs and given a verbal problem. Students must incorporate their knowledge and skill using the first and second derivatives to solve these problems. All answers are required to be given in complete sentences. **[CR2f: written]** They then trade with a partner who grades their problems and discusses why their explanations and mathematical support may or may not be clear. **[CR2f: oral]** All problems are submitted.

> **[CR2f]** — The course provides opportunities for students to communicate mathematical ideas in words, both orally and in writing.

G. Motion in two dimensions

- Vectors
- Parametric representation of velocity and acceleration

Evaluation: One test, three to four quizzes, daily homework, and daily classwork.

Past Free Responses Covered: 2008(A) AB-4; 2007(B) AB-2; 2006(A) AB-4; 2006(B) AB-6; 2005(A) AB-5; 2005(B) AB-3; 2004(A) AB-3; 2004(B) AB-2; 2003(A) AB-2; 2003(B) AB-4; 2002(A) AB-3; and 2002(B) AB-3.

More Differentiation and Curve Sketching

A. Implicit differentiation

- Process emphasizes use of the chain rule

B. Derivatives of inverse functions

- Use of implicit differentiation to find the derivative of an inverse function
- Derivatives of the inverse trigonometric functions

C. Derivatives of logarithmic functions

- Both the natural log and logs of other bases
- Logarithmic differentiation (if time permits)

D. Derivatives of exponential functions

- Base e and other bases

E. Curve sketching

- Sketch f' given a graph of f

- Discuss and explore increasing and decreasing behavior in relation to a function’s first derivative; Introduce term “monotonic”; Analysis of curves
- Discuss and explore concavity in relation to a function’s second derivative; Analysis of curves
- Find local and absolute maxima and minima
- Analyze points of inflection
- Compare characteristics of a function and its first and second derivatives
- Sketch f given f' or f''
- Sketch graphs given functions
- Translate equations utilizing derivatives into verbal descriptions and vice versa

Activity: Students use a ruler to find slope at different points, then plot the points on a new graph. They write their observations and make inferences about the behavior of the graph of f' in relation to the graph of f.

Activity: To introduce the second derivative test, students examine a series of graphs of f, f', and f'' and in groups discuss the graphs and make connections among them. The groups then present their discoveries to the class.

Activity: Students are given worksheets where they must draw f' given f and then draw f given f' and considering f''.

Activity: Once students understand the connections between f, f', and f'', they work in pairs to graph functions using the first and second derivative tests, with limits to infinity and relative and absolute extrema clearly marked. Intercepts, points of inflection, and asymptotes must be clearly identified and supported with calculus concepts.

Evaluation: One test, three quizzes, daily homework, and daily classwork.

Past Free Responses Covered: 2008(A) AB-2; 2008(A) AB-3; 2008(B) AB-2; 2008(B) AB-3; 2007(A) AB-2; 2007(A) AB-5; 2007(B) AB-3; 2006(A) AB-2; 2006(B) AB-4; 2005(A) AB-2; 2005(A) AB-3; 2005(B) AB-2; 2004(A) AB-1; 2004(B) AB-2; 2003(A) AB-3; 2003(B) AB-2; 2003(B) AB-3; and 2002(A) AB-2.

Applications of Derivatives

A. The Mean Value Theorem [CR1b: Mean Value Theorem]

- Discuss graphical interpretation and geometric consequences (*3.2 Rolle’s Theorem and Intermediate Value Theorem)*

Activity: The MVT is introduced by giving students a polynomial graph and asking them to draw a secant line through two given points. Students consider how many tangent lines can be drawn to the curve that will be parallel to this secant line. The MVT is given, and the hypotheses and conclusions are discussed. In pairs, students are given a variety of graphs on closed intervals, some of which satisfy the hypotheses of the MVT and others that do not. Each student must find the points that satisfy the MVT and sketch in relevant tangent lines. They then discuss their answers with their partners and as a class to reinforce the idea that the MVT applies only if certain conditions are satisfied. Students are given two follow-up problems in which a table of values is presented. The questions require students to apply the MVT in the context of a real-world problem (e.g., Is there a time when $r'(t)$ is 0?, etc.).

[CR1b] — The course is structured around the enduring understandings within Big Idea 2: Derivatives.

B. Related rates

- Analyze rates of change using a variety of examples and real-world applications

Activity: A lab is given where students must match a related rate problem to its picture and to its derivative. Once students have successfully matched these, they work in groups to solve the related rates problems.

C. Optimization

- Solve a variety of word problems requiring students to examine both local and absolute extrema

Activity: Working in groups, students are given a lab to complete. They must find the maxima and minima of various functions using the derivative. They are required to determine the various functions given a real-world problem (e.g., cost, revenue, or volume) and support their claims with clear derivatives and full sentences. Discussion among members of their group is required.

D. Differentials

- Discuss analytical and graphical meanings of differentials; Revisit local linear approximations

E. L'Hospital's Rule

- The indeterminate forms $\frac{0}{0}, \frac{\infty}{\infty}$; Emphasize the use of L'Hospital's Rule in evaluating limits
- Discuss rational functions and L'Hospital's Rule, motivated by considering local linearity

Activity: Students consider functions $y = \sin(2x)$ and $y = x$. They consider the ratio of the functions as x varies. Then they look at the functions on their calculators and zoom in until both functions appear linear. They again consider the ratio of the functions as x varies in this small neighborhood of a given x value. In this way, students can "see" L'Hospital's Rule prior to exposure to a formal proof.

Evaluation: One test, two quizzes, daily homework, and daily classwork.

Past Free Responses Covered: 2002(A) AB-5; 2002(B) AB-6; 1999 AB-6; 2008(A) AB-2; 2008(A) AB-3; 2008(B) AB-2; 2008(B) AB-3; 2007(A) AB-2; 2007(A) AB-5; 2007(B) AB-3; 2006(A) AB-2; 2006(B) AB-4; 2005(A) AB-2; 2005(A) AB-3; 2005(B) AB-2; 2004(A) AB-1; 2004(B) AB-2; 2003(A) AB-3; 2003(B) AB-2; 2003(B) AB-3; and 2002(A) AB-2.

BIG IDEA 3: INTEGRALS AND THE FUNDAMENTAL THEOREM OF CALCULUS

Integration [CR1c: integrals]

[CR1c] — The course is structured around the enduring understandings within Big Idea 3: Integrals and the Fundamental Theorem of Calculus.

A. Estimating with finite sums

- Emphasize area and discussion of units *(4.2 Area)*
- Introduce the idea of "accumulation" of area and Riemann sums and estimate areas using left, right, midpoint, and trapezoidal sums; Problems include functions represented graphically, algebraically, and using a table of values *(4.2 Area)*

Activity: Students work in groups to compute Riemann sums (i.e., midpoint, left, right, and trapezoidal) when given functions and tables. Each group presents the results of one problem to the class.

B. The definite integral

- Develop and define using a limit of Riemann sums: $\lim_{n\to\infty} \sum_{i\to 1}^{n} f(c_i)\Delta x$ *(4.3 Riemann Sums and Definite Integrals)*
- Discuss the integral of a rate of change over an interval as the accumulated change of the quantity over the interval with an emphasis on units *(4.3 Riemann Sums and Definite Integrals)*

- Discuss basic properties of definite integrals with graphical support *(4.3 Riemann Sums and Definite Integrals)*
- Calculate definite integrals using calculators

Activity: Each student is given a limit in the form of the definition of the definite integral. From this limit they must orally explain what the limit represents. That is, they must state that it is the integral, tell the function that is being integrated, and give the interval over which it is being integrated.

C. Antiderivatives and indefinite integrals

- Notice patterns and find basic antiderivatives *(4.1 Antiderivatives and Indefinite Integration)*
- Explore the difference between antiderivatives and definite integrals *(4.1 Antiderivatives and Indefinite Integration)*
- Answer "Why +C?" both analytically and graphically *(4.1 Antiderivatives and Indefinite Integration)*

D. The Fundamental Theorem of Calculus [CR1c: Fundamental Theorem of Calculus parts 1 and 2]

- If f is continuous on $[a, b]$, then the function g defined by $g(x) = \int_a^x f(t)dt$ is an antiderivative of f. That is, $g'(x) = f(x)$ for $a < x < b$. *(4.4 The Fundamental Theorem of Calculus – Part II)*
- If f is continuous on $[a, b]$, then $\int_a^b f(x)dx = F(b) - F(a)$ where F is any antiderivative of $f(x)$ *(4.4 The Fundamental Theorem of Calculus – Part I)*
- Evaluate definite integrals using the Fundamental Theorem *(4.4 The Fundamental Theorem of Calculus)*
- Tie together both definite and indefinite integrals using the Fundamental Theorem *(4.4 The Fundamental Theorem of Calculus)*
- Use the Fundamental Theorem to represent a particular antiderivative and to analyze functions both analytically and graphically *(4.4 The Fundamental Theorem of Calculus)*

Activity: Use Steve Olsen's activities to motivate the Fundamental Theorem of Calculus as outlined in the Special Focus series published by the College Board. In this way, students discover that the rate of change of the area function $A(x) = \int_a^x f(t)dt$ is $f(x)$ itself. Multiple AP Free-Response Questions (FRQs) are used to support and practice the application of the Fundamental Theorem of Calculus.

Activity: Students are given a lab of past free-response questions in which they must use the Fundamental Theorem of Calculus. Within these problems, they are often required to calculate a definite integral with their calculators. In addition, they must answer questions about extrema and inflection points of g using calculus if given a function $g(x) = \int_a^x f(t)dt$ **[CR2e]** and a graph of f.

> **[CR1c]** — The course is structured around the enduring understandings within Big Idea 3: Integrals and the Fundamental Theorem of Calculus.
>
> **[CR2e]** — The course provides opportunities for students to build notational fluency.

E. Integration by substitution

- Practice distinguishing when to use this approach vs. when not to
- Practice using substitution in integrating a variety of functions (e.g., exponential, trigonometric, logarithmic, etc.)
- Develop an understanding that integration by substitution "undoes" the chain rule
- Discuss why it is necessary to change the limits of integration on the integral

F. Integration by parts

- Emphasize when to use this method as compared to substitution

G. Integration by partial fractions

- Emphasize linear, non-repeating factors
- If time, address other factors

H. Trigonometry and integration (if time permits)

- If time, explore trig substitution along with powers of sine and cosine

I. Improper integrals

- View as a limit of a definite integral
- Revisit L'Hospital's Rule when discussing the convergence of improper integrals

J. The average value of a function

- Discuss analytically and interpret graphically, verbally, and numerically; Activities support these perspectives

K. Problem solving and application

- Revisit motion on a line and reinterpret total distance and displacement using integration
- Discuss various economic and other applications; Emphasize interpretation of the integral of a rate as accumulated change – this is reinforced using units and area under the curve; Make connections back to the Riemann sum

Activity: Students are given a lab in which they must calculate definite integrals using the definition, tables, and graphs. **[CR2c]** Real-life examples are included, and students must clearly interpret the integral's meaning using the proper units. In pairs, students discuss their answers.

> **[CR2c]** — The course provides opportunities for students to implement algebraic/computational processes.

Evaluation: One test, three to four quizzes, daily homework, and daily classwork.

Past Free Responses Covered: 2008(B) AB-5; 2007(B) AB-4; 2006(A) AB-3; 2005(B) AB-4; 2004(A) AB-5; 2004(B) AB-4; 2003(A) AB-4; 2003(B) AB-5; 2002(A) AB-4; and 2002(B) AB-4.

Other Applications of Integration

A. Differential equations

- What is a differential equation?
- Separation of variables; Emphasize exponential growth
- Particular vs. general solutions (use of initial conditions) and application problems
- Slope fields and their relationship to solution curves for differential equations
- Explore logistic differential equations and models that use them
- Euler's method

Activity: After being introduced to the idea of a slope field, students are given a series of differential equations, asked to draw the slope field, and then describe its solution curve. They then analytically solve the differential equation to reinforce their assertions. **[CR2d: connection between graphical and analytical]** To emphasize the usefulness of slope fields, students are then given a differential equation they cannot solve and asked about the solution curves. They quickly sketch the slope field to answer probing questions and understand their purpose.

> **[CR2d]** — The course provides opportunities for students to engage with graphical, numerical, analytical, and verbal representations and demonstrate connections among them.

B. Area

- Reemphasize area under a curve as well as the area between two curves
- Discuss curves that are a function of both x and y
- Consider polar curves

Activity: Students must travel to different stations in the classroom with a partner and calculate different areas between two curves. Some problems require students to calculate the intersection points of the curves and the area using the integral feature of their calculators, while other problems require students to calculate the area in two different ways.

C. Volume

- Use known cross sections
- Explore cross sections more deeply in solids formed by revolving regions around axes; Discuss discs/washers using curves that are functions of both x and y.
- Shells

Activity: Students build their own 3-D shapes to visualize volume using cross sections.

Activity: If time permits, students find a vase and calculate its volume by tracing it to determine its function as if it were revolved around the x or y axis. They use data points to calculate this function using regression and use calculus to integrate the function to calculate its volume.

Activity: Students are asked to calculate the volume created by revolving a region around different vertical and horizontal axes. Some problems require them to calculate the volume of the same region around the same axis using both washers and shells.

Evaluation: Two tests, three quizzes, daily homework, and daily classwork.

Past Free Responses Covered: 2008(A) AB-1; 2008(B) AB-1; 2007(A) AB-1; 2007(B) AB-1; 2006(A) AB-1; 2006(B) AB-1; 2005(A) AB-1; 2005(B) AB-1; 2004(A) AB-2; 2004(B) AB-1; 2004(B) AB-6; 2003(A) AB-1; 2003(B) AB-1; 2003(A) AB-1; 2002(B) AB-1; 2008(A) AB-5; 2007(A) AB-4; 2007(B) AB-5; 2006(A) AB-5; 2006(B) AB-5; 2005(A) AB-6; 2005(B) AB-6; 2004(A) AB-6; 2004(B) AB-5; 2003(A) AB-5; 2003(B) AB-6; and 2002(B) AB-5.

Review

The remainder of the year is dedicated to review for the AP exam. Students take two to three practice tests and six quizzes covering a variety of topics. They review in small groups, discussing methodology and approach with both their classmates and teacher.

In order to review, students are given a packet of old free-response questions from 2003-2013 and are expected to complete them and submit them on the day of the AP exam.