California Online Mathematics Education Times (COMET)
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California Online Mathematics Education Times (COMET) is an electronic news bulletin providing STEM-related news from California and across the nation, as well as information about professional events and opportunities, current educational issues, and online resources.

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ARTICLES & ANNOUNCEMENTS (CALIFORNIA FOCUS)

(1) Assembly Majority Leader Holden Introduces Bill To Update Algebra Graduation Requirement (AB 220)

URL: http://tinyurl.com/Chris-Holden-AB220

Over one-third of 800 California school districts surveyed have decided to use an integrated mathematics pathway to better align with the California Common Core State Standards for Mathematics, and more are expected to make the transition. On February 3, Assemblyman Chris Holden (D-Pasadena) introduced legislation that would update the California Education Code, specifying that **completion of Mathematics I (the first course in an integrated pathway), and not just Algebra I, would serve to satisfy the state's high school graduation requirement.**

"It is important we update our laws to reflect the reality of what is being taught in our classrooms. I believe AB 220 accomplishes this," stated Assemblyman Holden.

The bill may be heard in committee on March 6. To view the bill text, visit http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160AB220

Questions may be directed to Emily Oliva, Education Programs Consultant in the STEM Office at the California Department of Education: (916) 319-0198 or EOliva@cde.ca.gov

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(2) Common Core Mathematics Symposium to be held on Friday the 13th (of March) and Pi Day

Contact: Geoffrey Dean, CMC Central Section Vice President: (559) 250-5929
URL:
http://cmc-math.org/temp/wp-content/uploads/2013/05/2015-Symposium-flyer1.pdf

California State University, Stanislaus is the site of the **2015 California Mathematics Council (CMC)-Central Section's Common Core Mathematics Symposium** on **March 13-14**. Special speakers include **Cathy Carroll** (WestEd) and author **Greg Tang** (*Grapes of Math*). For more information, download the flyer for this conference from the website above.

Conference organizers are taking advantage of Saturday being **"Pi Day"** with a series of special activities and note that this year is a once-in-a-century opportunity to experience a special date and time: **3.14.15 9:26:53.**

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(3) Admission to the Exploratorium is Free on Pi Day
URL: www.exploratorium.edu/visit/calendar/pi-day-free-day-2015

Entrance to the Exploratorium (www.exploratorium.edu), which hosted the first "official" Pi Day celebration in 1988, will be **free on Saturday, March 14,** from 10 a.m. until 5 p.m.

The Exploratorium, which is located in San Francisco on Pier 15, currently offers **free admission to California public school teachers.** This special program, funded by Genentech, concludes on 30 June 2015. To apply for a ticket to visit on a particular date, visit www.exploratorium.edu/visit/teachers

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(4) Upcoming Webinars for Teachers and Teacher Educators Focus on the Next Generation Science Standards

(a) "Literacy for the Science Classroom: Think, Read Talk, and Write Like a Scientist"
Date: Wednesday, 25 February 2015
Time: 3:30-5:00 p.m.
Registration:
http://schoolsmovingup.wested.org/literacy-for-the-science-classroom-think-read-talk-and-write-like-a-scientist/

Description: The presenters will explore how reading, writing, listening, and speaking are used to develop knowledge of scientific ideas, as well as the ways in which scientists develop that knowledge. Particular emphasis will be given to the Next Generation Science Standards (NGSS) practices of "Constructing Explanations" and "Engaging in Argument Form Evidence" and the relationship of these practices with the Common Core State Standards for English Language Arts/Literacy in Science.

Examples will be drawn from middle and high school students' writings of scientific explanations and how argumentation strengthened those explanations. Furthermore, scientific literature will be shown that provides opportunities to compare writing requirements and address classroom strategies. For more information (speakers, registration), please visit the website above.

(b) "The Keys to Success in K-6 NGSS Implementation: Webinar II, Cross-cutting Concepts and CCSS Alignment in NGSS"

Date: Friday, 20 February 2015
Time: 11 a.m.-12:30 p.m.
Description/Registration: http://bit.ly/NGSS2-20-15

This webinar and the one immediately below focus on effective strategies for preparing elementary teachers for the Next Generation Science Standards (NGSS). The webinars are co-hosted by California State University (CSU) and WestEd. Early registration is encouraged. For more information, please visit the websites listed or CSU's NGSS website: http://teachingcommons.cdl.edu/ngss

(c) "The Keys to Success in K-6 NGSS Implementation: Webinar III, Exemplars of Learning through Scientific and Engineering Practices"
Date: Friday, 13 March 2015
Time: 11 a.m.-12:30 p.m.
Description/Registration: http://bit.ly/NGSS3-13-15

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(5) Next Generation Science Standards Rollouts for Spring 2015
URL:
https://live.iplanevents.com/index.cfm?fuseaction=reg.info&page=Welcome&event_id=2530&regid=---&flow=reg

On February 2-3, the first of three **Next Generation Science Standards (NGSS) State Rollout Symposium** 2-day events was held in San Jose. The two upcoming symposia will be held in **San Diego on April 17-18** and in **Ventura on June 1-2.** At these NGSS Rollouts, science teachers have the opportunity to delve into the philosophy and design of the new standards, explore available resources, and experience sample lesson plans in a variety of hands-on, intensive sessions. To view the agenda and to **register** for one of these rollouts, visit http://tinyurl.com/ngss-rollouts

These symposia are presented by the K-12 Alliance at WestEd in collaboration with the California Department of Education (CDE), the California Science Teachers Association, and the Curriculum and Instruction Steering Committee. Visit CDE's website for **NGSS resources and statewide implementation information:** www.cde.ca.gov/pd/ca/sc/ngssintrod.asp

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(6) Science Teachers Appointed to the State Board of Education's Instructional Quality Commission
URL: www.cde.ca.gov/be/cc/cd/members.asp

At its January 2015 meeting, the State Board of Education (SBE) approved the appointment of four teachers to the **Instructional Quality Commission** (IQC) for a four-year term. Two of the four appointees were science teachers:

- **Jocelyn Broemmelsiek** (San Dieguito Academy) -- Content Expertise: Biology and Chemistry)
- **Dean Reese** (Tracy High School) -- Content Expertise: Physics, Astronomy, Computer Modeling and Simulation

The IQC is an advisory body to the SBE on matters related to curriculum, instructional materials, and content standards.

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(7) Teachers are Encouraged to Submit a Proposal to Speak at the 2015 California Science Education Conference in Sacramento in October and at the California Mathematics Council-North Conference in December

Science: This coming Friday **(Feb. 13) is the deadline** to submit a proposal to speak at the **2015 California Science Education Conference** sponsored by the California Science Teachers Association. CSTA is actively seeking science teachers to present one-hour workshops (hands-on activities, lecture, demonstration, and/or discussion) at the conference, which will be held on October 2-4 in Sacramento. Proposals should have embedded in the content appropriate disciplinary core ideas, science and engineering practices, and/or crosscutting concepts and address one or more of the California Next Generation Science Standards and/or Common Core State Standards for Mathematics or Literacy. Visit https://csta.networkats.com/members_online/submissions/substart.asp to submit a proposal.

Math: The California Mathematics Council-Northern Section (**CMC- North**) invites speaker proposals for its 2015 annual conference at **Asilomar**. This year, the conference will be held on **December 11-13.** To apply to speak at this conference, please visit https://camathcouncil.wufoo.com/forms/2015-cmc-asilomar-conference-speaker-proposal/.

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(8) Publications Support Early Math Learning
URL: http://earlymathlearning.com
URL: http://cpin.us/

The importance of early education is receiving increased attention at the federal and state levels. To support parents and families in engaging young children

mathematically, the California Mathematics Council (CMC) has produced a free online resource, **"Early Learning, Math at Home: Helping Your Children Birth to Age Five Learn and Enjoy Mathematics."** This booklet is available for download in both English and Spanish (see links below). Individual articles can be downloaded in PDF format from an accompanying website, http://earlymathlearning.com

English version:
http://earlymathlearning.com/PDFs/Early%20Learning%20Math%20at%20Home%20English.pdf
Spanish version:
http://earlymathlearning.com/PDFs/Early%20Learning%20Math%20at%20Home%20Spanish.pdf

A related publication, **"Engaging Children in Early Mathematical Experiences,"** was produced by Region 3 of the California Preschool Instructional Network (CPIN) to provide families, early childhood educators, and family childcare providers with research-based early learning experiences focused on the California Preschool Learning Foundations (see http://www.cde.ca.gov/sp/cd/re/psfoundations.asp), as described in Volume 1 (mathematics). This volume can be downloaded from http://tinyurl.com/CPIN-Early-Childhood-Math

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Related Information

Cook Prize for Best STEM Picture Book
URL: www.bankstreet.edu/center-childrens-literature/cook-prize/

In January, the Bank Street Center for Children's Literature announced its finalists for the Cook Prize, the only national award that **honors children's STEM books.** Visit the website above to learn about the four finalists.

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(9) Statewide Student Testing in 2015
URL: www.caaspp.org/about/testing/

A summary of the online (Smarter Balanced ELA and Mathematics) and paper-pencil (CST/CMA/CAPA science) tests to be administered this semester as part of the California Assessment of Student Performance and Progress (CAASPP) is available at www.caaspp.org/about/testing/ A chart containing the **estimated testing times for the Smarter Balanced assessments** can be found at www.caaspp.org/about/smarter-balanced/index.html

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(10) Urgent Need: Subject Matter Experts in English and Mathematics to Complete Common Core Alignment Review
Source: California Commission on Teacher Credentialing

The California Commission on Teacher Credentialing (CTC) reports that there continues to be **an urgent need for subject matter experts to assist in the review of matrices** identifying how Mathematics and English subject matter preparation programs (SMPPs) are preparing prospective teachers to teach the K-12 Common Core Academic Standards.

The Commission has received 59 matrices. With the dedicated review of subject matter experts, 48 programs were found to be aligned, allowing those SMPPs to continue and assuring that Single Subject teachers are prepared appropriately in subject matter content. Reviewers are needed for 13 remaining documents.

Review time: Approximately two hours, including completing the online training, reviewing the matrix, and comparing comments with a partner reviewer.

For information: http://www.ctc.ca.gov/educator-prep/ssmp.html

To serve as a subject matter expert reviewer, please email Rebecca Parker: rparker@ctc.ca.gov.

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(11) CSET Item Field Test Opportunity: Science
Source: Pearson VUE
URL: www.pearsonvue.com/espilot/cset.asp

The Evaluation Systems group of Pearson is **field testing computer-based constructed-response (essay) items** for the California Subject Examinations for Teachers (CSET) program in the area of science.

To be eligible to participate, you must be seeking fulfillment of a credentialing requirement for the state of California in Science and be currently preparing to take or have recently taken one or more CSET: Science examinations (Subtests I and II for General Science; and/or Subtest III for Biology/Life Science, Earth and Planetary Science, and/or Physics).

For each field test form completed, participants will receive either a **$75 voucher** toward the registration fee of a future California credential exam (e.g., CBEST, CSET, or RICA) or a transferable **$50 Barnes & Noble eGift Card.**

If interested, please visit the website above to schedule a time to take the test(s).

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ARTICLES & ANNOUNCEMENTS (NATIONAL FOCUS)

(1) President Obama Includes over $3 Billion to Support STEM Programs in his Proposed 2015-16 Budget

URL:
www.whitehouse.gov/sites/default/files/microsites/ostp/stem_fact_sheet_2016_budget_0.pdf

On February 2, President Obama released his proposed 2015-16 budget, which included more **than $3 billion in support for STEM education programs**. This is a 3.6% increase over the current fiscal year's budgeted total.

A description of the proposed investments is contained in a brief available for download from the website above. A summary appears below:

* Supporting more **STEM-focused high schools**, with a new $125 million competitive program at the Department of Education (ED) to help communities across America launch Next-Generation High Schools that will be laboratories for cutting-edge STEM teaching and learning.

* Preparing excellent STEM teachers, with $100 million in the 2016 Budget for high-quality teacher preparation within ED's **new Teacher and Principal Pathways program** with a priority for STEM teacher preparation programs that make progress on the President's goal of preparing 100,000 excellent STEM teachers. (Note: See www.100kin10.org/) Also, ED's 2016 Budget provides more than $200 million in the Math and Science Partnership (MSP) program, a $50 million increase over 2015 enacted levels. The expanded MSP program will also create a national online community of STEM educators in a STEM Virtual Learning Network.

* Improving undergraduate STEM education, with the National Science Foundation (NSF) investing $135 million to **improve retention of undergraduate STEM majors and improve undergraduate teaching and learning in STEM subjects** to meet the President's goal of preparing 1 million more STEM graduates over a decade.

* **Investing in breakthrough research on STEM teaching and learning**, with up to $50 million for the Advanced Research Projects Agency-Education (ARPA-ED), allowing ED to support high-risk, high-return research on next-generation learning technologies.

In addition, with the overall number of STEM programs already reduced by 40 percent over the past two years, the Budget continues to reduce fragmentation of STEM education programs across the Government. It also focuses investment on the five key
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areas identified in the Federal STEM Education 5-Year Strategic Plan: K-12 instruction; undergraduate education; graduate education; broadening participation in STEM education and careers by women and minorities traditionally underrepresented in these fields; and STEM education activities that typically take place outside the classroom.

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(2) Frontiers of Engineering: Reports on Leading-Edge Engineering from the 2014 Symposium
Source: National Academies Press
URL: http://tinyurl.com/NAP-Frontiers-of-Engineering

Educators may find this publication interesting in providing insight into **new developments in engineering.** "The volume presents papers on the topics covered at the National Academy of Engineering's 2014 US Frontiers of Engineering Symposium. Every year the symposium brings together 100 outstanding young leaders in engineering to share their cutting-edge research and innovations in selected areas. The 2014 symposium was held September 11-13 at the National Academies Beckman Center in Irvine California. The topics covered at the 2014 symposium were: co-robotics, battery materials, technologies for the heart, and shale gas and oil. The intent of this book is to convey the excitement of this unique meeting and to highlight innovative developments in engineering research and technical work." Download *Frontiers of Engineering* free of charge from the website above.

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(3) Annenberg Learner Website Includes Numerous Mathematics and Science Videos
URL: http://learner.org

Annenberg Learner uses media and telecommunications to advance excellent teaching in American schools. This mandate is carried out chiefly by the funding and broad distribution of educational video programs with **coordinated Web and print materials for the professional development of K-12 teachers.** It is part of The Annenberg Foundation and advances the Foundation's goal of encouraging the development of more effective ways to share ideas and knowledge.

Annenberg Learner's multimedia resources help teachers increase their expertise in their fields and assist them in improving their teaching methods. Many programs are also intended for students in the classroom and viewers at home.

Annenberg Learner resources can be accessed free of charge at Learner.org

The February issue of the "Annenberg Learner Update" (available at www.learner.org/about/news/updates/february15.html) includes links to resources related to two recent movies:

The Theory of Everything tells the story of theoretical physicist Stephen Hawking, who applied his intellect to imagining the beginning of the universe as his physical power diminished. Read about "Hawking radiation," his calculation showing that black holes radiate by a quantum process in "String Theory and Extra Dimensions" of *Physics for the 21st Century*.

In *The Imitation Game*, theoretical mathematician Alan Turing devised a machine to decode Nazi communications and help the allies win WWII. The design for the code-breaking "Turing machine" was the prototype for all modern computers. Turing's question "Can machines think?" is addressed in delineating the lines between physics and biology. Read the online text of *Physics for the 21st Century*, unit 9, "Biophysics," for this discussion.

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Related article:

Scientific and Technical Awards Presented
URL:
www.oscars.org/news/21-scientific-and-technical-achievements-be-honored-academy-awardsr
URL:
www.insidescience.org/content/science-behind-oscars-award-winning-trees-and-tresses/2541

Last Saturday night at the Beverly Wilshire in Beverly Hills, "the Academy of Motion Picture Arts and Sciences recognized 58 men and one woman for their behind-the-scenes science and technical work, including creation of a camera rig used in 'The Grand Budapest Hotel' and development of software that forms the realistic hair seen in 'Dawn of the Planet of the Apes' (www.miamiherald.com/entertainment/celebrities/article9546143.html#storylink=cpy). For a list of all award categories and winners at the annual **Scientific and Technical Awards ceremony,** visit www.oscars.org/sci-tech/ceremonies/2015.

Richard Edlund, Academy Award-winning visual effects artist and chair of the Scientific and Technical Awards Committee, said that the award recipients "exemplify the phenomenal creativity of professionals in the scientific and technical community, and the invaluable contributions they make to what is arguably the most creative industry in the world."

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(4) Academy Honors Six for Major Contributions in Physical Sciences and Engineering
URL: www.nasonline.org/news-and-multimedia/news/jan-22-2015-NASawards.html

The National Academy of Science (NAS) announced that it will honor six individuals with awards in recognition **of extraordinary scientific achievements in a variety of fields in the physical sciences** at a ceremony on Sunday, April 26, during the National Academy of Sciences' 152nd annual meeting.

Three of the recipients are residents of California:
- **Jonathan Weissman**, investigator, Howard Hughes Medical Institute, and professor in the department of cellular and molecular pharmacology at the University of California, San Francisco, is the recipient of the inaugural **NAS Award for Scientific Discovery,** presented in 2015 in the field of chemistry, biochemistry, or biophysics for his work in ribosome profiling.
- **Bruce D. Roth**, senior vice president of small molecule drug discovery at Genentech (San Francisco), is the recipient of the 2015 **NAS Award for Chemistry in Service to Society** for his work leading to the development of Lipitor.
- **Benjamin Recht**, assistant professor of electrical engineering, computer science, and statistics at the University of California, Berkeley, is the recipient of the **William O. Baker Award for Initiatives in Research**, presented in 2015 in the field of statistics and machine learning for his significant contributions to the field of data science.

To learn more about these researchers and the other award winners, please visit the website above.

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(5) AMTE Response to Proposed Federal Regulations for Teacher Preparation
Source: Association of Mathematics Teacher Educators

The January issue of COMET included details about the proposed Federal regulations of teacher preparation programs (see http://comet.cmpso.org/a/cmpso.org/comet/2015-archive/vol-16-no-01---10-january-2015). The Association of Mathematics Teacher Educators (AMTE) recently submitted a response that detailed the organization's concerns with the proposed regulations. This letter can be read at http://amte.net/sites/default/files/amte_response_fedregs_jan_2015.pdf

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Example: Subscribe COMET Albert Einstein

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