

https://www.nctm.org/uploadedFiles/Research_and_Advocacy/NCTM_NCSM_Moving_Forward.pdf

NCTM Timeline

<https://www.nctm.org/100timeline/>

Principles to Actions, NCTM, 2014

<https://www.nctm.org/PtA/#:~:text=NCTM's%20landmark%20publication%20Principles%20to%20mathematics%20program%20at%20all%20levels.>

Mathematics Teaching Practices
Establish mathematics goals to focus learning. Effective teaching of mathematics establishes clear goals for the mathematics that students are learning, situates goals within learning progressions, and uses the goals to guide instructional decisions.
Implement tasks that promote reasoning and problem solving. Effective teaching of mathematics engages students in solving and discussing tasks that promote mathematical reasoning and problem solving and allow multiple entry points and varied solution strategies.
Use and connect mathematical representations. Effective teaching of mathematics engages students in making connections among mathematical representations to deepen understanding of mathematics concepts and procedures and as tools for problem solving.
Facilitate meaningful mathematical discourse. Effective teaching of mathematics facilitates discourse among students to build shared understanding of mathematical ideas by analyzing and comparing student approaches and arguments.
Pose purposeful questions. Effective teaching of mathematics uses purposeful questions to assess and advance students' reasoning and sense making about important mathematical ideas and relationships.
Build procedural fluency from conceptual understanding. Effective teaching of mathematics builds fluency with procedures on a foundation of conceptual understanding so that students, over time, become skillful in using procedures flexibly as they solve contextual and mathematical problems.
Support productive struggle in learning mathematics. Effective teaching of mathematics consistently provides students, individually and collectively, with opportunities and supports to engage in productive struggle as they grapple with mathematical ideas and relationships.
Elicit and use evidence of student thinking. Effective teaching of mathematics uses evidence of student thinking to assess progress toward mathematical understanding and to adjust instruction continually in ways that support and extend learning.

Guiding Principles for School Mathematics

Teaching and Learning. An excellent mathematics program requires effective teaching that engages students in meaningful learning through individual and collaborative experiences that promote their ability to make sense of mathematical ideas and reason mathematically.

Access and Equity. An excellent mathematics program requires that all students have access to a high-quality mathematics curriculum, effective teaching and learning, high expectations, and the support and resources needed to maximize their learning potential.

Curriculum. An excellent mathematics program includes a curriculum that develops important mathematics along coherent learning progressions and develops connections among areas of mathematical study and between mathematics and the real world.

Tools and Technology. An excellent mathematics program integrates the use of mathematical tools and technology as essential resources to help students learn and make sense of mathematical ideas, reason mathematically, and communicate their mathematical thinking.

Assessment. An excellent mathematics program ensures that assessment is an integral part of instruction, provides evidence of proficiency with important mathematics content and practices, includes a variety of strategies and data sources, and informs feedback to students, instructional decisions, and program improvement.

Professionalism. In an excellent mathematics program, educators hold themselves and their colleagues accountable for the mathematical success of every student and for their personal and collective professional growth toward effective teaching and learning of mathematics.

Catalyzing Change

<https://www.nctm.org/change/>

Modern Algebra, 1923

Schorling and Clark

https://www.google.com/books/edition/_/RStCAAAAIAAJ?hl=en&gbpv=1

Crossword puzzle, Mathematics Teacher, March 1940,

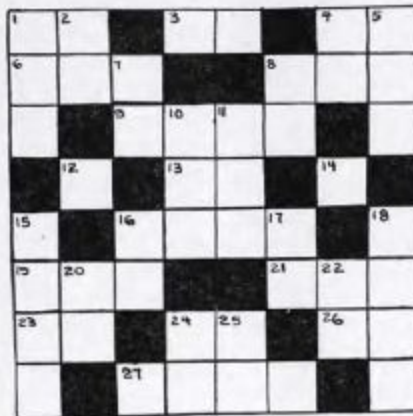
[https://www.nctm.org/Publications/Mathematics-Teacher/1940/Vol1/Issue1/Full-issue-PDF-of-Mathematics-Teacher-volume-33,-number-3-\(March-1940\)_/](https://www.nctm.org/Publications/Mathematics-Teacher/1940/Vol1/Issue1/Full-issue-PDF-of-Mathematics-Teacher-volume-33,-number-3-(March-1940)_/)

◆ THE ART OF TEACHING ◆

Crossword Puzzle on Percentage

By C. R. PURDY

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HORIZONTAL

1. $\frac{1}{4}$ as a per cent.
3. A salesman paid \$400 for a car and sold it at a profit of 20%. What was the profit?
4. A class of 36 pupils is $33\frac{1}{3}\%$ boys. How many boys are there in the class?
6. $1\frac{1}{2}$ expressed to the closest even per cent.
8. $3\frac{1}{2}$ as a per cent.
9. A newspaper report said that out of 9000 people at a football game, 12.9% were ladies. How many ladies were present?
12. Original price of a tennis racket if it sells for \$5 after a $16\frac{2}{3}\%$ discount is given.
13. Interest on \$1000 at 6% for 1 yr. 5 mo.
14. $\frac{1}{4}\%$ of 400.
16. 300% of 1903.
19. A man spent \$55 a month on food. This was 25% of his income. What was his income?
21. It is 520 miles from Chicago to St. Louis and 200 miles from Chicago to Indianapolis. What per cent of the distance to Indianapolis is the distance to St. Louis?
23. A paper boy sells 40 copies one week and increases his sales $12\frac{1}{2}\%$ the next week. How many papers did he sell in the two weeks?
24. $8\frac{1}{2}\%$ of a gross.
26. A house is insured for \$9000 for one year, at 20¢ per \$100. What is the premium per year?
27. Express $1\frac{1}{4}\%$ as a decimal.

VERTICAL

1. A salesman sells \$7110 worth of goods in two months. What is his commission if the rate of commission is 10%.
2. .53 as a per cent.
4. A man's salary was increased from \$200 a month to \$230. Find the per cent of increase.
5. Bolts that cost $\frac{1}{2}$ cents each to make, are sold for 1¢ each. What is the per cent of profit?
7. Net proceeds from a sale of \$50 if the salesman is paid a commission of 38%.
8. Rate of commission paid a salesman if he is given \$93 for a \$300 sale.
10. The sale price of an article priced at \$220 if a 15% discount is given.
11. A man saves 10% of his income. What is his monthly income if he saves \$65 each month?
15. 100% of the number of feet in a mile.
16. $7 = \frac{\quad}{\quad}\%$ of 14.
17. $23 = 25\%$ of $\frac{\quad}{\quad}$.
18. Net price = \$7000, discount = \$915, marked price = $\frac{\quad}{\quad}$?
20. A floor 20×22 ft. has a $9' \times 12'$ rug. To the closest even per cent, what per cent of the floor is covered by the rug?
22. $30\frac{1}{2}$ is what per cent of 50?
24. Goods costing \$20 are sold for \$17.80. What is the per cent of loss?
25. A lease which was formerly \$400 per year is increased to \$488. What is the per cent of increase?

April 1940

[https://www.nctm.org/Publications/Mathematics-Teacher/1940/Vol1/Issue1/Full-issue-PDF-of-Mathematics-Teacher-volume-33.-number-4-\(April-1940\)_/](https://www.nctm.org/Publications/Mathematics-Teacher/1940/Vol1/Issue1/Full-issue-PDF-of-Mathematics-Teacher-volume-33.-number-4-(April-1940)_/)

Presenting the Report of the Joint Commission to the National Council of Teachers of Mathematics

By E. R. BRESLICH

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THE DEVELOPMENT of the mathematical curriculum of the secondary schools is divided into two periods, one from 1893 to 1923 and the other from 1923 to 1940. The first period begins with the report of the famous *Committee of Ten on Secondary Studies*, the second with the report of the equally famous *Committee on Mathematical Requirements*. Each report has made a lasting impression on the mathematical curriculum. The presentation of the report

taken an active interest in the work of the lower schools adds greatly to the value of this report.

From the beginning it has been the policy of the commission to draw the general teaching public into their discussions. Members of the commission have taken the problems to numerous local groups of teachers for criticisms and suggestions. Two years ago a tentative report was published. This was widely distrib-

1950 April

[https://www.nctm.org/Publications/Mathematics-Teacher/1950/Vol1/Issue1/Full-issue-PDF-of-Mathematics-Teacher-volume-43.-number-4-\(April-1950\)_/](https://www.nctm.org/Publications/Mathematics-Teacher/1950/Vol1/Issue1/Full-issue-PDF-of-Mathematics-Teacher-volume-43.-number-4-(April-1950)_/)

<https://mtbos.org/>

DESMOS

<https://student.desmos.com/join/8pb2a5>

8th grade Algebra

Berry, 2018/19?

https://www.nctm.org/News-and-Calendar/Messages-from-the-President/Archive/Robert-Q_-Berry-III/Initiating-Critical-Conversations-on-the-Discontinuation-of-Tracking/

Larson 2017

https://www.nctm.org/News-and-Calendar/Messages-from-the-President/Archive/Matt-Larson/Are-We-Breaking-Down-Barriers-to-Student-Learning_/

<https://my.nctm.org/blogs/matthew-larson/2017/12/20/mathematics-learning-a-journey-not-a-sprint>

Linda Gojak, NCTM President (12-14), 2013

https://www.nctm.org/News-and-Calendar/Messages-from-the-President/Archive/Linda-M_-Gojak/Algebra_-Not-_If_-_but-_When_/

EXCELLENCE IN MATHEMATICS EDUCATION—FOR ALL is the goal to which the NCTM looks forward. As the great accomplishments of the last fifty years toward this goal are recounted, they challenge us to meet the dawning fifty with even greater vigor. What are some of these challenges?

Students are still dropping out of school because their interest in mathematics has not been “turned on.” How can we make mathematics more relevant to them? Students are progressing at ever-varying rates. How can we provide the best individualized programs? Computers are assuming an overwhelming place in modern life. What is the responsibility of mathematics teachers and NCTM in this field? School organizations are changing to adjust to research findings. What are the responsibilities of the NCTM to administrators and curriculum directors? Evaluation and school marks are a constant challenge to teachers and a source of frustration to students and parents. How can the NCTM help students to get a fair deal? The National Bureau of Standards is in a congressionally authorized three-year study to help the nation make a long-needed decision about the future of its measuring system, now predominantly based on the English system in a world almost entirely committed to the metric system. What responsibilities does the NCTM have to help in making the decision and in implementing it? The new mathematics programs are stimulating students, both young and mature, to read mathematics and forge ahead “on their own.” How are teachers at *any* level to act if student researchers outpace them? (It has been said that permitting a degree of insecurity may be a higher teaching qualification than the determination to keep ahead of the students.) The recent cross-cultural study in twelve countries showed great differences in mathematics achievement. What steps can the NCTM take to improve student achievement in the United States?

Our astronauts, thanks to the mathematics of celestial navigation and the technology of the twentieth century, have conquered the moon. How can mathematics help in the next steps to Mars and to other universes? Let us all pitch in and help the NCTM meet these challenges!

Sir Isaac Newton said that the reason he could see so far was that he stood on the shoulders of giants. Similarly, are we in the NCTM not standing on the shoulders of the dedicated and inspired workers of the past fifty years? Let us all rededicate ourselves to carry on the great work of the NCTM, to which we say on its birthday, "May the next fifty years be even more glorious than the first fifty!"



Veryl Schult, the author of this article, was formerly supervising director of mathematics in the District of Columbia Public Schools. She is at present with the U.S. Office of Education, Washington, D.C., and is chairman of the NCTM Fiftieth Anniversary Committee.

Michael Shaughnessy (10-12), 2011

https://www.nctm.org/News-and-Calendar/Messages-from-the-President/Archive/J_-Michael-Shaughnessy/Let_s-Not-Forget-Geometry!/

https://www.nctm.org/News-and-Calendar/Messages-from-the-President/Archive/J_-Michael-Shaughnessy/Endless-Algebra%e2%80%94the-Deadly-Pathway-from-High-School-Mathematics-to-College-Mathematics/

<https://www.brookings.edu/research/advanced-math-in-eighth-grade/>

Francis (Skip Fennell), NCTM President (06-08), 2008

https://www.nctm.org/News-and-Calendar/Messages-from-the-President/Archive/Skip-Fennell/What-Algebra_-When_/

Cathy Seeley, NCTM Preside (04-06), 2005,

<https://www.nctm.org/News-and-Calendar/Messages-from-the-President/Archive/Cathy-Seeley/Pushing-Algebra-Down/>

Lott 2003 "I think most everybody recognizes the importance of algebra.

It is a question of how they introduce it and when," he says.

In an article in the *Mathematics Teacher*, Usiskin (1987) suggested that under certain conditions, algebra could and should be an eighth-grade course in the United States. But the very suggestion makes it clear that at that time, algebra was primarily a high school mathematics topic, or, more accurately, a pair of high school mathematics courses.

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