OFFICE OF QUALITY PROFESSIONALS
Summary of State Board of Education Items
May 16-17, 2013

OFFICE OF EDUCATOR LICENSURE

21.   Approval to begin the Administrative Procedures Act process: To Approve Praxis
       Core Academic Skills for Educators Reading (5712), Writing (5722), and
       Mathematics (5732) and Recommended Passing Scores as Recommended by
       the Commission on Teacher and Administrator Education, Certification and
       Licensure and Development

Executive Summary

A multistate standard-setting panel established by Educational Testing Service
(ETS) has concluded a study of the new Praxis Core Academic Skills for
Educators (CASE) test. These tests serve as entry exams for students to be
admitted into teacher education programs or alternate route programs. The
Multistate Standard-Setting Technical Report of the CASE test from ETS assist
state agencies in setting cut scores for regenerated tests. The report lists the
suggested cut scores from the multistate standard-setting panel study.

In September 2013, CASE will replace the current Praxis I Pre-Professional Skills
Test (PPST) Reading 0710/5710, Writing 0720/5720 and Mathematics
0730/5730.

On May 3, 2013, the Commission on Teacher and Administrator Education,
Certification and Licensure Development (the Commission) approved the
recommendation to accept the CASE tests with the recommended cut scores.
These passing CASE scores reflect the cut scores recommended by the
multistate standard-setting panel.

During the transition to the CASE, the Office of Educator Licensure will continue
to accept passing PPST scores through December 31, 2013 from applicants who
meet all other licensure qualifications as listed in the Licensure Guidelines K-12.

Recommendation: Approval

Back-up material attached

APPENDIX C:
PRAXIS I & PRAXIS II PLT SCORES

PRAXIS I REQUIREMENTS FOR EDUCATOR LICENSURE

~~PRE-PROFESSIONAL SKILLS TEST~~	PASSING SCORE
CORE ACADEMIC SKILLS FOR EDUCATORS	
Reading (~~**0710 or 5710**~~) (5712)	~~172~~ 156
Writing (~~**0720 or 5720**~~) (5722)	1~~73~~ 162
Mathematics (~~**0730 or 5730**~~) (5732)	~~172~~ 150

PRAXIS II REQUIREMENTS FOR EDUCATOR LICENSURE
(For Approved Teacher Education Program Candidates only)

PRINCIPLES OF LEARNING AND TEACHING (PLT)	PASSING SCORE
Grade Level Pre-K – K (**0621**)	157
Grade Level K-6 (**0622**)	160
Grade Level 4-6 (**0623**)	160
Grade Level 7-12 (**0624**)	157

Multistate Standard-Setting Technical Report

PRAXIS™ CORE ACADEMIC SKILLS FOR EDUCATORS
READING (5712)
WRITING (5722)
MATHEMATICS (5732)

Licensure and Credentialing Research

ETS

Princeton, New Jersey

February 2013

EXECUTIVE SUMMARY

To support the decision-making process of education agencies establishing passing scores (cut scores) for the Praxis™ Core Academic Skills for Educators Reading (5712), Writing (5722), and Mathematics (5732) subtests, research staff from Educational Testing Service (ETS) designed and conducted a multistate standard-setting study.

PARTICIPATING JURISDICTIONS

Panelists from 23 states, Washington, DC, and Guam were recommended by their respective education agency. The education agencies recommended panelists with (a) experience preparing teachers candidates and (b) familiarity with the knowledge and skills required of candidates entering a teacher preparation program.

RECOMMENDED PASSING SCORES

ETS provides recommended passing scores from the multistate standard-setting study to help education agencies determine appropriate operational passing scores. For the Praxis Core Academic Skills for Educators subtests, the recommended passing scores[1] are

- **Reading**. The recommended passing score is 31 out of a possible 50 raw-score points. The scaled score associated with a raw score of 31 is 156 on a 100–200 scale.

- **Writing**. The recommended passing score is 44 out of a possible 70 raw-score points. The scaled score associated with a raw score of 44 is 162 on a 100–200 scale.

- **Mathematics**. The recommended passing score is 29 out of a possible 50 raw-score points. The scaled score associated with a raw score of 29 is 150 on a 100–200 scale.

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[1] Results from two panels participating in the study were averaged to produce the recommended passing score for each subtest.

To support the decision-making process of education agencies establishing passing scores (cut scores) for the Praxis™ Core Academic Skills for Educators Reading (5712), Writing (5722), and Mathematics (5732) subtests, research staff from ETS designed and conducted a multistate standard-setting study in January 2013 in Princeton, New Jersey. Education agencies[2] recommended panelists with (a) experience preparing teachers candidates and (b) familiarity with the knowledge and skills required of candidates entering a teacher preparation program. Twenty-three states, Washington, DC, and Guam (see Table 1) were represented by 74 panelists. (See Appendix A for the names and affiliations of the panelists.)

Table 1
Participating Jurisdictions and Number of Panelists

Alaska (2 panelists)	North Dakota (2 panelists)
Arkansas (4 panelists)	Nebraska (4 panelists)
Connecticut (4 panelists)	New Hampshire (3 panelists)
Delaware (3 panelists)	New Jersey (3 panelists)
Guam (4 panelists)	Nevada (3 panelists)
Hawaii (3 panelists)	Rhode Island (2 panelists)
Iowa (1 panelist)	South Carolina (4 panelists)
Kentucky (2 panelists)	Tennessee (2 panelists)
Louisiana (4 panelists)	Vermont (2 panelists)
Maryland (4 panelists)	Washington, DC (1 panelist)
Maine (4 panelists)	Wisconsin (2 panelists)
Mississippi (4 panelists)	West Virginia (4 panelists)
North Carolina (3 panelists)	

The following technical report contains three sections. The first section describes the content and format of each subtest. The second section describes the standard-setting processes and methods. The third section presents the results of the standard-setting study.

ETS provides recommended passing scores from the multistate standard-setting study to education agencies. In each jurisdiction, the department of education, the board of education, or a designated educator licensure board is responsible for establishing the operational passing scores for

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[2] States and jurisdictions that currently use Praxis were invited to participate in the multistate standard-setting study.

each subtest in accordance with applicable regulations. This study provides recommended passing scores, which represents the combined judgments of two panels of experienced educators. Each jurisdiction may want to consider the recommended passing scores and other sources of information when setting the final Praxis Core Academic Skills for Educator passing scores (see Geisinger & McCormick, 2010). A jurisdiction may accept the recommended passing scores, adjust one or more of the scores upward to reflect more stringent expectations, or adjust one or more of the scores downward to reflect more lenient expectations. There are no *correct* decisions; the appropriateness of any adjustment may only be evaluated in terms of its meeting the jurisdiction's needs.

Two sources of information to consider when setting the passing scores are the standard error of measurement (SEM) and the standard error of judgment (SEJ). The former addresses the reliability of the Praxis Core Academic Skills for Educators subtests and the latter, the reliability of panelists' passing-score recommendations. The SEM allows a jurisdiction to recognize that any test score on any standardized test—including the Praxis Core Academic Skills for Educator subtests—is not perfectly reliable. A test score only *approximates* what a candidate truly knows or truly can do on the test. The SEM, therefore, addresses the question: How close of an approximation is the test score to the *true* score? The SEJ allow a jurisdiction to gauge the likelihood that a recommended passing score from the current panel would be similar to the passing scores recommended by other panels of experts similar in composition and experience. The smaller the SEJ, the more likely that another panel would recommend a passing score consistent with the recommended passing score. The larger the SEJ, the less likely the recommended passing score would be reproduced by another panel.

In addition to measurement error metrics (e.g., SEM, SEJ), each jurisdiction should consider the likelihood of classification error. That is, when adjusting a passing score, policymakers should consider whether it is more important to minimize a false-positive decision or to minimize a false-negative decision. A false-positive decision occurs when a candidate's test score suggests he should receive a license/certificate, but his actual level of knowledge/skills indicates otherwise (i.e., the candidate does not possess the required knowledge/skills). A false-negative decision occurs when a candidate's test score suggests that she should not receive a license/certificate, but she actually does possess the required knowledge/skills. The jurisdiction needs to consider which decision error may be more important to minimize.

OVERVIEW OF THE PRAXIS CORE ACADEMIC SKILLS FOR EDUCATORS

The Praxis Core Academic Skills for Educators *Test at a Glance* documents (ETS, in press) describes the purpose and structure of each subtest. In brief, the Praxis Core Academic Skills for Educators subtests measure whether candidates entering a teacher preparation program have the necessary reading, writing, and mathematical knowledge/skills. Each subtest — Reading, Writing, and Mathematics — is administered and scored separately.

- **Reading.** The 85-minute subtest contains 56 multiple-choice items[3] covering three content areas: *Key Ideas and Details*, *Craft, Structure and Language Skills*, and *Integration of Knowledge and Ideas*.

- **Writing.** The 100-minute subtest contains 40 multiple-choice items[4] covering two content areas: *Text Types, Purposes and Production* and *Language and Research Skills for Writing* .

- **Mathematics.** The 85-minute subtest contains 56 multiple-choice and numeric-entry items[5] covering four content areas: *Number and Quantity*, *Algebra and Functions*, *Geometry*, and *Statistics an Probability*.

The reporting scale for all three Praxis Core Academic Skills for Educators subtests ranges from 100 to 200 scaled-score points.

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[3] Six of the 56 multiple-choice items are pretest items and do not contribute to a candidate's score.
[4] Six of the 40 multiple-choice items are pretest items and do not contribute to a candidate's score.
[5] Six of the 56 multiple-choice or numeric entry items are pretest items and do not contribute to a candidate's score.

Core Academic Skills for Educators: Reading (5712)

Test at a Glance	
Test Name	**Core Academic Skills for Educators: Reading**
Test Code	**5712**
Time	**85 Minutes**
Number of Questions	**56 multiple-choice questions**
Format	**Multiple-choice questions based on reading passages and statements**

	Content Categories	Approximate Number of Questions*	Approximate Percent of Examination
I.	Key Ideas and Details	17-22	35%
II.	Craft, Structure, and Language Skills	14-19	30%
III.	Integration of Knowledge and Ideas	17-22	35%

* Includes both scored and unscored (pretest) questions. Depending on the number of pretest questions included in each scoring category, the total number of questions in that category may vary from one form of the test to another. The number of scored questions included in a given category is the same for all forms of the test.

About This Test

The Core Academic Skills for Educators Test in Reading measures basic academic skills in Reading needed to prepare successfully for a career in education. All skills assessed have been identified as needed for college and career readiness, in alignment with the Common Core State Standards for Reading. In particular, there is an emphasis on skills that are critical to learning and achievement in teacher preparation programs. These skills include the ability to understand, analyze, and evaluate written messages of different kinds. Varying in difficulty, the reading material on the test is drawn from a variety of subject areas and real - life situations that educated adults are likely to encounter. Each passage is followed by questions that are based on its content and that relate to reading skills. All questions can be answered by using information contained within the passage; no question requires outside knowledge of the content.

The test consists of four types of stimulus material: paired passages totaling approximately 200 words followed by 4 to 7 questions, long passages of approximately 200 words with 4 to 7 questions, short passages of approximately 100 words with 2 or 3 questions, and brief statements followed by a single question. Passages are drawn from both print and electronic media, such as newspapers, magazines, journals, nonfiction books, novels, online articles, and visual representations. Questions in each of the formats may pose tasks of varying difficulty and test any of the skills identified in the Topics Covered section.

This test may contain questions that will not count toward your score.

Topics Covered

I. Key Ideas and Details

- Read closely to determine what a text says explicitly and to make logical inferences from it; connect insights gained from specific details to an understanding of the text as a whole; attend to important distinctions the author makes and to any gaps or inconsistencies in the account; determine where the text leaves matters uncertain
    - Draw inferences and implications from the directly stated content of a reading selection

- Determine central ideas or themes of a text and analyze their development; identify accurate summaries of key supporting details and ideas
    - Identify summaries or paraphrases of the main idea or primary purpose of a reading selection
    - Identify summaries or paraphrases of the supporting ideas and specific details in a reading selection

- Identify how and why individuals, events, or ideas interact within a text; determine how an idea or detail informs an author's argument

II. Craft, Structure, and Language Skills

- Interpret words and phrases as they are used in a text and recognize how specific word choices shape meaning or tone
    - Determine the author's attitude toward material discussed in a reading selection

- Analyze the structure of a text, including how specific parts of a text relate to each other and to the whole to contribute to meaning
    - Identify key transition words and phrases in a reading selection and how they are used

    - Identify how a reading selection is organized in terms of cause/effect, compare/contrast, problem/solution, etc

- Assess how point of view or purpose shapes the content and style of a text
    - Determine the role that an idea, reference, or piece of information plays in an author's discussion or argument

- Apply knowledge of language to understand how language functions in different contexts and to comprehend more fully when reading
    - Determine whether information presented in a reading selection is presented as fact or opinion

- Determine the meaning of unknown and multiple-meaning words and phrases by using context clues
    - Identify the meanings of words as they are used in the context of a reading selection

- Understand figurative language and nuances in word meanings

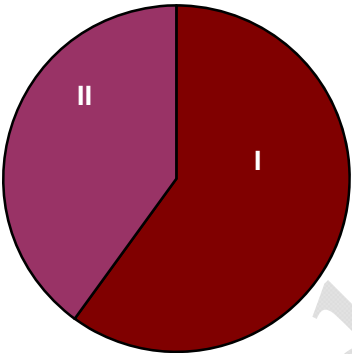- Understand a range of words and phrases sufficient for reading at the college and career readiness level

III. Integration of Knowledge and Ideas

- Analyze content presented in diverse media and formats, including visually and quantitatively, as well as in words
  - ⎯ Answer questions about texts that include visual representations

- Identify and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence
  - ⎯ Identify the relationship among ideas presented in a reading selection
  - ⎯ Determine whether evidence strengthens, weakens, or is relevant to the arguments in a reading selection
  - ⎯ Determine the logical assumptions upon which an argument or conclusion is based
  - ⎯ Draw conclusions from material presented in a reading selection

- Analyze how two or more texts address similar themes or topics in order to build knowledge and/or compare the approaches the authors take
  - ⎯ Recognize or predict ideas or situations that are extensions of or similar to what has been presented in a reading selection
  - ⎯ Apply ideas presented in a reading selection to other situations

Core Academic Skills for Educators: Writing (5722)

Test at a Glance	
Test Name	**Core Academic Skills for Educators: Writing**
Test Code	**5722**
Time	**100 minutes, divided into a 40-minute multiple-choice section and two 30-minute essay sections**
Number of Questions	**40 multiple-choice questions, 2 essay questions**
Format	**Multiple-choice questions involving usage, sentence correction, revision in context, and research skills; 2 essay topics as the basis for writing samples**

	Content Categories:	Approximate Number of Questions*	Approximate Percentage of Examination
	I. Text Types, Purposes, and Production	6-12 multiple-choice questions, 2 essay questions	60%
	II. Language and Research Skills for Writing	28-34 multiple-choice questions	40%

* Includes both scored and unscored (pretest) questions. Depending on the number of pretest questions included in each scoring category, the total number of questions in that category may vary from one form of the test to another. The number of scored questions included in a given category is the same for all forms of the test.

About This Test

The Core Academic Skills for Educators Test in Writing measures basic academic skills in Writing needed to prepare successfully for a career in education. All skills assessed have been identified as needed for college and career readiness, in alignment with the Common Core State Standards for Writing.

The Writing test is 100 minutes in length and has three separately timed sections: a 40-minute multiple-choice section containing 40 multiple-choice questions and two 30-minute essay sections that each require a response based on an essay topic. This test may contain some questions that will not count toward your score.

The multiple-choice section is designed to measure examinees' ability to use standard written English correctly and effectively. This section is divided into four parts: usage, sentence correction, revision in context, and research skills. In the usage questions, examinees are asked to recognize errors in mechanics, in structural and grammatical relationships, and in idiomatic expressions or word choice and they are also asked to recognize sentences that have no errors and that meet the conventions of standard written English. The sentence correction questions require examinees to select, from among the choices presented, the best way to restate a certain phrase or sentence by using standard written English; in some cases, the phrase or sentence is correct and most effective as stated. Examinees are not required to have a knowledge of formal grammatical terminology. In the revision-in-context questions, examinees are asked to recognize how a passage with which they are presented can be strengthened through editing and revision. Revision-in-context questions require examinees to consider development, organization, word choice, style, tone, and the conventions of standard written English. In some cases, the indicated portion of a passage will be most effective as it is already expressed and thus will require no changes.
In the research skills questions, examinees are asked to recognize effective research strategies, recognize the different elements of a citation, recognize information relevant to a particular research task, and assess the credibility of sources.

The two essays assess examinees' ability to write effectively in a limited period of time. The Argumentative essay topic invites examinees to draw from personal experience, observation, or reading to support a position with specific reasons and examples. The Informative/Explanatory essay topic asks examinees to extract information from two provided sources in order to identify important concerns related to an issue.

The topics for the Argumentative and Informative/Explanatory essays attempt to present situations that are familiar to all educated people; no topic will require any specialized knowledge other than an understanding of how to write effectively in English.

Examinees should write only on the topic assigned for each essay task, address all the points presented in the topic, and support generalizations with specific examples. For the Informative/Explanatory essay, examinees should also draw information from both sources, making sure to cite the source of the information. Before beginning to write each essay, examinees should read the topic and organize their thoughts carefully.

Experienced teachers read and evaluate each essay holistically (that is, with a single score for overall quality) under carefully controlled conditions designed to ensure fair and reliable scoring. Acknowledging that writing comprises a number of features that are not independent of one another, scorers base their judgments on an assessment of such features as quality of insight or central idea, clarity, consistency of point of view, cohesiveness, strength and logic of supporting information, rhetorical force, appropriateness of diction and syntax, and correctness of mechanics and usage. In addition, for the Informative/Explanatory essay, scorers will also evaluate the examinees' ability to synthesize information from the provided sources and to cite this information in the essay.

Topics Covered

I. Text Types, Purposes, and Production

A. Text Production: Writing Arguments

- Produce an argumentative essay to support a claim using relevant and sufficient evidence
    - Write clearly and coherently
    - Address the assigned task appropriately for an audience of educated adults
    - Organize and develop ideas logically, making coherent connections between them
    - Provide and sustain a clear focus or thesis
    - Use supporting reasons, examples, and details to develop clearly and logically the ideas presented
    - Demonstrate facility in the use of language and the ability to use a variety of sentence structures
    - Construct effective sentences that are generally free of errors in standard written English

B. Text Production: Writing Informative/Explanatory Texts

- Produce an informative/explanatory essay to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content
    - Write clearly and coherently
    - Address the assigned task appropriately for an audience of educated adults
    - Draw evidence from informational texts to support analysis
    - Organize and develop ideas logically, making coherent connections between them
    - Synthesize information from multiple sources on the subject
    - Integrate and attribute information from multiple sources on the subject, avoiding plagiarism
    - Provide and sustain a clear focus or thesis
    - Demonstrate facility in the use of language and the ability to use a variety of sentence structures
    - Construct effective sentences that are generally free of errors in standard written English

C. Text Production: Revision

- Develop and strengthen writing as needed by revising and editing
    - Recognize how a passage can be strengthened through editing and revision
        - Apply knowledge of language to understand how language functions in different contexts and to make effective choices for meaning or style
            - Choose words and phrases for effect
            - Choose words and phrases to convey ideas precisely
            - Maintain consistency in style and tone

II. Language and Research Skills for Writing

A. Language Skills

- Demonstrate command of the conventions of standard English grammar and usage
  - Grammatical Relationships

    Recognize and correct
    - Errors in the use of adjectives and adverbs
    - Errors in noun-noun agreement
    - Errors in pronoun-antecedent agreement
    - Errors in pronoun case
    - Errors in the use of intensive pronoun
    - Errors in pronoun number and person
    - Vague pronouns
    - Errors in subject-verb agreement
    - Inappropriate shifts in verb tense
  - Structural Relationships

    Recognize and correct
    - Errors in the placement of phrases and clauses within a sentence
    - Misplaced and dangling modifiers
    - Errors in the use of coordinating and subordinating conjunctions
    - Fragments and run-ons
    - Errors in the use of correlative conjunctions
    - Errors in parallel structure
  - Word Choice

    Recognize and correct
    - Errors in the use of idiomatic expressions
    - Errors in the use of frequently confused words
    - Wrong word use
    - Redundancy

  - No Error

    Recognize
    - Sentences free of errors in the conventions of standard English grammar and usage

- Demonstrate command of the conventions of standard English capitalization and punctuation
  - Mechanics

    Recognize and correct
    - Errors in capitalization
    - Errors in punctuation
      - Commas (e.g., the use of a comma to separate an introductory element from the rest of the sentence)
      - Semicolons (e.g., the use of a semicolon [and perhaps a conjunctive adverb] to link two or more closely related independent clauses)
      - Apostrophes (e.g., the use of an apostrophe to form contractions and frequently occurring possessives)
  - No Error

    Recognize
    - Sentences free of errors in the conventions of standard English capitalization and punctuation

B. Research Skills

- Recognize and apply appropriate research skills and strategies
    - Assess the credibility and relevance of sources
    - Recognize the different elements of a citation
    - Recognize effective research strategies
    - Recognize information relevant to a particular research task

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Core Academic Skills for Educators: Mathematics (5732)

Test at a Glance	
Test Name	**Core Academic Skills for Educators: Mathematics**
Test Code	**5732**
Time	**84 minutes**
Number of Questions	**56**
Format	**Multiple-choice question—select one answer choice** **Multiple-choice question—select one or more answer choices** **Numeric entry questions** **On-screen calculator available**

Content Categories	Approximate Number of Questions*	Approximate Percentage of Examination
I. Number and Quantity	17	30%
II. Algebra and Functions	17	30%
III. Geometry	11	20%
IV. Statistics and Probability	11	20%

* Includes both scored and unscored (pretest) questions. Depending on the number of pretest questions included in each scoring category, the total number of questions in that category may vary from one form of the test to another. The number of scored questions included in a given category is the same for all forms of the test.

About This Test

The Core Academic Skills for Educators Test in Mathematics measures basic academic skills in Mathematics needed to prepare successfully for a career in education. All skills assessed have been identified as needed for college and career readiness, in alignment with the Common Core State Standards for Mathematics. The test will cover 4 major content areas of Number and Quantity, Algebra and Functions, Geometry, and Statistics and Probability. Focus is on key concepts of mathematics and the ability to solve problems and to reason in a quantitative context. Many of the problems require the integration of multiple skills to achieve a solution.

In Number and Quantity, the understanding of order among integers, representation of a number in more than one way, place value, properties of whole numbers, equivalent computational procedures, ratio, proportion and percent, are emphasized. Algebra assesses the ability to handle equations and inequalities, recognition of various ways to solve a problem, relationship between verbal and symbolic expressions and graphs. Functions questions test the knowledge of basic function definitions, and relationship between the domain and range of any given functions. Geometry assesses the understanding and application of the characteristics and properties of geometric shapes, the Pythagorean Theorem, transformation and use of symmetry to analyze mathematical situations. Knowledge of basic US customary and metric systems of measurement is assumed. Statistics and Probability assesses the ability to read and interpret visual display of quantitative information, understand the correspondence between data and graph, make inferences from a given data display, determine mean, median and mode, and assign a probability to an outcome.

The test is 84 minutes long, and contains 56 questions. This test may contain questions that will not count toward your score. The responses to the pretest questions are used to gauge the statistical performance of each question before its use as a question that will count towards your official score.

The test will contain several types of questions:
*   Multiple-choice question—select one answer choice:
    These questions are multiple-choice questions that ask you to select only one answer choice from a list of five choices.
*   Multiple-choice question—select one or more answer choices:
    These questions are multiple-choice questions that ask you to select one or more answer choice from a list of choices. A question may or may not specify the number of choices to select. These questions are marked with square boxes besides the answer choices, not circles or ovals.
*   Numeric entry questions:
    Questions of this type ask you to enter your answer as an integer or a decimal in a single answer box or to enter it as a fraction in two separate boxes—one for the numerator and one for the denominator. In the computer-based test, use the computer mouse and keyboard to enter your answer.

An on-screen calculator, shown below, is available for computer-based tests. The Transfer Display button can be used on numeric entry questions with a single answer box to transfer the calculator display to the answer box.
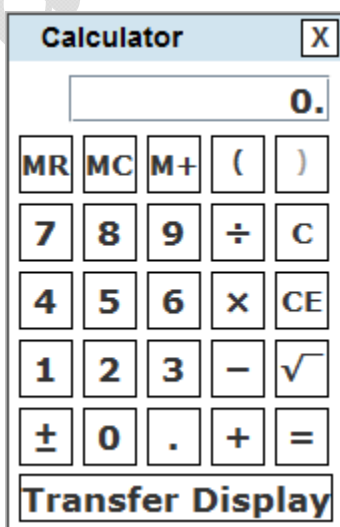
Topics Covered

I. Number and Quantity

- Ratios and Proportional Relationships
  — Understand ratio concepts and use ratio reasoning to solve problems
  — Analyze proportional relationships and use them to solve real-world and mathematical problems

- The Real Number System
  — Apply understanding of multiplication and division to divide fractions by fractions
  — Compute fluently with multi-digit numbers and find common factors and multiples
  — Apply understanding of operations with fractions to add, subtract, multiply, and divide rational numbers
  — Know that there are numbers that are not rational, and approximate them by rational numbers
  — Work with radicals and integer exponents

- Quantities
  — Reason quantitatively and use units to solve problems

II. Algebra and Functions

- Seeing Structure in Expressions
  — Apply understanding of arithmetic to algebraic expressions
  — Solve real-life and mathematical problems using numerical and algebraic expressions
  — Use properties of operations to generate equivalent expressions

- Reasoning with Equations and Inequalities
  — Understand the connections between proportional relationships, lines, and linear equations
  — Understand solving equations as a process of reasoning and explain the reasoning
  — Reason about and solve one-variable equations and inequalities
  — Solve equations and inequalities in one variable
  — Analyze and solve linear equations and pairs of simultaneous linear equations
  — Represent and solve equations and inequalities graphically

- Functions
  — Interpreting Functions
  — Building Functions

III. Geometry

- Congruence
  — Draw, construct, and describe geometrical figures and describe the relationships between them
  — Experiment with transformations in the plane

- Similarity, Right Triangles, and Trigonometry
  — Understand and apply the Pythagorean Theorem

- Circles
  — Understand and apply theorems about circles

- Geometric Measurement and Dimension
  — Solve real-life and mathematical problems involving angle measure, area, surface area, and volume
  — Explain volume formulas and use them to solve problems

- Modeling with Geometry
  — Apply geometric concepts in modeling situations

IV. Statistics and Probability

- Basic Statistics and Probability
  - Develop understanding of statistical variability
  - Summarize and describe distributions
  - Use random sampling to draw inferences about a population
  - Investigate chance processes and develop, use, and evaluate probability models
  - Investigate patterns of association in bivariate data

- Interpreting Categorical and Quantitative Data
  - Summarize, represent, and interpret data on a single count or measurement variable
  - Interpret linear models

- Making Inferences and Justifying Conclusions
  - Understand and evaluate random processes underlying statistical experiments

- Using Probability to Make Decisions (+)
  - Use probability to evaluate outcomes of decisions (+)