Voluntary State Curriculum

Mathematics

PreK-3
3-8
Algebra/Data Analysis
Geometry

Maryland State Department of Education
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Grades PreK – 8

- Algebra/Patterns
- Geometry
- Measurement
- Statistics
- Probability
- Number Relationships/Computation
- Processes of Mathematics

Voluntary State Curriculum Organization

(PreK-8)

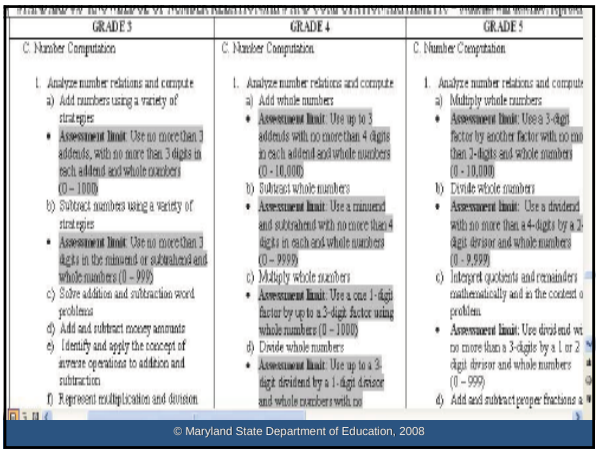
Content Standard

Topic/Strand

Indicator

Objective

Assessment Limit



GRADE 3	GRADE 4	GRADE 5
C. Number Computation	C. Number Computation	C. Number Computation
1. Analyze number relations and compute a) Add numbers using a variety of strategies • **Assessment limit:** Use no more than 3 addends, with no more than 3 digits in each addend and whole numbers (0 – 1000) b) Subtract numbers using a variety of strategies • **Assessment limit:** Use no more than 3 digits in the minuend or subtrahend and whole numbers (0 – 999) c) Solve addition and subtraction word problems d) Add and subtract money amounts e) Identify and apply the concept of inverse operations to addition and subtraction f) Represent multiplication and division	1. Analyze number relations and compute a) Add whole numbers • **Assessment limit:** Use up to 3 addends with no more than 4 digits in each addend and whole numbers (0 - 10,000) b) Subtract whole numbers • **Assessment limit:** Use a minuend and subtrahend with no more than 4 digits in each and whole numbers (0 – 9999) c) Multiply whole numbers • **Assessment limit:** Use a one 1-digit factor by up to a 3-digit factor using whole numbers (0 – 1000) d) Divide whole numbers • **Assessment limit:** Use up to a 3-digit dividend by a 1-digit divisor and whole numbers with no	1. Analyze number relations and compute a) Multiply whole numbers • **Assessment limit:** Use a 3-digit factor by another factor with no more than 2-digits and whole numbers (0 - 10,000) b) Divide whole numbers • **Assessment limit:** Use a dividend with no more than a 4-digits by a 2-digit divisor and whole numbers (0 - 9,999) c) Interpret quotients and remainders mathematically and in the context of problem • **Assessment limit:** Use dividend with no more than a 3-digits by a 1 or 2 digit divisor and whole numbers (0 – 999) d) Add and subtract proper fractions a

Voluntary State Curriculum

- Objectives without an assessment limit
  - Contain content material that is not assessed on MSA for a given school year

BUT DO NOT IGNORE THEM!

  - This content material must be instructed because it lays a critical foundation for skills assessed in later years

Voluntary State Curriculum

- Highlighted assessment limits
  - Calculator use will not be permitted
    - Basic skill item
    - Calculator advantage
    - IEP
- Non-highlighted assessment limits
  - Neutral: calculator may or may not be permitted depending on the item and its location on the assessment

VSC Format for High School Credit Courses

Pre-Requisites from PreK-8	Core Learning Goals	Additional Topics
	NO CHANGES!	

Algebra/Data Analysis on Page 2

CLG 1 The student will demonstrate the ability to investigate, interpret, and communicate solutions to mathematical and real-world problems using patterns, functions and algebra.

1.1 The student will analyze a wide variety of patterns and functional relationships using the language of mathematics and appropriate technology.

1.1.2 The student will represent patterns and/or functional relationships in a table, as a graph, and/or by mathematical expression.

Assessment Limits

- The given pattern must represent a relationship of the form mx + b (linear), x2 (simple quadratic), simple arithmetic progression, or simple geometric progression with all exponents being positive.

Skill Statement

- Given a narrative description, algebraic expression, graph or table, the student will produce a graph, table, algebraic expression of the form mx + b (linear) or x2 (simple quadratic), or equation.

Processes of Mathematics

- Problem Solving
- Reasoning
- Communication
- Connections

Processes of Mathematics

- **Problem Solving**
  - Apply a variety of concepts, processes, and skills to answer a question that has no specific rule or algorithm
- **Reasoning**
  - Justify ideas or solutions with mathematical concepts or proofs
- **Communication**
  - Present mathematical ideas using words, numbers, symbols, visual displays, and technology
- **Connections**
  - Relate or apply mathematics within the discipline, to other disciplines, and to life

Problem Solving

- Apply a variety of concepts, processes, and skills to solve a problem
  - Draw a picture
  - Make a table, a graph, or an organized list
  - Look for a pattern
  - Guess and check
  - Work backwards
  - Find a similar problem

Reasoning

- Justify ideas or solutions with mathematical concepts or proofs
  - Use the rules or laws of mathematics to solve a problem
  - Make logical conclusions

Communication

- Present mathematical ideas using words, symbols, visual displays, or technology
  - Begin by talking and reflecting about mathematics before writing
  - Symbols and numbers are as good as words

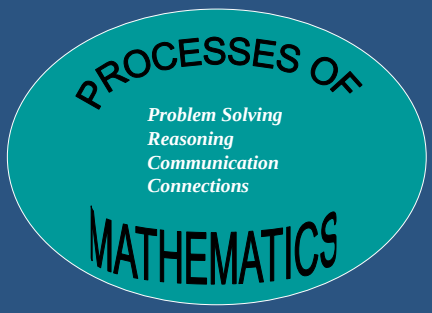
Communication

- Reading
- Listening
- Speaking
- Writing

Connections

- Relate or apply mathematics within the discipline, to other disciplines, and to life
  - Mathematics is a life skill
  - Examine how measurement indicators are applied in geometry
  - Examine how number computation is applied in algebra, geometry, measurement, statistics, and probability

Use of the Processes



Explain How

Put the decimals below in order from least to greatest.

2.99 29.9 .299 299

Explain how you found your answer. Use what you know about place value in your explanation. Use words, numbers and/or symbols in your explanation.

Explain Why
Justify Why

Complete the pattern below.

9, 12, 15, 18, ____, 24 …

Explain why (justify why) your answer is correct.
Use what you know about patterns in your explanation.
Use words and/or numbers in your explanation (justification).

Levels of Cognitive Demand

Level	Description
Recall Knowledge	The lowest level only requires the ability to recall rote knowledge.
Application Analysis	The middle level requires the ability to apply knowledge.
Synthesis Evaluation	The highest level requires the ability to make judgments about information.

	Skills Demonstrated	Question Cues
Level 1 Knowledge Comprehension	Make observations Recall information Recognize formulas, properties, patterns, processes Know vocabulary, definitions Know basic concepts Perform one-step processes Interpret facts Compare or contrast simple concepts/ideas Translate from one representation to another Identify relationships	Tell what...when...where Find List Define Identify; labels; name Choose; select Compute; estimate Compare; contrast Express as Read from data displays Order

	Skills Demonstrated	Question Cues
Level 2 Application Analysis	Apply learned information to abstract and real life situations Use methods, concepts, theories in abstract and real life situations Perform multi-step processes Solve problems using required skills or knowledge (requires more than habitual response) Make a decision about how to proceed Identify and organize components of a whole Extend patterns Identify/describe cause and effect Recognize unstated assumptions, make inferences	Apply Calculate; solve Complete Describe Explain how; demonstrate Construct data displays Construct; draw Analyze Extend Connect Classify Arrange

	Skills Demonstrated	Question Cues
Level 3 **Synthesis** **Evaluation**	Solve an open-ended problem with more than one correct answer Create a pattern Generalize from given facts Relate knowledge from several source Draw conclusions Make predictions Translate knowledge into new context Compare and discriminate between ideas Assess value of methods, concepts, theories, processes, formulas Make choices based on reasoned argument Verify the value of evidence, information, number, data	Plan; prepare Predict Create; design Ask "what if?" questions Generalize Justify; explain why; support; convince Assess Rank; grade Test; judge Recommend Select Conclude

1. Find the area of the rectangle below.

2. The area of a rectangle is 24 square centimeters. If the width is 3 cm, what is the length of the rectangle?
   Explain how you found your answer.

3. The area of a rectangle is 60 square units. What are the length and the width of the rectangle?
   Explain why your answer is correct.


School Improvement in MARYLAND
ASSESSMENTS
DATA ANALYSIS
INSTRUCTION
SCHOOL IMPROVEMENT
ADMINISTRATORS
Toolkit
Core Learning Goals Toolkit
ENGLISH LANGUAGE ARTS
ALGEBRA/ DATA ANALYSIS & GEOMETRY
BIOLOGY
GOVERNMENT
Voluntary State Curriculum Toolkit
READING
MATHEMATICS
SCIENCE
SOCIAL STUDIES
The Toolkit is a project developed and implemented by the Maryland State Department of Education (MSDE) in partnership with local school system staff.The project has two main goals:
1) to provide Maryland educators with additional resources that will assist them in the instruction of content and skills contained in the voluntary state curriculum and Core Learning Goals.
2) to enhance student learning in the classroom, as well as improve student success on all Maryland assessments.
Explanation of CLG Resources
CLG Toolkit resources are embedded in the Core Learning Goals document. Different types of tools are under development, although not all tools are currently available for every indicator.
Public Release Item: Public release items have appeared on HSA forms and then are released for public viewing and use. Releasing items is one step to ensuring that schools, districts, and other stakeholders understand how the core learning goals are assessed on the HSA.
Skill Statement: The Skill Statement gives the reader direction on how an assessment item is written. The Skill Statement describes what information may be given and/or the format of that information. In addition, the Skill Statement describes how the student is expected to respond to the item.
Sample Assessment: Each sample assessment item gives an idea of how an assessment item on the High School Assessment (HSA) might be presented. The items appropriately measure the content of the Core Learning Goals and are formatted similarly to those appearing on the HSA.
Explanation of VSC Resources


School Improvement in MARYLAND
ASSESSMENTS
DATA ANALYSIS
INSTRUCTION
SCHOOL IMPROVEMENT
ADMINISTRATORS
VSC Toolkit
View the tools for each Mathematics Standard:
The VSC Toolkit is a project developed and implemented by the Maryland State Department of Education (MSDE) in partnership with Local School System (LSS) personnel. The project has two goals. The first goal is to provide Maryland educators with additional resources that will assist them in the instruction of content and skills contained in the Voluntary State Curriculum (VSC). The second goal is to enhance student learning in the classroom, as well as improve student success on all Maryland assessments.
VSC Standard 1.0 Knowledge of Algebra, Patterns, and Functions
VSC Standard 2.0 Knowledge of Geometry
VSC Standard 3.0 Knowledge of Measurement
VSC Standard 4.0 Knowledge of Statistics
VSC Standard 5.0 Knowledge of Probability
VSC Standard 6.0 Knowledge of Number Relationships and Computation/Arithmetic
VSC Standard 7.0 Processes of Mathematics
Pk K 1 2 3 4 5 6 7 8
Explanation of the Tools in the VSC Toolkit
The tools for the Toolkit are embedded in the VSC document at the objective level. Nine different types of tools are under development, although not all tools are currently available for every objective.
Clarifications: Each clarification provides an explanation of an indicator/objective to help teachers better understand the skills and/or concepts.
Lesson Plans: The lesson plans have been juried by Maryland educators and could be used when teaching this concept.
Lesson Seeds: The lesson seeds are ideas for the indicator/objective that can be used to build a lesson. Lesson seeds are not meant to be all-inclusive, nor are they substitutes for instruction.
Sample Assessments: Each sample assessment item gives an idea of how an assessment item on the Maryland School Assessment (MSA) might be presented. The items appropriately measure the content of the VSC and may be formatted similarly to those appearing on the MSA; however, these are sample items only and have not appeared on any MSA form.
Prerequisite Skills: The prerequisite skills describe what concepts a student needs to understand before working on this concept.
Higher Order Thinking Skills: The higher order thinking skills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School Improvement in MARYLAND
ASSESSMENTS
DATA ANALYSIS
INSTRUCTION
SCHOOL IMPROVEMENT
USER GUIDES
CLG Toolkit
View the tools for each Goal:
Algebra / Data Analysis:
1.0 Functions and Algebra
3.0 Data Analysis and Probability
Geometry:
2.0 Geometry, Measurement, And Reasoning
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Explanation of Specific Resources
Toolkit resources are embedded in the Core Learning Goals document. Different types of tools are under development, although not all tools are currently available for every indicator.
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We welcome your comments and suggestions regarding how we can make these tools more useful to you on the feedback form.

Contact Information

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