Pennsylvania Alternate System of Assessment (PASA)

Alternate Assessment Anchors and Alternate Eligible Content

MATHEMATICS

Grades 7 and 8
### The Layout of the PSSA Assessment Anchors and PASA Assessment Anchors Alignment Document

**Math**

#### PSSA Numbering system
Example: M3.A.1.1
- M = Math
- 3 = Grade
- A = Reporting category (e.g., Numbers & Operations, Measurement, Geometry, Algebraic Concepts, Data Analysis & Probability)
- 1 = Assessment anchor
- 1 = Sub assessment anchor

#### PASA Numbering system
Example: M3&4.AA.1.1a (LC)
- M = Math
- 3&4 = Grade
- 1 = Assessment anchor
- 1 = Sub assessment anchor
- a = Eligible content
- LC = Level

<table>
<thead>
<tr>
<th>M3.A</th>
<th>Numbers and Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>M3.A.1</td>
<td>Demonstrate an understanding of numbers, ways of representing numbers, relationships among numbers and number systems.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>M4.A</th>
<th>Numbers and Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>M4.A.1</td>
<td>Demonstrate an understanding of numbers, ways of representing numbers, relationships among numbers and number systems.</td>
</tr>
</tbody>
</table>

#### PASA ASSESSMENT ANCHOR

<table>
<thead>
<tr>
<th>GRADE 3</th>
<th>PSSA ASSESSMENT ANCHOR</th>
<th>PASA ASSESSMENT ANCHOR</th>
<th>PASA ELIGIBLE CONTENT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>M3.A.1</strong> Apply place-value concepts and numeration to counting, ordering, grouping, and equivalency.</td>
<td><strong>M4.A.1.1</strong> Use models and/or words to represent quantities as decimals, fractions, or mixed numbers.</td>
<td><strong>M3&amp;4.AA.1.1</strong> Apply numeracy concepts and use models and fractions to represent quantities as part of a whole or part of a set.</td>
<td><strong>M3&amp;4.AA.1.1 (LA)</strong> Matches 2 sets of items with 1 item each – difference between target and closest choice is 12 units – sets are cut to size.</td>
</tr>
</tbody>
</table>

| **M3&4.AA.1.1a (LC)** Matches numeral to quantity ≤ 9 – the target and 2 sets are within +/- 5. |
| **M3&4.AA.1.1b (LC)** Selects item divided evenly… |

The layout of this document reflects the organization of the PSSA assessment anchor content standards - see 2007 PSSA Technical Report for Reading and Mathematics: Grades 3-8 and 11 (page A-2) (attached on the next page).
# PASA ASSESSMENT ANCHORS AND ELIGIBLE CONTENT
## MATH
### GRADES 7 & 8

<table>
<thead>
<tr>
<th>M7.A</th>
<th>M8.A</th>
<th>Numbers and Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>M7.A.1</td>
<td>M8.A.1</td>
<td>Demonstrate an understanding of numbers, ways of representing numbers, relationships among numbers and number systems.</td>
</tr>
</tbody>
</table>

### PSSA ASSESSMENT ANCHOR

<table>
<thead>
<tr>
<th>GRADE 7</th>
<th>GRADE 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>M7.A.1.1 Express numbers in equivalent forms.</td>
<td>M8.A.1.1 Represent numbers in equivalent forms.</td>
</tr>
</tbody>
</table>

### PASA ASSESSMENT ANCHOR

| M7&8.AA.1.1 | Express equivalencies with numbers and quantities (match). |

### PASA ELIGIBLE CONTENT

| M7&8.AA.1.1a (LA) | Matches identical numbers from 1-2 |
| M7&8.AA.1.1b (LA) | Matches 2 sets of items with 1-2 items each |
| M7&8.AA.1.1 (LB) | Matches numeral to quantity |

| M7&8.AA.1.1a (LA) | Scans materials |
| M7&8.AA.1.1b (LA) | Selects set with 1 |
| M7&8.AA.1.1c (LA) | Selects set with most/least – |
| M7&8.AA.1.1d (LA) | Selects one- or five-dollar bill |
| M7&8.AA.1.1a (LB) | Counts aloud items or dollars starting at 2 or more with bridge |
| M7&8.AA.1.1b (LB) | Counts out items or dollars from a larger set |
| M7&8.AA.1.1c (LB) | Selects 1, 5, 10, or 25 cents based on value |
| M7&8.AA.1.1d (LB) | Orders 3 sets of evenly spaced items ≤ 19 |
| M7&8.AA.1.1e (LB) | Orders 3 consecutive numbers or prices |
### Alternate Assessment Anchors – Math (Grades 7 & 8)

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>Understand the meanings of operations, use operations and understand how they relate to each other.</strong></td>
<td></td>
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</tr>
<tr>
<td><strong>M7.A.2.1</strong> Complete calculations by applying the order of operations.</td>
<td><strong>M8.A.2.1</strong> Complete calculations by applying the order of operations.</td>
<td></td>
</tr>
<tr>
<td><strong>M7.A.2.2</strong> Solve problems using ratios, proportions, percents, and/or rates.</td>
<td><strong>M8.A.2.2</strong> Represent or solve problems using rates, ratios, proportions, and/or percents.</td>
<td><strong>M7&amp;8.A.2.2</strong> Solve problems involving proportions (read, select, and determine sum of fractions).</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>M7&amp;8.A.2.2 (LB)</strong> Selects item divided evenly and in the number of pieces specified</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>M7&amp;8.A.2.2a (LC)</strong> Selects item divided evenly and in the number of pieces specified</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>M7&amp;8.A.2.2b (LC)</strong> Selects picture with biggest/smallest fraction</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>M7&amp;8.A.2.2c (LC)</strong> Reads simple fractions</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>M7&amp;8.A.2.2d (LC)</strong> Selects sum of 2 moveable figures</td>
</tr>
<tr>
<td><strong>M7.A.3</strong></td>
<td><strong>M8.A.3</strong></td>
<td><strong>M7&amp;8.A.3</strong></td>
</tr>
<tr>
<td><strong>Compute accurately and fluently and make reasonable estimates.</strong></td>
<td></td>
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</tr>
<tr>
<td><strong>M7.A.3.1</strong> Apply estimation strategies to a variety of problems.</td>
<td><strong>M7&amp;8.A.3.1</strong> Apply estimation strategies (match approximately equal quantities).</td>
<td><strong>M7&amp;8.A.3.1 (LC)</strong> Selects quantity that is enough</td>
</tr>
<tr>
<td>M7.A.3.2</td>
<td>Compute accurately with and without use of a calculator.</td>
<td></td>
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<tr>
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<td>----------------------------------------------------------</td>
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</tr>
<tr>
<td>M8.A.3.1</td>
<td>Determine the appropriateness of overestimating, underestimating or calculating an exact answer in problem-solving situations.</td>
<td></td>
</tr>
<tr>
<td>M7&amp;8.AA.3.2a (LB)</td>
<td>Adds 2 numbers or prices by counting</td>
<td></td>
</tr>
<tr>
<td>M7&amp;8.AA.3.2b (LB)</td>
<td>Adds 3 numbers named and shown with sums ≤ 19 by counting</td>
<td></td>
</tr>
<tr>
<td>M7&amp;8.AA.3.2c (LB)</td>
<td>Subtracts 2 numbers or dollars by counting items</td>
<td></td>
</tr>
<tr>
<td>M7&amp;8/AA.3.2a (LC)</td>
<td>Adds 2 numbers or prices in a word problem</td>
<td></td>
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<tr>
<td>M7&amp;8.AA.3.2b (LC)</td>
<td>Adds 3 numbers in a word problem</td>
<td></td>
</tr>
<tr>
<td>M7&amp;8.AA.3.2c (LC)</td>
<td>Selects equation required to solve an addition word problem</td>
<td></td>
</tr>
<tr>
<td>M7&amp;8.AA.3.2d (LC)</td>
<td>Subtracts 2 numbers or prices in a word problem</td>
<td></td>
</tr>
<tr>
<td>M7&amp;8.AA.3.2e (LC)</td>
<td>Selects equation required to solve a subtraction word problem</td>
<td></td>
</tr>
<tr>
<td>M7&amp;8.AA.3.2f (LC)</td>
<td>Multiplies numbers by counting</td>
<td></td>
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<tr>
<td>M7&amp;8.AA.3.2g (LC)</td>
<td>Divides items by counting</td>
<td></td>
</tr>
<tr>
<td>M7&amp;8.AA.3.2</td>
<td>Computes accurately (add, subtract, multiply, and divide).</td>
<td></td>
</tr>
<tr>
<td>M7.A.3.2</td>
<td>Compute accurately with and without use of a calculator.</td>
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</tr>
<tr>
<td>M8.A.3.3</td>
<td>Compute and/or explain operations with integers, fractions, and/or decimals.</td>
<td></td>
</tr>
<tr>
<td>M7.B</td>
<td>M7&amp;8.BA.1.1 Demonstrates understanding of measurements including • match and compare length, • match and compare area, • match and compare volume, • match and compare capacity, and • match and compare time.</td>
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<tr>
<td>M7.B</td>
<td>Add, subtract, or convert measurements.</td>
<td></td>
</tr>
<tr>
<td>M7.B.1.1</td>
<td>M7&amp;8.BA.1.1a (LA) Matches objects, pictures of items of same length, photographs of items of same length</td>
<td></td>
</tr>
<tr>
<td>M7.B.1.1</td>
<td>M7&amp;8.BA.1.1b (LA) Selects longest/shortest object, picture of item, photograph of item</td>
<td></td>
</tr>
<tr>
<td>M7.B.1.1</td>
<td>M7&amp;8.BA.1.1c (LA) Matches identical shapes, objects, pictures, photographs of same size,</td>
<td></td>
</tr>
<tr>
<td>M7.B.1.1</td>
<td>M7&amp;8.BA.1.1d (LA) Selects biggest/smallest shape, object, picture, photograph of item</td>
<td></td>
</tr>
<tr>
<td>M7.B.1.1</td>
<td>M7&amp;8.BA.1.1e (LA) Matches items with same volume</td>
<td></td>
</tr>
<tr>
<td>M7.B.1.1</td>
<td>M7&amp;8.BA.1.1f (LA) Selects biggest/smallest object by volume</td>
<td></td>
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<tr>
<td>M7.B.1.1</td>
<td>M7&amp;8.BA.1.1g (LA) Matches items with same capacity</td>
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<tr>
<td>M7.B.1.1</td>
<td>M7&amp;8.BA.1.1h (LA) Selects item that holds the most/least</td>
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<tr>
<td>M7.B.1.1</td>
<td>M7&amp;8.BA.1.1i (LA) Matches item to space</td>
<td></td>
</tr>
<tr>
<td>M7.B.1.1</td>
<td>M7&amp;8.BA.1.1j (LA) Selects full/empty item</td>
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<tr>
<td>M7.B.1.1</td>
<td>M7&amp;8.BA.1.1k (LA) Selects clock by function</td>
<td></td>
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<tr>
<td>M7.B.1.1</td>
<td>M7&amp;8.BA.1.1l (LA) Matches identical digital time</td>
<td></td>
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<tr>
<td>M7.B.1.1</td>
<td>M7&amp;8.BA.1.1a (LB) Selects longest/shortest distance</td>
<td></td>
</tr>
<tr>
<td>M7.B.1.1</td>
<td>M7&amp;8.BA.1.1b (LB) Reads analog time</td>
<td></td>
</tr>
<tr>
<td>M7.B.1.1</td>
<td>M7&amp;8.BA.1.1c (LB) Reads digital time</td>
<td></td>
</tr>
<tr>
<td>M7.B.1.1</td>
<td>M7&amp;8.BA.1.1d (LB) Selects activity that takes the most/least amount of time</td>
<td></td>
</tr>
<tr>
<td>M7.B.1.1</td>
<td>M7&amp;8.BA.1.1a (LC) Matches closest digital</td>
<td></td>
</tr>
</tbody>
</table>
### Alternate Assessment Anchors – Math (Grades 7 & 8)

<table>
<thead>
<tr>
<th>M7.B.2</th>
<th>M8.B.2</th>
<th>M7&amp;8.BA.1 Apply appropriate techniques, tools and formulas to determine measurements.</th>
<th>M7&amp;8.BA.2 Apply appropriate techniques, tools and formulas to determine measurements.</th>
</tr>
</thead>
</table>
| M7.B.2.1 Develop, use, and/or describe strategies to find the measure of length, perimeter, circumference, area, or volume. | M7&8.BA.2.1 Develop strategies for measurement including  
- measure length,  
- measure area, and  
- measure volume. | M7&8.BA.2.1a (LB) Measures length of item to the 1/2-inch mark  
M7&8.BA.2.1b (LB) Measures to 1/2-cup using a measuring cup  
M7&8.BA.2.1c (LC) Measures whole number amount using 1/2 cup  
M7&8.BA.2.1d (LB) Selects ½-cup measure |
| M7&8.BA.2.1a (LC) Measures length of item to the 1/2-inch mark  
M7&8.BA.2.1b (LC) Measures to 1/2-cup using a measuring cup  
M7&8.BA.2.1c (LC) Measures whole number amount using 1/2 cup  
M7&8.BA.2.1d (LB) Selects ½-cup measure |
| M8.B.2.1 Determine the measurement of a missing side(s) or angle(s) in a polygon. |
| M7.B.2.2 Construct, interpret, and/or use scale drawings to solve real-world problems. |
| M8.B.2.2 Use, describe, and/or develop procedures to determine measures of perimeter, circumference, area, surface area, and/or volume. |
|-------|----------------------------------------------|-------|
| M7.C.1 | Analyze characteristics and properties of two- and three-dimensional geometric shapes and demonstrate understanding of geometric relationships. | M8.C.1 | Identify, use, and/or describe properties of angles, triangles, quadrilaterals, circles, pyramids, cubes, prisms, spheres, cones, and/or cylinders. |
| M7.C.1.1 | Define and/or apply basic properties of two- and three-dimensional geometric shapes. | M8.C.1.1 | Use basic properties of two- and three-dimensional geometric shapes. |
| M7.C.1.2 | Identify congruence and/or similarity in polygons. | M8.C.1.2 | Compute measures of sides of right triangles using the Pythagorean Theorem. |
| M7.C.2 | Identify and/or apply concepts of transformations or symmetry. | M8.C.1.1.1 | Not assessed. |
| M7.C.3 | Locate points or describe relationships using the coordinate plane. | M8.C.3.1 | Plot and/or identify ordered pairs on a coordinate plane. |
| M7.C.3.1 | Locate, plot, and/or describe points on a coordinate plane. | M8.C.3.1 | Not assessed. |

M7&8.CA.1.1 (LA) Sorts 1 object into 1 of 3 existing groups
M7&8.CA.1.1 (LB) Sorts 8 items into 4 groups
M7&8.CA.1.1 (LC) Sorts 9 items into 4 groups
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>M7.D.1</td>
<td>M8.D.1</td>
<td>Demonstrate an understanding of patterns, relations and functions.</td>
</tr>
<tr>
<td><strong>M7.D.1.1</strong> Recognize, reproduce, extend, and/or describe patterns.</td>
<td><strong>M8.D.1.1</strong> Analyze, extend, or develop descriptions of patterns or functions.</td>
<td></td>
</tr>
<tr>
<td>M7.D.2</td>
<td>M8.D.2</td>
<td>Represent and/or analyze mathematical situations using numbers, symbols, words, tables and/or graphs.</td>
</tr>
<tr>
<td><strong>M7.D.2.1</strong> Select and/or use appropriate strategies to solve or represent equations or expressions.</td>
<td><strong>M8.D.2.1</strong> Select and/or use a strategy to simplify an expression, solve an equation or inequality and/or check the solution for accuracy.</td>
<td></td>
</tr>
<tr>
<td><strong>M7.D.2.2</strong> Create and/or interpret expressions, equations, or inequalities that model problem situations</td>
<td><strong>M8.D.2.2</strong> Create and/or interpret expressions, equations, or inequalities that model problem situations.</td>
<td></td>
</tr>
<tr>
<td><strong>M7.D.3.1</strong> Describe the relationship between two variables (e.g., time, temperature).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M7.D.4  M8.D.4</td>
<td>Describe or use models to represent quantitative relationships.</td>
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<td>---------------------------------------------------------------</td>
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<td></td>
<td><strong>M8.D.4.1</strong> Represent relationships with tables or graphs on the coordinate plane.</td>
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</tbody>
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<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>M7.E.1   M8.E.1</td>
<td>Formulate or answer questions that can be addressed with data and/or organize, display, interpret, or analyze data.</td>
</tr>
<tr>
<td>M7.E.1.1</td>
<td>Interpret data shown in complex data displays.</td>
</tr>
<tr>
<td>M8.E.1.1</td>
<td>Choose, display, or interpret data (tables, charts, graphs, etc.).</td>
</tr>
<tr>
<td>M7&amp;8.EA.1.1</td>
<td>Interpret data displayed, including • interpret graphs and • interpret tables.</td>
</tr>
<tr>
<td>M7&amp;8.EA.1.1a (LB)</td>
<td>Selects largest/smallest value</td>
</tr>
<tr>
<td>M7&amp;8.EA.1.1b (LB)</td>
<td>Selects largest/smallest value from graph</td>
</tr>
<tr>
<td>M7&amp;8.EA.1.1c (LB)</td>
<td>Locates number described in a 7-8 item display</td>
</tr>
<tr>
<td>M7&amp;8.EA.1.1 (LC)</td>
<td>Locates number described in a 9-10 item, 3-variable display</td>
</tr>
<tr>
<td>M7&amp;8.EA.1.2</td>
<td>Describe data using mean, median, or mode.</td>
</tr>
<tr>
<td>M7&amp;8.EA.1.2 (LC)</td>
<td>Selects mode on graph</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>M7.E.2  M8.E.2</th>
<th>Select and/or use appropriate statistical methods to analyze data.</th>
</tr>
</thead>
<tbody>
<tr>
<td>M7.E.2.1</td>
<td>Describe, compare, and/or contrast data using mean, median, mode, or range.</td>
</tr>
<tr>
<td>M7.E.3</td>
<td>M7&amp;E.3</td>
</tr>
<tr>
<td>--------</td>
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</tr>
<tr>
<td>Understand and/or apply basic concepts of probability or outcomes.</td>
<td>Determine the theoretical or experimental probability.</td>
</tr>
<tr>
<td>M7.E.3.1</td>
<td>M8.E.3.1</td>
</tr>
<tr>
<td>M8.E.3.2</td>
<td>Determine the number of combinations and/or permutations for an event.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>M7.E.4</th>
<th>M7&amp;E.4</th>
<th>M7&amp;8.EA.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop and/or evaluate inferences and predictions or draw conclusions based on data or data displays.</td>
<td>Draw conclusions and/or make predictions based on data displays.</td>
<td>Develop and/or evaluate inferences and predictions or draw conclusions based on data or data displays.</td>
</tr>
<tr>
<td>M7.E.4.1</td>
<td>M8.E.4.1</td>
<td></td>
</tr>
<tr>
<td>M8.E.4.1</td>
<td>Draw conclusions, make inferences, and/or evaluate hypotheses based on statistical and data displays.</td>
<td></td>
</tr>
</tbody>
</table>