

Board of Education Curriculum, Assessment & Professional Practices Committee Meeting

Thursday, April 25, 2024 6:00 PM

Board of Education Conference Room E, Live Stream:

<http://devos2.bethel.k12.ct.us/show?video=763ff4de0370> Materials can be viewed at: <https://meetings.boardbook.org/Public/Organization/2425> The opportunity for members of the public wishing to make comments can attend and comment in-person or may send public comments to the Board via email or letter and it will be included as part of the record of the meeting., 1 School Street, PO Box 253, Bethel, CT 06801

1. **Precalculus Textbook**

2. **Algebra II Curriculum**

3. **Science Curriculum:**

1. **Environmental Science Curriculum**
2. **Forensics Curriculum**
3. **Physical Science Curriculum**

4. **AP Environmental Textbook**

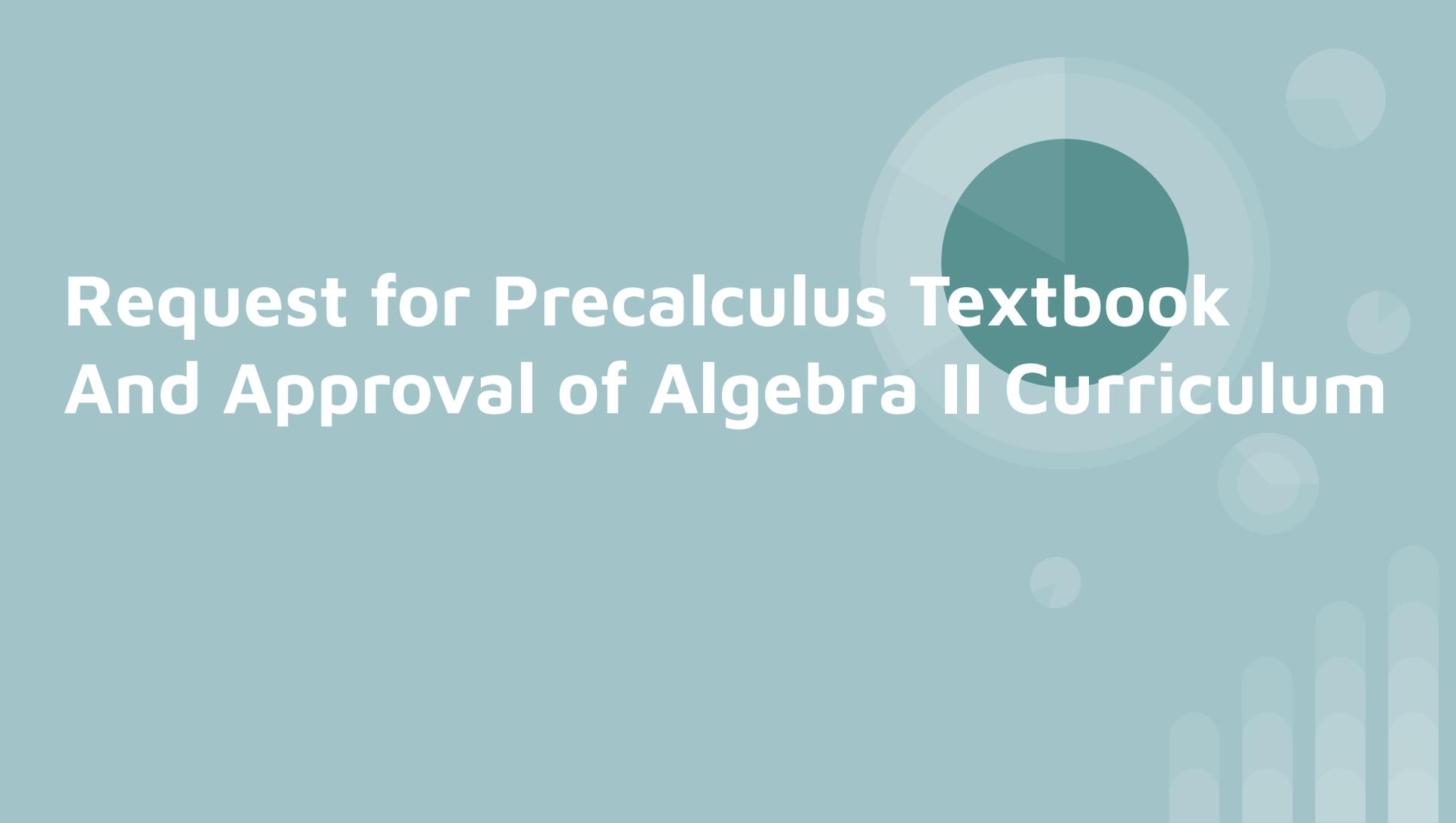
5. **Korean Collaborative Program**

6. **New Business**

7. **Public Comment**

(Please note: The Board welcomes Public Comment and asks that speakers please limit their comments to 2 minutes. Speakers may offer objective comments of school operations and programs that concern them. The Board will not permit any expression of personal complaints or defamatory comments about Board of Education personnel and students, nor against any person connected with the Bethel Public School System.)

8. **Adjourn**



Request for Precalculus Textbook And Approval of Algebra II Curriculum



Agenda

- Request for new Precalculus textbook and online resource
- Approval of Algebra II curriculum



Selection Process

- Formed a selection committee of our current Precalculus Teachers
- Each member reviewed the different textbooks and additional resource.
- Member of the Math Honors Society reviewed the books to get a student perspective
- Committee decided on a favorite book and piloted a unit with their classes
- Had a virtual meeting with the sales representative and a MyMathLab representative



Precalculus Graphing, Numerical, Algebraic

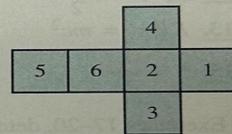
- AP Edition: Written in conjunction with College Board
- Well written, worked out examples are challenging and easy to follow
- Explorations, Group work, Challenge Problems
- Textbook follows a very similar order to our current curriculum
- Variety of challenging problems associated with a variety of different applications
- Worked out examples in the text directly related to practice problems
- Access to data sets
- MyMathLab

Sample Problem

Using a Polynomial to Model the Rolls of a Die

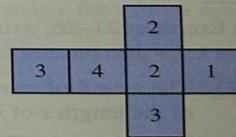
We can write a polynomial expression to represent a die—or other device, like a spinner or a coin, that produces random numbers. A **die** (singular of *dice*) is a polyhedral object with numbers on its faces. The die can be rolled to generate random numbers. The die is **fair** if each face (side) is equally likely to be rolled. We assume fair dice, spinners, and so on, unless otherwise stated. A standard 6-sided die is shown in Figure 10. A 4 has been rolled because a 4 is facing up.

We can represent this standard 6-sided die using a **net**. (This *net* is what we'd get if we could unfold the die onto a flat surface. Dots or numerals can be used for the numbers.)

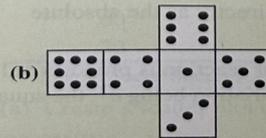
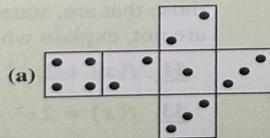


To model the possible *outcomes* of rolling this standard 6-sided die, we use the **outcome polynomial** $1x^6 + 1x^5 + 1x^4 + 1x^3 + 1x^2 + 1x^1$. For each term in this polynomial, the *exponents* (powers of x) represent the numbers (1–6) on the faces of the die. The *coefficient* of each term tells us how many faces have that number on them. Therefore, the sum of the coefficients must equal the number of faces on the die.

Now consider the *nonstandard* 6-sided die given by the net at right. The polynomial that represents this unusual die is $1x^4 + 2x^3 + 2x^2 + 1x^1$. Remember, for each term in the polynomial, the exponent gives the number on the face, and the coefficient tells us how many faces have that number.



1. The outcome polynomial $2x^5 + 3x^4 + x^3 + 4x^2 + 2$ models a particular die. Describe the die, including the number of sides on the die and how many faces have each number. [*Hint*: Think of the last term as $2x^0$.]
2. Below are nets for two different dice. Write an outcome polynomial for each die.



3. For the pair of dice in part 2, how many ways can a sum of 6 be rolled?
4. How many ways can doubles occur when these two dice are rolled?



MyMathLab

- Online access to the entire textbook
- Teachers can create homework assignments from the Publisher's entire library (1 problem from book and the rest can be from any other)
- Videos, additional instructional tools, extra practice, and other helpful tools to assist students in learning the material
- Customizable Homework
 - Teacher creates an assignment
 - Student gets the assignment
 - Same concept for everyone but all have different numbers and variables
 - Students can help each other but will not be able to copy each other



Cost Estimate

Description	Unit Cost	Quantity	Subtotal
Precalculus Student ed with MyMathLab	\$238.47	60	\$14,308.20
Teacher's Edition	\$148.47	4	\$593.88
MyMathLab	\$127.47	90	\$11,472.30
Shipping	\$1,266.68	1	\$1,266.68
Total			\$27,641.06



Professional Learning

Curriculum Writing

- Summer curriculum time
- Current and Future Precalculus teachers
- Ensure all curriculum documents are created using the UBD process and aligned to the new textbook

Publisher workshops

- Virtual asynchronous activation session (complimentary)
- Two-hour virtual live activation session (cost)



Algebra II Curriculum

Algebra II is one of our most important math courses at BHS. Algebra II takes students to the next level in their algebraic reasoning. The curriculum moves students from linear functions to quadratics and other more challenging functions. It provides students with the necessary skills to be successful in any STEM related course. Successful completion of the Algebra II curriculum gives students most of the necessary skills needed to see success on the PSAT/SAT.



Math Course Sequence Options

- Algebra I, Algebra II, Geometry, Precalculus and/or Statistics
- Algebra I, Algebra II, Geometry, Elementary Discrete Math, Data Science
- Algebra I, Algebra II, Geometry, College Algebra, Data Science
- Algebra I, Algebra II, College Algebra, Geometry
- Algebra II, Geometry, Precalculus, Calculus and/or Statistics
- Integrated Math I, Integrated Math II, Financial Algebra I, Financial Algebra II



Algebra II Links

[Algebra II Curriculum Folder](#)

[Algebra II Curriculum Map](#)

[Algebra II Performance Task - Parabola Selfie](#)



Units of Study

Unit 1 - Sequences and Function

Unit 2 - Introduction to Quadratics

Unit 3 - Quadratic Equations

Unit 4 - Polynomials and Rational Functions

Unit 5 - Complex Numbers and Rational Exponents

Unit 6 - Exponential Equations and Functions

Unit 7 - Transformations of Functions

Bethel Public School

Textbook or Instructional Resource Adoption Form

Please use as much space as needed to complete the questions. When the form is complete, please email it to Dr. Brooks and send one hard copy with signatures in the interoffice mail. If you need any assistance with any part of the form, please contact Dr. Brooks.

1. Title of Currently Used Textbook/Instructional Resource:
Precalculus with Limits 3rd edition by Ron Larson
2. Title of Proposed Textbook/Instructional Resource:
Precalculus Graphical, Numerical, Algebraic - AP Edition by Demana et al.
3. Subject Area:
Mathematics
4. Course:
Precalculus 31 & 42
5. Grade Level:
High School
6. Author(s):
Demana, Waits, Foley, Kennedy, Gorsuch, Phelps
7. Publisher:
Pearson
8. Unit Cost of Textbook or Unit Cost of the Instructional Resource:
Textbook with MyMathLab - \$238.47
Teacher's Edition - \$148.47
MyMathLab for School 6yr - Digital Delivery Access \$127.47
9. Number of Textbooks/Instructional Resource Materials Needed:
60 Textbooks and MyMathLab
4 Teacher's Edition
90 Additional MyMathLab
10. Total Cost (including estimated shipping):
\$27,641.06
11. What specific selection criteria were established by the Selection Committee for a new textbook or instructional material? (enumerate below)

The selection committee was looking for well written easy to follow text.
A variety of different problems covering a topic.
Worked out examples that were annotated and easy to follow.
Course progression that followed or closely matched our current curriculum.
Valuable online resources that can assist students, enhance content and access to the textbook.
Textbooks that are currently accepted by College Board and UConn for use in their Precalculus course.

12. List the names of the Selection Committee members:

Michele Bradshaw, Kathleen Ciskowski, Jonathan DosSantos, Jason Gill, Dr. Reine Issa

13. Has the Selection Committee carefully vetted this textbook/instructional resource using the established criteria?

Yes. Teachers had a Math Honors Society student review the textbook and create a list of pros and cons for each textbook. Representative from Savvas Learning presented to the group about MyMathLab. The presentation showed the extensive amount of resources and material available to teachers and students. Changed the minds of two teachers about MyMathLab's usefulness in our course. Textbook projects and activities were good examples of real world applications of the content.

14. Is there a digital component to this textbook that would collect student information (names, email, date of birth, address, etc.) or house student content?

- a. Did you review the status of the application or software program on our website to see if it has already been approved for use?

Yes, it has not been approved yet.

- b. If not, did you go through the Bethel Public School's resource review process to have it approved?

Submitted the application to have the resource evaluated for approval
3/13/24

15. What other textbooks or instructional resources were reviewed during the selection process? (list them below)

Precalculus with Limits 8e A Graphing Approach Larson

Precalculus Blitzer

Precalculus Sullivan

Precalculus Enhanced with Graphing Utilities Sullivan and Sullivan

16. Was all or part of the textbook or instructional resource piloted by teachers? (Describe the pilot procedure or explain why the textbook was not piloted.)

The Precalculus PLC used one of the units from the textbook with their classes. The unit of study coincided with the unit of study (Inverses and Composition of Functions) from the current Precalculus curriculum. Upon completion of the unit the teachers had the students provide feedback about the text, practice problems, worked out examples and flow of the unit. Mostly positive feedback from the students, teachers said the assessment data showed solid understanding of the material.

17. What other school districts in our area or in Connecticut use this textbook or instructional resource?

Textbook has not been released yet so there are not any other schools using the textbook yet.

Previous edition by the authors being used at UCONN MathLab is currently being used at Greenwich, Darien, Newtown, Stratford, Trumbull and Bridgeport.

18. Summarize the reasons why this textbook or instructional resource is being recommended to the Board of Education for adoption.

The textbook was a cooperative creation by the authors and College Board. While we are not currently offering AP Precalculus if we do decide to move forward with that course we would already have one of the approved textbooks available to our students. The textbook has a variety of activities and strategies that help present the material to the students in a comprehensive way. Approaching the course graphically, numerically and algebraically helps students to make connections to the complex material that will be long lasting.

MyMathLab is an exceptional resource available to our students. The website gives our students access to the textbook in an online format which has many benefits to our students and staff. Having online access helps keep the textbooks in excellent condition for a significant amount of time. Students can also access additional resources on the website like video lessons, practice problems, projects, homework, etc. The website also gives our teachers and students access to the entire Pearson Library of textbooks. When creating homework or practice teachers are able to use the entire catalog as long as one of the problems is from the textbook. Additionally, since our students can access the entire textbook online we do not need to buy a textbook for every student giving us a huge cost savings.

Signature: *Jason Gill*
Proposal Originator

Date: 3/14/24

Signature: *A. M. Pratt*
Building Administrator

Date: 3/19/24

Signature: *Kristen Brooker*
District Administrator

Date: 3.19.24



Mr. Jason Gill
 Mathematics Dept Chair
 Bethel High School
 300 Whittlesey Dr
 Bethel, CT 06801-1549
 United States

Quote Number: 261100-4
Quote Creation Date: 03-04-2024
Quote Expiration Date: 09-30-2024

Quote Release: 4

**60x Demana, Precalculus: AP Edition 11e ©2024 + 150 MyMathLab Digital
 Price Quote Summary**

Solution	Base Amount	Total
Demana: Precalculus: Graphical, MyMathLab	\$ 14,902.08	\$ 14,902.08
	\$ 11,472.30	\$ 11,472.30
Solution Subtotal	\$ 26,374.38	\$ 26,374.38
	Shipping & Handling	\$ 1,266.68
	Total	\$ 27,641.06

Price Quote Detail

ISBN	Description	Price	Charged Qty	Total Charged
Demana: Precalculus: Graphical, Numerical Algebraic				
Demana, Precalculus: Graphical, Numerical, Algebraic AP Edition 11e ©2024				
9780138049263	PRECALCULUS: GRAPHICAL, NUMERICAL, ALGEBRAIC, STUDENT EDITION + 6YR MYMATHLAB FOR SCHOOL W/ETEXT -- PACKAGE	238.47	60	\$14,308.20
9780138049355	PRECALCULUS: GRAPHICAL, NUMERICAL, ALGEBRAIC, ANNOTATED TEACHER EDITION	148.47	4	\$593.88
Demana, Precalculus: Graphical, Numerical, Algebraic AP Edition 11e ©2024 Subtotal				\$ 14,902.08
Demana: Precalculus: Graphical, Numerical Algebraic Subtotal				\$ 14,902.08
MyMathLab				
MyMathLab for School from Pearson				

Bethel High School

ISBN	Description	Price	Charged Qty	Total Charged
9780132962391	MyMathLab® for School 6yr - Digital Delivery Access	127.47	90	\$11,472.30
MyMathLab for School from Pearson Subtotal				\$ 11,472.30
MyMathLab Subtotal				\$ 11,472.30
Solution Subtotal				\$ 26,374.38
Shipping and Handling				\$ 1,266.68
Total				\$ 27,641.06

Savvas Learning Company LLC Terms and Conditions

To place your order please submit a copy of this price quote with your Purchase Order, include the Quote Number on your Purchase Order, and include any other required documentation. You may send the order documents using an electronic form **or** by mail. Please submit your PO and price quote via one of the following methods:

Online: <https://support.savvas.com/support/s/customerserviceus>

Mail: PO Box 6820, Chandler, AZ 85246

Savvas does not accept Credit Card information via postal mail, facsimile, or email. Credit Card information will only be accepted via phone, eCommerce, or OASIS. For questions regarding your order please call Customer Service: 1-800-848-9500.

Price quote: This is a price quote for the customer's convenience only, and not an offer to contract. All quotes are subject to review and final acceptance by an authorized representative of Savvas at its offices. Savvas reserves the right to correct typographical, computational or other errors. Savvas' standard payment terms are net 30 days unless otherwise specified. All pricing is in US Dollars unless otherwise specified. Pricing calculations use multiple decimal places to determine the most accurate extended pricing but are represented in standard currency format.

Shipping & handling charges (where applicable) are shown on the quote. S&H rates quoted are for standard ground transportation and may not reflect account contracted rates. If expedited shipping is requested, actual charges may be higher. For orders picked up at the Savvas warehouse by the customer or a third party carrier contracted by the customer, a 2% handling charge will be applied to shippable items. The 2% charge will appear on the customer proposal and invoice as a S&H charge.

Taxes: All pricing in this quote is exclusive of any applicable sales, use or other similar taxes or duties. The customer is responsible for any such taxes or duties that may apply; if the customer is tax exempt, evidence of such tax exemption must be provided.

Estimated tax may be provided solely for customer convenience. The amount indicated is only an estimate and is intended to be helpful for budgeting purposes. The actual amount of sales tax assessed at the time of invoicing may be more or less.

Platforms: Savvas, and any third party for which Savvas serves as the sales agent or distributor, reserve the right to change and/or update technology platforms, including possible edition updates to customers during the term of access. Customers will be notified of any change prior to the beginning of the new school year.

Damaged & Defective Products: If a print product, or the print component of a blended (print & digital) product, is received in damaged or defective condition, Savvas will issue a credit or replacement at no charge to the customer if the customer promptly (no later than 120 days) returns the damaged or defective product. Customers must report missing product immediately upon receipt.

Return Policy: Returns (other than damaged or defective products) are subject to the following conditions: (a) materials must be returned to Savvas at the customer's expense in new, unused condition, suitable for resale by Savvas (note that any barcoding, stickering, stamping or similar marking on any print materials renders them unsuitable for resale); (b) materials must be returned within six (6) months from the date of purchase; (c) the customer must obtain a Return Materials Authorization ("RMA") from Savvas prior to returning the materials, and must ship the materials back to Savvas within thirty days of receiving the RMA; (d) all materials sold in a set or package must be returned complete as originally sold; and (e) any materials provided by Savvas to the customer on a no-charge basis in consideration of the customer's purchase must be returned in proportion to the purchased materials that are being returned for a credit. A restocking fee of 3% may be applied to credits over \$1,000. Savvas' return policy does not apply to science lab kits or trade publication novels, which are sold on a non-returnable basis.

Consumable Worktexts: Subsequent year consumable worktexts will ship each year on the anniversary of the original order date for the duration of their license. Worktexts will ship to the location listed on the original order. Quantities for each grade level and title will remain consistent each year. Changes to quantities of titles previously ordered, shipping location changes, or any other changes to consumable worktext shipments must be made 4 weeks prior to shipment date. (the anniversary of the original order date unless changed). Changes can be made on the Subscription Worktext Site:

<https://worktext-subscriptions.savvas.com>

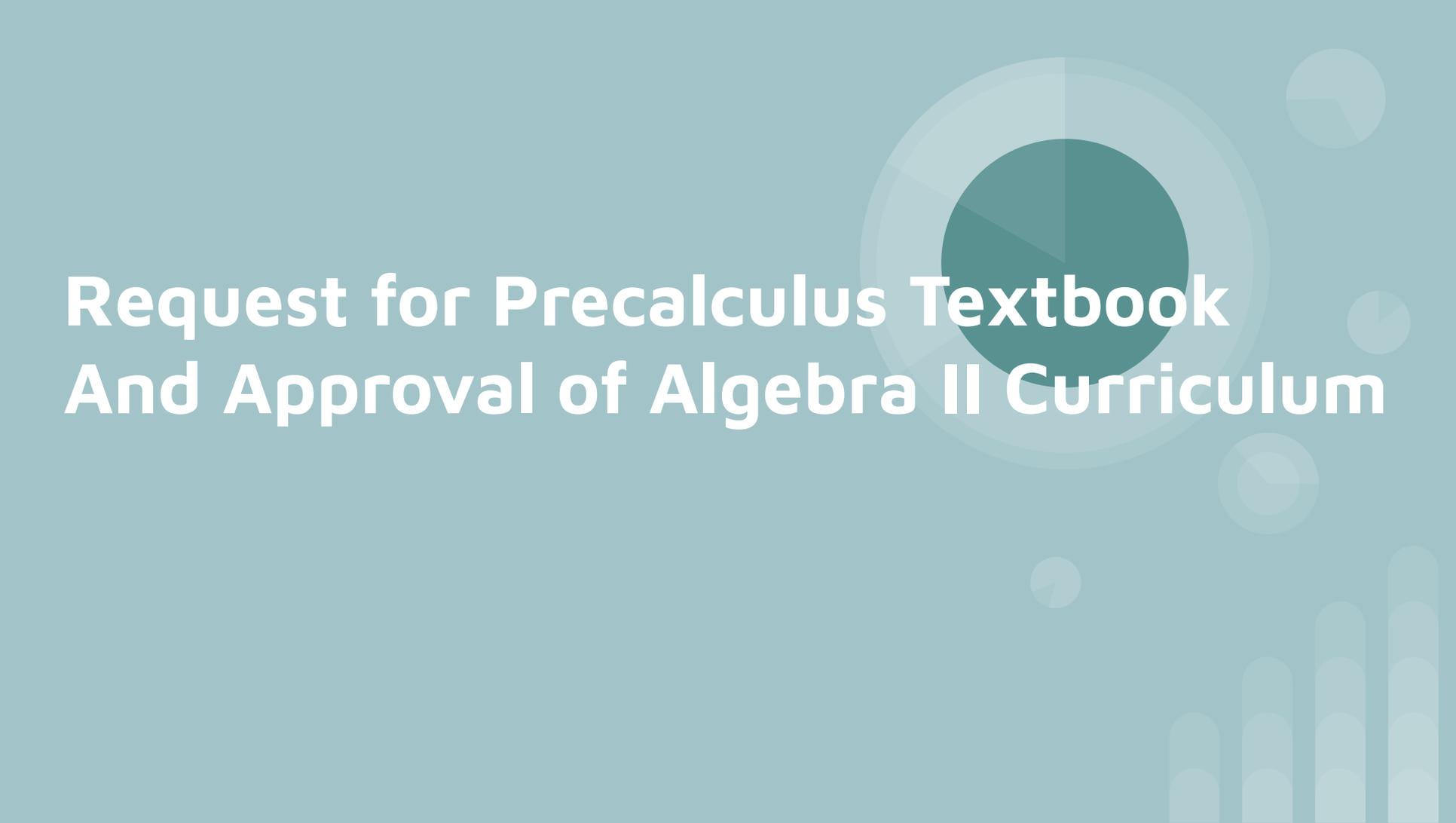
Annual subscriptions for iLit and Successmaker Only: Savvas' iLit and Successmaker products (and no others) automatically renew on the anniversary date of the original purchase and will be invoiced accordingly unless otherwise specified.

Technical support services are included with purchase of Savvas digital products.

online help: <https://support.savvas.com/support/s/k12-curriculum-support-form>

phone: 1-800-848-9500

Professional Services: Professional Services: All paid services must be delivered within twelve (12) months of the order date of those services. Any unused services expire at the end of such twelve (12) month period, unless otherwise specified in contract terms. Any cancellation made with less than 72 hours' notice will result in a cancellation fee equal to the full price of the event. MySavvasTraining is included with purchase of products (<https://mysavvastraining.com>).



Request for Precalculus Textbook And Approval of Algebra II Curriculum



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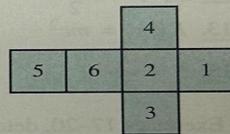
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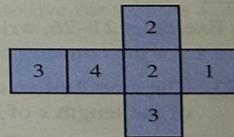
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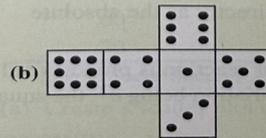
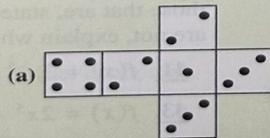


To model the possible *outcomes* of rolling this standard 6-sided die, we use the **outcome polynomial** $1x^6 + 1x^5 + 1x^4 + 1x^3 + 1x^2 + 1x^1$. For each term in this polynomial, the *exponents* (powers of x) represent the numbers (1–6) on the faces of the die. The *coefficient* of each term tells us how many faces have that number on them. Therefore, the sum of the coefficients must equal the number of faces on the die.

Now consider the *nonstandard* 6-sided die given by the net at right. The polynomial that represents this unusual die is $1x^4 + 2x^3 + 2x^2 + 1x^1$. Remember, for each term in the polynomial, the exponent gives the number on the face, and the coefficient tells us how many faces have that number.



- The outcome polynomial $2x^5 + 3x^4 + x^3 + 4x^2 + 2$ models a particular die. Describe the die, including the number of sides on the die and how many faces have each number. [*Hint*: Think of the last term as $2x^0$.]
- Below are nets for two different dice. Write an outcome polynomial for each die.



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Math Course Sequence Options

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Algebra II Links

[Algebra II Curriculum Folder](#)

[Algebra II Curriculum Map](#)

[Algebra II Performance Task - Parabola Selfie](#)



Units of Study

Unit 1 - Sequences and Function

Unit 2 - Introduction to Quadratics

Unit 3 - Quadratic Equations

Unit 4 - Polynomials and Rational Functions

Unit 5 - Complex Numbers and Rational Exponents

Unit 6 - Exponential Equations and Functions

Unit 7 - Transformations of Functions

April 25, 2024
Board of Education

BHS Science
Ray Turek

Agenda

- Curricula:
 - Environmental Science
 - Forensic Science
 - Physical Science
- AP Environmental Science Textbook
- US-Korean Collaborative Program

Environmental Science Curriculum

Duration: 1 semester (.5 credits)

Level: College Prep

Grades: 11 & 12

This science elective addresses the global ecosystem and the ways local, federal, and international policies regulate how human beings use natural resources on Earth.

[Environmental Science Curriculum Folder](#)

Units of Study:

- Introduction to Environmental Science and Populations
- The Living World
- Agriculture and Its Impact on the Environment
- Waste, Energy, and Human Effects on the Environment.

A Deeper Look Into Unit 3: Agriculture

ESSENTIAL QUESTIONS

1. What concerns exist in regards to illnesses and toxins stemming from agriculture, and how are they spread?
2. What effects does agriculture have on nearby ecosystems, water supplies, and the environment?
3. How can we best prevent environmental problems from arising from agriculture?

[Unit 3 Link](#)

Forensic Science Curriculum

Duration: 1 semester (.5 credits)

Level: College Prep

Grades: 11 & 12

Forensic scientists are responsible for analyzing evidence collected at crime scenes by legal officials. Students will process and analyze evidence using techniques grounded in biology, chemistry, and physics.

[Forensic Science Curriculum Folder](#)

Units of Study:

- Introduction to Forensic Science through the Crime Scene.
- Estimating Post-mortem interval, Entomology, and Osteology
- Biological Evidence: Blood and blood stain patterns, DNA, fingerprinting.
- Non-Biological Evidence: Ballistics, glass, criminal profiling/psychology
- Forensic Toxicology and Chemistry

A Deeper Look Into Unit 2: Estimating post-mortem interval, Entomology, & Osteology

ESSENTIAL QUESTIONS

1. What are the ways in which forensic scientists determine the time of death of a victim?
2. How can bones be used to help in the identification of a victim?

[Unit 2 Link](#)

Physical Science Curriculum

Duration: 1 year (1.0 credits)

Level: College Prep

Grades: 10

This course is designed to be an alternative to the traditional high school chemistry course taken in the sophomore year. The course focuses on the conceptual components of chemistry as well as the Earth and Space Science standards required by the state.

[Physical Science Curriculum Folder](#)

Units of Study:

Semester 1:

- Introduction to the Scientific Method
- Atomic Structure
- Chemical Reactions

Semester 2:

- Carbon Chemistry
- Heat and Energy
- Earth Systems

A Deeper Look Into Unit 6: Earth Systems

ESSENTIAL QUESTIONS

1. How can historical global climate evidence be used to make predictions about the future impacts of Earth's systems?
2. Can steps be taken to change Earth's climate?

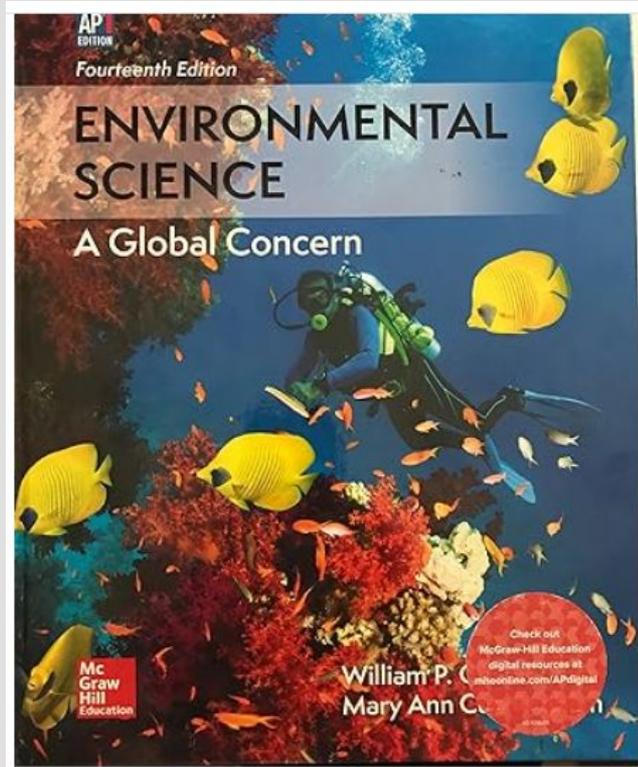
[Unit 6 Link](#)

AP Environmental Science Textbook



Environmental Science for the AP Course 4e by Andrew Friedland and Rick Relyea, 2023

Why the need?



The previous textbook was purchased in 2017 to meet the needs of our new class.

In 2019 College Board made substantial changes to the APES CED.

Topic	Percent
Earth Systems and Resources	10–15%
The Living World	10–15%
Population	10–15%
Land and Water use	10–15%
Energy Resources and Consumption	10–15%
Pollution	25–30%
Global Change	10–15%

Unit	Topic	Exam Weighting
1	The Living World: Ecosystems	6-8%
2	The Living World: Biodiversity	6-8%
3	Populations	10–15%
4	Earth Systems and Resources	10–15%
5	Land and Water Use	10–15%
6	Energy Resources and Consumption	10-15%
7	Atmospheric Pollution	7-10%
8	Aquatic and Terrestrial Pollution	7-10%
9	Global Change	15-20%

Why Mr. Cox Really Loves This Book:

- The new proposed textbook aligns 100% with the AP Environmental Science Course and Exam Description (CED). There is no extra information. There is no missing information.
- The textbook asks students to engage in the AP Environmental Science framework practices which include: Concept Explanation, Visual Representations, Text Analysis, Data Analysis, Mathematical Routines, and Environmental Solutions.
- A full complement of teacher focused resources are provided.

Cost

Itemized Products									
ISBN	EAN	Product	Edition	Author	Sales Price	Quantity	Total Price		
1319409288	9781319409289	Environmental Science for the AP® Course	4	Andrew Friedland; Rick Relyea	USD 153.98	40.00	USD 6,159.20		
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40 books @ \$153.93 each
\$6159.20

US-South Korea Science Collaborative Research and Education Project



2023 Timeline

The US-Korea Science Research and Education Project

Collaborative Exchange Partnership Between Students of US and South Korea Schools



In late August 2023 we were invited to join in the collaborative partnership and travel to Korea from December 15th -22nd. -we declined.

Instead....

Two separate groups of BHS students collaborated on two different projects from October to December.

- **Group 1** Mathematical Modeling for the Analysis of Desalination-Korean Science Research Project Partnership
 - 12 students
 - Experimentation based research
- **Group 2:** Accuracy Analysis of Trend Lines; Using Distribution Plot in Each Time Series
 - 10 students
 - Mathematical modeling based research

Collaboration

- Both groups met with a paired S. Korea private science school via Zoom on two different occasions.
- Schools shared their interpretation of their assigned project and presented their work.
- Mentors and a moderator helped coordinate the sessions.



Meeting Presentation

Mathematical Modeling for the Analysis of Desalination

INTRODUCTION

Desalination is the process of removing salt and other minerals from seawater to produce fresh water. It is a critical technology for providing water in arid regions and for ensuring water security in the face of climate change.

Why Desalination?

Over 97% of the water on Earth is saltwater. As the world's population grows, the demand for fresh water increases, leading to significant environmental and economic challenges. Desalination offers a potential solution to these challenges.

Positives of Solar

- 1. Solar energy is a renewable resource that does not deplete natural resources like fossil fuels, making it a sustainable alternative for desalination.
- 2. Solar desalination systems are generally simpler and less expensive to install and maintain compared to traditional desalination plants.

- 3. Solar desalination can be implemented in remote areas with limited infrastructure, providing a decentralized water supply.
- 4. Solar desalination has a smaller carbon footprint compared to fossil fuel-based desalination, contributing to a more sustainable water supply.

Negatives of Solar

- 1. Solar desalination systems require large areas of land and high initial investment costs.
- 2. The efficiency of solar desalination is highly dependent on weather conditions and the availability of sunlight.
- 3. Solar desalination systems often require significant maintenance and monitoring.
- 4. Solar desalination may not be suitable for large-scale industrial or municipal water supply.



Positives of Boiling

- 1. Boiling is a simple and effective method for removing salt and other minerals from seawater.
- 2. Boiling desalination systems are generally simpler and less expensive to install and maintain compared to traditional desalination plants.
- 3. Boiling desalination can be implemented in remote areas with limited infrastructure, providing a decentralized water supply.

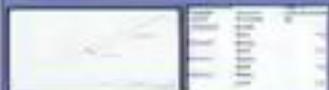
Negatives of Boiling

- 1. Boiling is a highly energy-intensive process, requiring a significant amount of fuel or electricity.
- 2. Boiling desalination systems are generally more expensive to install and maintain compared to traditional desalination plants.
- 3. Boiling desalination may not be suitable for large-scale industrial or municipal water supply.



SOLAR

The solar desalination process involves using solar energy to heat seawater, causing it to evaporate. The resulting steam is then condensed to produce fresh water. This process is a form of distillation, where the water is heated to its boiling point, and the vapor is collected and condensed. The solar energy is captured by a solar collector, which is a large, flat, white surface that reflects the sun's rays onto the water. The water is then heated and evaporates, leaving behind the salt and other minerals. The steam is then collected in a condenser, which is a large, flat, white surface that reflects the sun's rays onto the steam. The steam is then condensed and collected in a collection channel, which leads to a storage tank. The solar desalination process is a simple and effective method for producing fresh water from seawater. It is a sustainable and decentralized water supply solution that can be implemented in remote areas with limited infrastructure. The solar desalination process is a form of distillation, where the water is heated to its boiling point, and the vapor is collected and condensed. The solar energy is captured by a solar collector, which is a large, flat, white surface that reflects the sun's rays onto the water. The water is then heated and evaporates, leaving behind the salt and other minerals. The steam is then collected in a condenser, which is a large, flat, white surface that reflects the sun's rays onto the steam. The steam is then condensed and collected in a collection channel, which leads to a storage tank.



The graph shows the temperature of the solar desalination system over time. The temperature starts at 20°C at 0 hours and increases steadily to 80°C at 8 hours. This indicates that the solar energy is effectively heating the water, causing it to evaporate and produce fresh water.

Boiling

The boiling desalination process involves heating seawater to its boiling point, causing it to evaporate. The resulting steam is then condensed to produce fresh water. This process is a form of distillation, where the water is heated to its boiling point, and the vapor is collected and condensed. The boiling energy is captured by a boiler, which is a large, flat, white surface that reflects the sun's rays onto the water. The water is then heated and evaporates, leaving behind the salt and other minerals. The steam is then collected in a condenser, which is a large, flat, white surface that reflects the sun's rays onto the steam. The steam is then condensed and collected in a collection channel, which leads to a storage tank. The boiling desalination process is a simple and effective method for producing fresh water from seawater. It is a sustainable and decentralized water supply solution that can be implemented in remote areas with limited infrastructure. The boiling desalination process is a form of distillation, where the water is heated to its boiling point, and the vapor is collected and condensed. The boiling energy is captured by a boiler, which is a large, flat, white surface that reflects the sun's rays onto the water. The water is then heated and evaporates, leaving behind the salt and other minerals. The steam is then collected in a condenser, which is a large, flat, white surface that reflects the sun's rays onto the steam. The steam is then condensed and collected in a collection channel, which leads to a storage tank.



The graph shows the temperature of the boiling desalination system over time. The temperature starts at 20°C at 0 hours and increases steadily to 100°C at 8 hours. This indicates that the boiling energy is effectively heating the water, causing it to evaporate and produce fresh water.



CONCLUSION

The solar desalination process is a simple and effective method for producing fresh water from seawater. It is a sustainable and decentralized water supply solution that can be implemented in remote areas with limited infrastructure. The solar desalination process is a form of distillation, where the water is heated to its boiling point, and the vapor is collected and condensed. The solar energy is captured by a solar collector, which is a large, flat, white surface that reflects the sun's rays onto the water. The water is then heated and evaporates, leaving behind the salt and other minerals. The steam is then collected in a condenser, which is a large, flat, white surface that reflects the sun's rays onto the steam. The steam is then condensed and collected in a collection channel, which leads to a storage tank.

Conclusion from Solar Investigation

The solar desalination process is a simple and effective method for producing fresh water from seawater. It is a sustainable and decentralized water supply solution that can be implemented in remote areas with limited infrastructure. The solar desalination process is a form of distillation, where the water is heated to its boiling point, and the vapor is collected and condensed. The solar energy is captured by a solar collector, which is a large, flat, white surface that reflects the sun's rays onto the water. The water is then heated and evaporates, leaving behind the salt and other minerals. The steam is then collected in a condenser, which is a large, flat, white surface that reflects the sun's rays onto the steam. The steam is then condensed and collected in a collection channel, which leads to a storage tank.

Conclusion from Investigation by Boiling

The boiling desalination process is a simple and effective method for producing fresh water from seawater. It is a sustainable and decentralized water supply solution that can be implemented in remote areas with limited infrastructure. The boiling desalination process is a form of distillation, where the water is heated to its boiling point, and the vapor is collected and condensed. The boiling energy is captured by a boiler, which is a large, flat, white surface that reflects the sun's rays onto the water. The water is then heated and evaporates, leaving behind the salt and other minerals. The steam is then collected in a condenser, which is a large, flat, white surface that reflects the sun's rays onto the steam. The steam is then condensed and collected in a collection channel, which leads to a storage tank.

Action Plan

The action plan for the solar desalination process is to build a solar desalination system that can produce fresh water from seawater. The action plan for the boiling desalination process is to build a boiling desalination system that can produce fresh water from seawater. The action plan for the solar desalination process is to build a solar desalination system that can produce fresh water from seawater. The action plan for the boiling desalination process is to build a boiling desalination system that can produce fresh water from seawater.

What would we do differently in the future?

In the future, we would like to improve the efficiency of the solar desalination process by using a more efficient solar collector. We would also like to improve the efficiency of the boiling desalination process by using a more efficient boiler. We would also like to improve the efficiency of the solar desalination process by using a more efficient condenser. We would also like to improve the efficiency of the boiling desalination process by using a more efficient condenser.

Final Notes

The solar desalination process is a simple and effective method for producing fresh water from seawater. It is a sustainable and decentralized water supply solution that can be implemented in remote areas with limited infrastructure. The solar desalination process is a form of distillation, where the water is heated to its boiling point, and the vapor is collected and condensed. The solar energy is captured by a solar collector, which is a large, flat, white surface that reflects the sun's rays onto the water. The water is then heated and evaporates, leaving behind the salt and other minerals. The steam is then collected in a condenser, which is a large, flat, white surface that reflects the sun's rays onto the steam. The steam is then condensed and collected in a collection channel, which leads to a storage tank.

Water Used

The solar desalination process uses 100 liters of seawater to produce 10 liters of fresh water. The boiling desalination process uses 100 liters of seawater to produce 10 liters of fresh water. The solar desalination process uses 100 liters of seawater to produce 10 liters of fresh water. The boiling desalination process uses 100 liters of seawater to produce 10 liters of fresh water.

Plan for 2024

- We have already committed to two teams for the 2024 school year.
 - We will have input into our topic.
 - Timeline will be moved up and students will start earlier.
- We currently have no plans to travel to S. Korea however perhaps down the road it may be something we would like to consider.

BETHEL BOARD OF EDUCATION

Briefing Summary

Date of Briefing to the Board:

4.25.24

Topic:

BHS Science Curriculum

Summary of the Briefing:

We are bringing forward the [Environmental Science Curriculum](#).

This course addresses the global ecosystem and the ways local, federal, and international policies regulate how human beings use natural resources on Earth. This class emphasizes environmental issues and some of the potential ways to address them. Multimedia resources, fieldwork, laboratories, and case studies will be used to investigate environmental issues.

We are bringing forward the [Forensics Curriculum](#).

This elective course is designed for students with an interest in the field of forensics. Students taking the course should have a strong understanding of biological concepts (e.g., the structure of DNA). Forensic scientists are responsible for analyzing evidence collected at crime scenes by legal officials. Students will process and analyze evidence using techniques grounded in biology, chemistry, and physics. The course will include famous crimes throughout history, how science has been used to solve these crimes, and ethical and legal issues involved within the discipline.

We are bringing forward the [Physical Science Curriculum](#).

This course is designed to be an alternative to the traditional high school chemistry course. Students taking the course will be asked to use the NGSS Science and Engineering Practices to learn about the Scientific Method, Atomic Structure, Chemical Reactions, Carbon Chemistry, Heat and Energy, and Earth Systems.

We are bringing forward a new AP Environmental Science textbook.

Environmental Science for the AP Course 4e by Friedland and Relyea

- AP Environmental Science (APES) students are currently using a textbook that was purchased at a time when the APES curriculum was substantially different from the current curriculum.
- In 2019 the APES underwent extensive changes to both the topics covered and the end of year AP exam.

Pre- 2019

Topic	Percent
Earth Systems and Resources	10–15%
The Living World	10–15%
Population	10–15%
Land and Water use	10–15%
Energy Resources and Consumption	10–15%
Pollution	25–30%
Global Change	10–15%

Current

Unit	Topic	Exam Weighting
1	The Living World: Ecosystems	6-8%
2	The Living World: Biodiversity	6-8%
3	Populations	10–15%
4	Earth Systems and Resources	10–15%
5	Land and Water Use	10–15%
6	Energy Resources and Consumption	10-15%
7	Atmospheric Pollution	7-10%
8	Aquatic and Terrestrial Pollution	7-10%
9	Global Change	15-20%

- The new proposed textbook aligns 100% with the AP Environmental Science Course and Exam Description (CED). There is no extra information. There is no missing information.
- The textbook asks students to engage in the The AP Environmental Science framework practices which include: Concept Explanation, Visual Representations, Text Analysis, Data Analysis, Mathematical Routines, and Environmental Solutions.
- A full complement of teacher focused resources are provided.
- The book offers an array of additional benefits:
 - The book contains Unit-Opening Case Studies designed to spark discussion.
 - The book emphasizes the interconnectedness of topics across the various units.
 - The book provides numerous opportunities for both unit level and cumulative practice for the AP exam.

Textbook Cost

Itemized Products								
ISBN	EAN	Product	Edition	Author	Sales Price	Quantity	Total Price	
1319409288	9781319409289	Environmental Science for the AP® Course	4	Andrew Friedland; Rick Relyea	USD 153.98	40.00	USD 6,159.20	
Itemized Product Total:			USD 6,159.20					

Recommended Motions:

Motion to bring the Environmental Science, Forensics, and Physical Science curricula to the full Board of Education for approval.

Motion to bring the AP Environmental Science textbook, *Environmental Science for the AP Course 4e* by Friedland and Relyea, to the full Board of Education for approval.

Bethel Public School

Textbook or Instructional Resource Adoption Form

Please use as much space as needed to complete the questions. When the form is complete, please email it to Dr. Brooks and send one hard copy with signatures in the interoffice mail. If you need any assistance with any part of the form, please contact Dr. Brooks.

1. Title of **Currently Used** Textbook/Instructional Resource:
Environmental Science: A Global Concern 14th Edition by William P. Cunningham
2. Title of **Proposed** Textbook/Instructional Resource:
Environmental Science for the AP Course 4e
3. Subject Area: High School Science
4. Course: AP Environmental Science
5. Grade Level: 11,12
6. Author(s): Andrew Friedland and Rick Relyea
7. Publisher: Bedford, Freeman and Worth
8. Unit Cost of Textbook or Unit Cost of the Instructional Resource:
\$153.98/ textbook
9. Number of Textbooks/Instructional Resource Materials Needed:
60
10. Total Cost (including estimated shipping):
\$9,238.80
11. What **specific selection criteria** were established by the **Selection Committee** for a new textbook or instructional material?
 1. The textbook should completely align with the AP Environmental Science Course and Exam Description.
 2. The textbook should provide students with opportunities to practice AP Exam-like questions within units and as a whole.
 3. The textbook should allow students to interact with the The AP Environmental Science framework practices which include: Concept Explanation, Visual Representations, Text Analysis, Data Analysis, Mathematical Routines, and Environmental Solutions.
 4. The textbook should include resources for teachers.

12. List the names of the **Selection Committee** members:
Ray Turek, Grant Cox, Kateri Kenney
13. Has the Selection Committee carefully vetted this textbook/instructional resource using the established criteria?
Yes
14. Is there a digital component to this textbook that would collect student information (names, email, date of birth, address, etc.) or house student content?
We are not opting to purchase the digital component which accompanies the textbook.
15. What other textbooks or instructional resources were reviewed during the selection process?
- Miller, G. Tyler and Scott Spoolman. *Exploring Environmental Science for AP*. 1st ed., Boston, MA: Cengage Learning, 2021.
 - Cunningham, William and Mary Cunningham. *Environmental Science: A Global Concern*. 16th ed., New York, NY: McGraw-Hill Higher Education, 2024
 - Withgott, Jay H. and Matthew Laposata. *Environment: The Science Behind the Stories, AP Edition*. 7th ed., San Francisco, CA: Pearson Education, 2021
16. Was **all or part** of the textbook or instructional resource **piloted** by teachers? (Describe the pilot procedure or explain why the textbook was not piloted.)
The textbook was not piloted. The cost of the textbook makes this impractical.
17. What other school districts in our area or in Connecticut use this textbook or instructional resource?
Avon
Brookfield
East Haven
Granby
Greenwich Academy
Greenwich Country Day School
Hopkins School
Lyman Memorial High School (Lebanon)
Southington
18. Summarize the reasons why this textbook or instructional resource is being recommended to the Board of Education for adoption.
This book meets all of the selection criteria that were established by the Selection Committee for a new textbook. This book has become the choice for the majority of school districts that are looking for a new APES textbook.

Signature: _____
Proposal Originator

Date: _____

Signature: _____
Building Administrator

Date: _____

Signature: _____
District Administrator

Date: _____

April 25, 2024
Board of Education

BHS Science
Ray Turek

Agenda

- Curricula:
 - Environmental Science
 - Forensic Science
 - Physical Science
- AP Environmental Science Textbook
- US-Korean Collaborative Program

Environmental Science Curriculum

Duration: 1 semester (.5 credits)

Level: College Prep

Grades: 11 & 12

This science elective addresses the global ecosystem and the ways local, federal, and international policies regulate how human beings use natural resources on Earth.

[Environmental Science Curriculum Folder](#)

Units of Study:

- Introduction to Environmental Science and Populations
- The Living World
- Agriculture and Its Impact on the Environment
- Waste, Energy, and Human Effects on the Environment.

A Deeper Look Into Unit 3: Agriculture

ESSENTIAL QUESTIONS

1. What concerns exist in regards to illnesses and toxins stemming from agriculture, and how are they spread?
2. What effects does agriculture have on nearby ecosystems, water supplies, and the environment?
3. How can we best prevent environmental problems from arising from agriculture?

[Unit 3 Link](#)

Forensic Science Curriculum

Duration: 1 semester (.5 credits)

Level: College Prep

Grades: 11 & 12

Forensic scientists are responsible for analyzing evidence collected at crime scenes by legal officials. Students will process and analyze evidence using techniques grounded in biology, chemistry, and physics.

[Forensic Science Curriculum Folder](#)

Units of Study:

- Introduction to Forensic Science through the Crime Scene.
- Estimating Post-mortem interval, Entomology, and Osteology
- Biological Evidence: Blood and blood stain patterns, DNA, fingerprinting.
- Non-Biological Evidence: Ballistics, glass, criminal profiling/psychology
- Forensic Toxicology and Chemistry

A Deeper Look Into Unit 2: Estimating post-mortem interval, Entomology, & Osteology

ESSENTIAL QUESTIONS

1. What are the ways in which forensic scientists determine the time of death of a victim?
2. How can bones be used to help in the identification of a victim?

[Unit 2 Link](#)

Physical Science Curriculum

Duration: 1 year (1.0 credits)

Level: College Prep

Grades: 10

This course is designed to be an alternative to the traditional high school chemistry course taken in the sophomore year. The course focuses on the conceptual components of chemistry as well as the Earth and Space Science standards required by the state.

[Physical Science Curriculum Folder](#)

Units of Study:

Semester 1:

- Introduction to the Scientific Method
- Atomic Structure
- Chemical Reactions

Semester 2:

- Carbon Chemistry
- Heat and Energy
- Earth Systems

A Deeper Look Into Unit 6: Earth Systems

ESSENTIAL QUESTIONS

1. How can historical global climate evidence be used to make predictions about the future impacts of Earth's systems?
2. Can steps be taken to change Earth's climate?

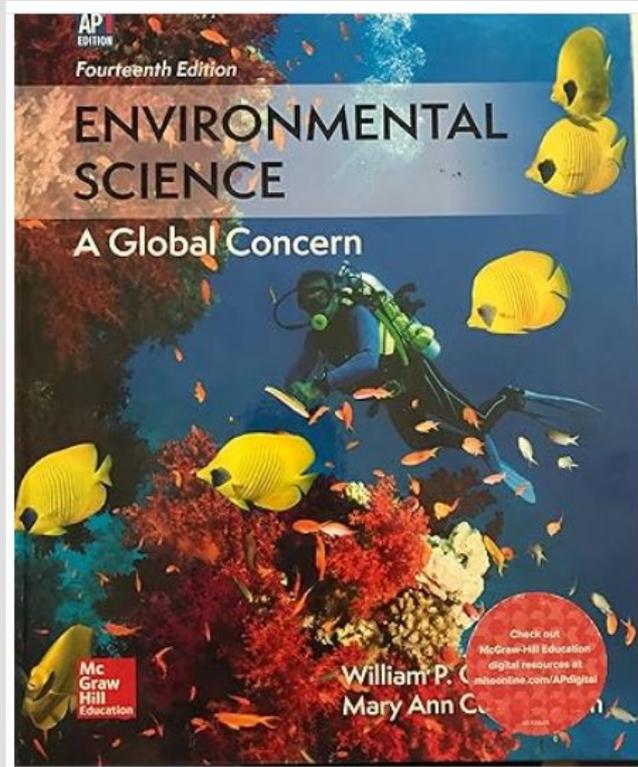
[Unit 6 Link](#)

AP Environmental Science Textbook



Environmental Science for the AP Course 4e by Andrew Friedland and Rick Relyea, 2023

Why the need?



The previous textbook was purchased in 2017 to meet the needs of our new class.

In 2019 College Board made substantial changes to the APES CED.

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Earth Systems and Resources	10–15%
The Living World	10–15%
Population	10–15%
Land and Water use	10–15%
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- Both groups met with a paired S. Korea private science school via Zoom on two different occasions.
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Mathematical Modeling for the Analysis of Desalination

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Why Desalination?

Over 97% of the water on Earth is saltwater. As the world's population grows, the demand for fresh water increases, leading to significant environmental and economic challenges. Desalination offers a potential solution to these challenges.

Positives of Solar

1. **Renewable Energy Source:** Solar energy is a clean, renewable energy source that does not produce greenhouse gas emissions during operation.

2. **Low Operating Costs:** Once the initial infrastructure is in place, the cost of solar energy is significantly lower than fossil fuel-based energy.

Negatives of Solar

1. **Intermittent Energy Source:** Solar energy is only available during daylight hours and is affected by weather conditions.

2. **High Initial Costs:** The initial investment for solar panels and associated infrastructure can be high.

3. **Space Requirements:** Large-scale solar farms require significant land area.

4. **Energy Storage:** Storing solar energy for use during non-daylight hours is currently expensive and inefficient.



Positives of Boiling

1. **Simple Technology:** Boiling is a straightforward process that requires minimal infrastructure.

2. **Low Energy Consumption:** Boiling uses less energy than other desalination methods like reverse osmosis.

3. **Scalability:** Boiling can be scaled up or down to meet local water needs.

Negatives of Boiling

1. **High Energy Consumption:** Boiling requires a significant amount of energy to heat the water.

2. **Water Loss:** A significant portion of the water is lost as steam during the boiling process.

3. **Scale Formation:** Boiling can lead to the formation of mineral scale, which can clog pipes and reduce efficiency.

4. **High Salinity Brine:** The remaining brine is highly concentrated with salt, posing disposal challenges.

5. **Environmental Impact:** Large-scale boiling operations can have a significant carbon footprint.

6. **Space and Infrastructure:** Boiling requires large tanks and heating systems, which can be costly and space-intensive.

7. **Energy Efficiency:** Boiling is generally less energy-efficient than other desalination technologies.

8. **Water Quality:** Boiling does not remove all contaminants, such as heavy metals and certain organic compounds.

9. **Operational Costs:** The high energy requirements of boiling lead to higher operational costs compared to other methods.

10. **Resource Intensity:** Boiling is a resource-intensive process that requires significant energy and infrastructure.

11. **Environmental Concerns:** The high energy consumption of boiling can contribute to greenhouse gas emissions.

12. **Water Loss:** Boiling results in a significant loss of water as steam, reducing the overall yield of fresh water.



SOLAR

The solar desalination process involves using solar energy to heat seawater, causing it to evaporate. The resulting steam is then condensed to produce fresh water. This process is a sustainable and renewable method of water purification.

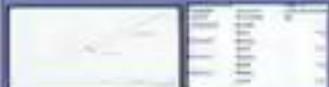


Figure 1: Relationship between solar radiation and evaporation rate.

The graph shows a positive linear relationship between solar radiation and evaporation rate. As solar radiation increases, the evaporation rate also increases proportionally.

This relationship is crucial for understanding the efficiency of solar desalination systems. Higher solar radiation leads to faster evaporation, which in turn results in higher fresh water production.

The data points from the graph are as follows:

Solar Radiation (W/m²)	Evaporation Rate (kg/m²/h)
100	0.5
200	1.0
300	1.5
400	2.0
500	2.5
600	3.0
700	3.5
800	4.0
900	4.5
1000	5.0

The slope of the line is 0.005 kg/m²/h per W/m², indicating that for every 100 W/m² increase in solar radiation, the evaporation rate increases by 0.5 kg/m²/h.

This linear relationship suggests that solar desalination systems can be scaled up or down based on the available solar radiation, making them a flexible and adaptable technology.

The graph also highlights the importance of maximizing solar radiation capture in solar desalination systems. This can be achieved through the use of solar collectors and tracking systems.

Overall, the graph demonstrates the direct impact of solar radiation on the evaporation rate, which is a key factor in the efficiency of solar desalination.

The data points from the graph are as follows:

Solar Radiation (W/m²)	Evaporation Rate (kg/m²/h)
100	0.5
200	1.0
300	1.5
400	2.0
500	2.5
600	3.0
700	3.5
800	4.0
900	4.5
1000	5.0

The graph shows a clear positive correlation between solar radiation and evaporation rate, which is essential for the design and optimization of solar desalination systems.

The data points from the graph are as follows:

Solar Radiation (W/m²)	Evaporation Rate (kg/m²/h)
100	0.5
200	1.0
300	1.5
400	2.0
500	2.5
600	3.0
700	3.5
800	4.0
900	4.5
1000	5.0

CONCLUSION

The investigation into solar desalination and boiling processes has provided valuable insights into their respective strengths and limitations. Solar desalination offers a sustainable and renewable method of water purification, while boiling provides a simple and low-energy alternative.

Conclusion from Solar Investigation

The solar desalination process is highly dependent on solar radiation. Higher solar radiation leads to faster evaporation, which in turn results in higher fresh water production. This relationship is crucial for understanding the efficiency of solar desalination systems.

Conclusion from Investigation by Boiling

The boiling process is a simple and low-energy method of water purification. However, it requires a significant amount of energy to heat the water, and a significant portion of the water is lost as steam during the boiling process.

Action Plan

Based on the findings of this investigation, the following action plan is recommended:

1. **Optimize Solar Radiation Capture:** Use solar collectors and tracking systems to maximize the amount of solar radiation captured by the solar desalination system.
2. **Improve Energy Efficiency:** Use energy-efficient heating systems and insulation to reduce energy losses during the boiling process.
3. **Reduce Water Loss:** Use condensation traps and other techniques to reduce the amount of water lost as steam during the boiling process.
4. **Scale Up Operations:** Scale up the solar desalination and boiling processes to meet the water needs of larger communities.

What would be the difference in the Return?

The difference in the return between solar desalination and boiling is primarily due to the energy requirements of each process. Solar desalination is a renewable and low-energy process, while boiling is a non-renewable and high-energy process. This difference in energy requirements leads to a significant difference in the return on investment for each process.

Final Notes

The investigation into solar desalination and boiling processes has provided valuable insights into their respective strengths and limitations. The findings of this investigation can be used to inform the design and optimization of water purification systems.

Water Chart

The water chart shows the relationship between the amount of water produced and the amount of energy consumed. The chart is a line graph with the x-axis representing energy consumption (kWh) and the y-axis representing water production (m³). The data points from the chart are as follows:

Energy Consumption (kWh)	Water Production (m³)
100	0.5
200	1.0
300	1.5
400	2.0
500	2.5
600	3.0
700	3.5
800	4.0
900	4.5
1000	5.0

The chart shows a positive linear relationship between energy consumption and water production. As energy consumption increases, the amount of water produced also increases proportionally.

This relationship is crucial for understanding the efficiency of water purification systems. Higher energy consumption leads to higher water production, which in turn results in higher fresh water production.

The data points from the chart are as follows:

Energy Consumption (kWh)	Water Production (m³)
100	0.5
200	1.0
300	1.5
400	2.0
500	2.5
600	3.0
700	3.5
800	4.0
900	4.5
1000	5.0

The graph shows a clear positive correlation between energy consumption and water production, which is essential for the design and optimization of water purification systems.

The data points from the chart are as follows:

Energy Consumption (kWh)	Water Production (m³)
100	0.5
200	1.0
300	1.5
400	2.0
500	2.5
600	3.0
700	3.5
800	4.0
900	4.5
1000	5.0

Plan for 2024

- We have already committed to two teams for the 2024 school year.
 - We will have input into our topic.
 - Timeline will be moved up and students will start earlier.
- We currently have no plans to travel to S. Korea however perhaps down the road it may be something we would like to consider.