Content Specification ID Formats

2 January 2019

Smarter Balanced uses identifiers in specific formats to reference the claims and targets in our content specifications. The "Legacy" formats were designed by AIR during the initial content development for Smarter Balanced. The specification for those formats is included as appendix A to this document.

The new, "Enhanced" format was developed by PCG in cooperation with CRESST and with feedback from Smarter Balanced. This document describes the Enhanced format and includes a data dictionary that defines elements used by all formats, both Enhanced and Legacy.

General Identifier Format

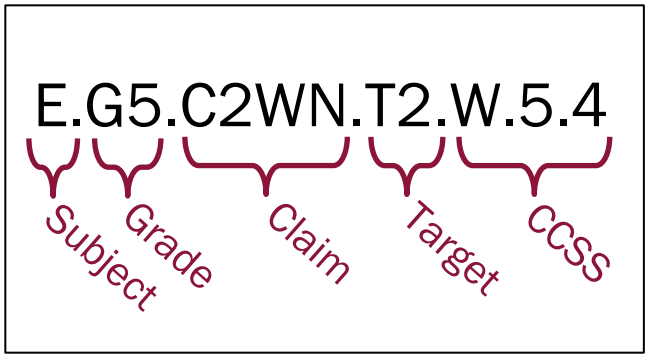


Figure 1: General Format of a Content Standard Identifier

Identifiers have up to five parts, with dots (periods) delimiting the parts. The first four segments reference the Smarter Balanced Content Specification. The last segment references the Common Core State Standard and it has embedded periods that delimit the parts of the CCSS identifier.

A full data dictionary for the parts appears later in this document. Here's a summary:

- **Subject:** May be "E" indicating English Language Arts – Literacy, or "M" indicating Mathematics.
- **Grade:** A "G" prefix followed by the grade number. For Smarter Balanced, grades are 3-8 and "HS" for High School.
- **Claim:** A "C" prefix followed by the claim number followed by an optional domain suffix. Claim numbers are 1-4. Domain suffixes are dependent on the subject and are discussed below.
- **Target:** A "T" prefix followed by the target number (for ELA) or letter (for Math). Certain ELA targets have letter suffixes (e.g. "T1b").
- **CCSS:** The Common Core State Standard identifier. These values correspond to the values used on CoreStandards.org.

Truncated identifiers may be used. For example, "E.G5" might be used to indicate all of ELA-Literacy, Grade 5. Or "E.G5.C2" might be used to indicate ELA-Literacy, Grade 5, Claim 2.

ELA-Literacy Identifier Format

Identifiers for ELA-Literacy have the following features:

- Claims have a 1-2 letter suffix indicating the domain.

- Targets are numeric but may also have a lower-case letter suffix.

ELA-Literacy Domains:

ELA-Literacy claims have a single capital letter suffix indicating the domain. These are the values:

Claim ID	Claim – Domain
C1RL	Reading – Literary Texts
C1RI	Reading – Informational Texts
C2WN	Writing – Narrative
C2WI	Writing – Informational (Grades 3-5)
C2WO	Writing – Opinion (Grades 3-5)
C2WE	Writing – Explanatory (Grades 6-HS)
C2WA	Writing – Argument (Grades 6-HS)
C2WG	Writing – General
C3SL	Speaking & Listening
C4R	Research / Inquiry

Table 1: ELA-Literacy Claims and Domains

ELA-Literacy Targets

ELA-Literacy targets are numeric ranging from 1-14. Some targets are subdivided with lower-case suffix letters indicating the subdivision. For example, Grade 3, Claim 2, Target 1a is "Write Brief Texts", while Target 1b is "Revise Brief Texts".

Each target belongs to one and only one domain. Therefore, the domain may be derived from the target. *See **Appendix B** for tables that translate from target to domain.*

Math Identifier Format

Here is the general format of a math identifier for Claim 1:

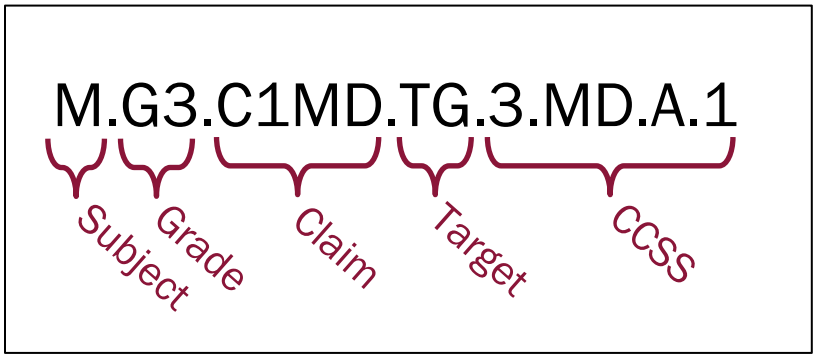


Figure 2: Format for Math Claim 1 Content Standard Identifiers

Identifiers for Mathematics have the following features:

- Claim 1 identifiers have a Domain suffix.
- Claim 2-4 identifiers do not have a Domain suffix.

- Claim 2-4 identifiers do not have a CCSS part.
- Assessment items with primary alignment to claims 2, 3, or 4 must, at a minimum, have a secondary alignment to a Claim 1 identifier. The CCSS alignment of the *item* is indicated by that Claim 1 alignment.

Math Domains

Math Claim 1 is divided into domains. The domain is indicated by a one-to-three letter suffix to the claim number. Claims 2-4 do not have a domain.

For grades 3-8 the Domain is equivalent to the CCSS Domain. For high school Domain is equivalent to the CCSS Conceptual Category.

Each claim 1 target belongs to only one domain; So, that value can be derived from the target. *See **Appendix B** for a mapping from target to domain.*

Here are the Claim 1 Domains for grades 3-5:

Claim ID	Domain
C1OA	Operations and Algebraic Thinking
C1NBT	Number and Operations – Base Ten
C1NF	Number and Operations - Fractions
C1MD	Measurement and Data
C1G	Geometry

Table 2: Claim 1 domains for Grades 3-5

Here are the Claim 1 Domains for grades 6-8:

Claim ID	Domain
C1RP	Ratios and Proportional Relationships
C1NS	The Number System
C1EE	Expressions & Equations
C1G	Geometry
C1F	Functions
C1SP	Statistics and Probability

Table 3: Claim 1 domains for grades 6-8

Here are the Claim 1 Domains for High School (equivalent to CCSS Conceptual Category)

Claim ID	Domain
C1N	Number and Quantity
C1A	Algebra
C1F	Functions
C1G	Geometry

C1S	Statistics and Probability

Table 4: Claim 1 Domains for High School

Math Identifiers for Claims 2-4

Identifiers for Math Claims 2-4 do not have a Domain suffix on the claim and they do not indicate a Common Core State Standard alignment. All items aligned with claims 2-4 must have a secondary alignment to a claim 1 target which does include the CCSS alignment.

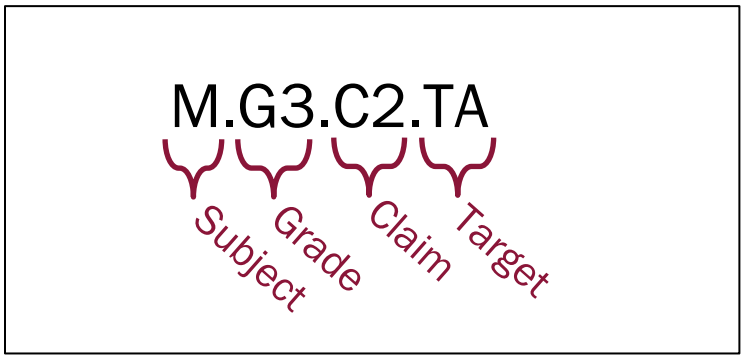


Figure 3: Format for Math Claim 2-4 Content Standard Identifiers

*See **Appendix A** regarding special treatment of Domain in Math v6 Legacy identifiers.*

Data Dictionary

This data dictionary contains definitions of the elements of Content Specification IDs. The first table defines principal elements – those that must be defined for all IDs. The second table defines derived elements – values that may be derived from the principal elements.

Principal Elements

Name	Samples	Definition and Notes	Appears In
Subject	M, MA E, ELA	The new format uses the values “E” for ELA-Literacy and “M” for Math. The legacy formats use “MA” and “ELA” respectively.	Enhanced SBAC-MA-v4 SBAC-MA-v5 SBAC-MA-v6 SBAC-ELA-v1
Grade	3, 4, 5, 6, 7, 8, HS	The grade level. New formats have a part for identifying the grade. Legacy formats include grade as a suffix to the claim.	Enhanced SBAC-MA-v4 SBAC-MA-v5 SBAC-MA-v6 SBAC-ELA-v1
Claim	1, 2, 3, 4	The claim is the top-level division of skills in each grade. Smarter Balanced has four claims numbered 1-4 in ELA-Literacy and Math.	Enhanced SBAC-MA-v4 SBAC-MA-v5 SBAC-MA-v6 SBAC-ELA-v1

Name	Samples	Definition and Notes	Appears In
Target	1, 1a, 2, A, B	Each claim has a number of targets, the count differing between claims and grades. ELA-Literacy uses numeric targets, math uses letters.	Enhanced SBAC-MA-v4 SBAC-MA-v5 SBAC-MA-v6 SBAC-ELA-v1
CCSS	RI.3.9 6.NS.C.4	The common core state standard. This should follow the standard format for CCSS standards on http://www.corestandards.org minus the CCSS.ELA-LITERACY or CCSS.MATH prefix. In some cases, the existing Smarter Balanced formats will swap the domain and grade components. (e.g. SL.6.2 becomes 6.SL.2).	Enhanced SBAC-MA-v4 SBAC-MA-v5 SBAC-ELA-v1

Table 5: Principal elements of Content Standard Identifiers

Derived Elements

The following elements are derived from the principal elements. **Appendix B** includes tables for deriving these values. They appear in certain Legacy ID formats.

Name	Samples	Definition and Notes	Appears In
Domain	RL, WE, NS, EE	A domain is a subset of a claim. Each target belongs to zero or one Domains. Therefore, the Domain may be derived from the principle elements of Subject, Grade, Claim, and Target. *See **Appendix B** for tables that translate from Grade, Claim and Target to domain.* All ELA targets belong to a domain which corresponds to the domain in the associated Common Core State Standard (CCSS). *Legacy Identifiers for ELA use slightly different domain codes from their CCSS equivalents. See **Appendix A** for a translation table.* In Math, only Claim 1 targets belong to domains. For grades 3-8 the Domain corresponds to the CCSS Domain. For high school, the Domain corresponds to the CCSS Conceptual Category. *See **Appendix A** regarding special treatment of Domain in Math v6 Legacy identifiers.*	Enhanced SBAC-MA-v4 SBAC-MA-v5

Emphasis	m, a/s, NA	**Used exclusively in Legacy Math v4 and v5 Identifiers** For targets in Math Claim 1 only. “m” indicates “major work (of the grade).” “a/s” indicates “additional supporting” work. For Math claims 2-4, Emphasis is NA for “Not Applicable”. *Also see Content Category.*	SBAC-MA-v4 SBAC-MA-v5
Content Category	P, S, A, F, MD, NBT	**Used exclusively in Legacy Math v6 Identifiers** For Math Claim 1: Values are “P” for “Priority Cluster” or “S” for “Supporting Cluster”. These values are equivalent to Emphasis of “m” and “a/s” respectively. Items with a primary alignment to Math Claims 2, 3, or 4 must have a secondary alignment to Claim 1. In these cases, the Content Category for the Claim 2, 3, or 4 identifier will be the Domain from the Claim 1 secondary alignment. *Also see Emphasis and Domain.*	SBAC-MA-v6
Target Set	TS01, TS02, TS03	**Used exclusively in Legacy Math v6 Identifiers** In the Math blueprint, each target is assigned to a target set. *See **Appendix B** for a table that translates from Grade, Claim and Target to Target Set.*	SBAC-MA-v6

Table 6: Derived and Legacy elements of Content Standard Identifiers

Appendix A: Legacy Identifier Formats

In the item metadata, references to the content specification are made in the form of "Standard IDs". Each ID in the legacy formats corresponds to a "Standard Publication." While "Standard Publication" originally had a different meaning, we can now consider it to be equivalent to an identifier format.

There are four legacy identifier formats. One for ELA-Literacy and three for Math.

Here are two examples of standards references made in item metadata followed by instructions on how to interpret these values.

Examples

English Language Arts - Literacy example:

```
<StandardPublication>
  <Publication>SBAC-ELA-v1</Publication>
  <PrimaryStandard>SBAC-ELA-v1:3-L|4-6|6.SL.2</PrimaryStandard>
</StandardPublication>
```

Math example:

```
<StandardPublication>
  <Publication>SBAC-MA-v6</Publication>
  <PrimaryStandard>SBAC-MA-v6:2|MD|NA|A</PrimaryStandard>
</StandardPublication>
<StandardPublication>
  <Publication>SBAC-MA-v4</Publication>
  <PrimaryStandard>SBAC-MA-v4:2|MD|A-4|NA|NA</PrimaryStandard>
  <SecondaryStandard>SBAC-MA-v5:1|MD|I-4|a/s|4.MD.2</SecondaryStandard>
</StandardPublication>
```

In the math example, the primary standard alignment is presented in two formats, SBAC-MA-V6, and SBAC-MA-v4. The secondary alignment is presented exclusively in SBAC-MA-v5 format.

Interpreting the Legacy Standard Identifiers

Each legacy identifier begins with a standard publication ID followed by a colon followed by a series of elements separated by pipe "|" characters. The elements included in the legacy standard identifiers are defined in the Data Dictionary in the main body of this document.

SBAC-ELA-v1

This is the only format for ELA-Literacy items. It is used in both development and delivery.

- **Use:** ELA; used for development and delivery.
- **Format:** Claim-Domain|Target-Grade|CCSS
- **Example**: SBAC-ELA-v1:3-L|4-6|6.SL.2

The example is interpreted as follows:

- **Claim**: 3
- **Domain**: L
- **Target**: 4
- **Grade**: 6
- **CCSS**: 6.SL.2

Equivalent Enhanced Identifier:

- E.G6.C3SL.T4

Legacy ELA identifiers use different codes for the domain from the Enhanced identifiers. Enhanced identifiers use the same values as the Common Core State Standards.

Here is the translation from Legacy domain values to Enhanced domain values.

Legacy Claim and Domain	Enhanced Claim and Domain	Description
1-LT	1RL	Reading – Literary Texts
1-IT	1RI	Reading – Informational Texts
2-W	2WN, 2WI, 2WO, 2WE, 2WA, 2WG	Writing (See table 1 for detailed descriptions of each code)
3-L	3SL	Speaking & Listening
4-CR	4R	Communicating Reasoning (Research & Inquiry)

Table a-1: Translation between Legacy and Enhanced domains.

SBAC-MA-v4

- **Use:** Math primary standard identifier; used during item authoring. Based on the content specification hierarchy.
- **Format:** Claim|Domain|Target-Grade|Emphasis|CCSS
- **Example:** SBAC-MA-v4:2|MD|A-4|NA|NA

The example is interpreted as follows:

- **Claim**: 2
- **Domain**: MD
- **Target**: A
- **Grade**: 4
- **Emphasis**: NA
- **Common Core Standard**: NA

Equivalent Enhanced Identifier:

- M.G4.C2.TA

Notes:

- Math Claims 2, 3, and 4 do not have a domain. However, when used as a primary alignment, they must always be paired with a Claim 1 secondary alignment. A legacy Claim 2, 3, or 4 alignment may include the domain from the Claim 1 alignment on the same item. In this

example, the domain is “MD” derived from the secondary alignment. In other cases, it might be “NA” meaning “Not Applicable.”
- In the legacy data, the grade is frequently omitted, especially for claims 2-4. In these cases, the grade must be derived from the item metadata or from other standards alignments in the same set.

SBAC-MA-v5

The format is exactly the same as v4. The only difference is that v5 is used for secondary alignments. There may be up to three secondary alignments.

- **Use:** Math secondary standard identifier; used during item authoring. Based on the content specification hierarchy.
- **Format:** Claim|Domain|Target-Grade|Emphasis|CCSS
- **Example:** SBAC-MA-v5:1|MD|I-4|a/s|4.MD.2

The example is interpreted as follows:

- **Claim**: 1
- **Domain**: MD
- **Target**: I
- **Grade**: 4
- **Emphasis**: a/s
- **Common Core Standard**: 4.MD.2

Equivalent Enhanced Identifier:

- M.G4.C1.TI

Notes:

- The domain from this example is used in the associated SBAC-MA-v4 primary identifier.
- In the legacy data, the grade is frequently omitted, especially for claims 2-4. In these cases, the grade must be derived from the item metadata or from other standards alignments in the same set.

SBAC-MA-v6

This identifier repeats information from the v4 identifier in a different format. It’s intended to be a simpler alignment to the blueprint hierarchy.

- **Use:** Math standard identifier; used for delivery. Based on the blueprint hierarchy; does not reach to standard level.
- **Format:** Claim|Content Category|Target Set|Target-Grade
- **Example**: SBAC-MA-v6:2|O|NA|A-4

The example is interpreted as follows:

- **Claim**: 2
- **Content Category**: MD
- **Target Set**: NA
- **Target:** A
- **Grade**: 4

Equivalent Enhanced Identifier:

- M.G4.C2.TA

Notes:

- The content category in this case is derived from the associated Claim 1 secondary alignment.
- In the legacy data, the grade is frequently omitted, especially for claims 2-4. In these cases, the grade must be derived from the item metadata or from other standards alignments in the same set.

Appendix B: Deriving Domain, Emphasis, and Target Set from Grade, Claim, Target

Domain and Emphasis are properties of the target. So, by knowing the grade, Claim, and Target, you can determine the Domain and Emphasis.

Legacy identifiers for Mathematics have a Target Set. That value may also be derived from the grade, Claim, and Target.

The following tables show mappings of these properties.

ELA Domains

Grades	Claims	Targets	Domain
All	1	1-7	RL
All	1	8-14	RI
3-5	2	1-2	WN
3-5	2	3-5	WI
3-5	2	6-7	WO
3-5	2	8-10	WG
6-HS	2	1-2	WN
6-HS	2	3-5	WE
6-HS	2	6-7	WA
6-HS	2	8-10	WG
All	3	All	SL
All	4	All	R

Table b-1: ELA grade, claim, and target to domain (claim must be 1)

Math Domains

Only Claim 1 targets in Math have a domain.

		Target															
Grade	Claim	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	
3	1	OA	OA	OA	OA	NBT	NF	MD	MD	MD	MD	G						O
4	1	OA	OA	OA	NBT	NBT	NF	NF	NF	MD	MD	MD	G					O
5	1	OA	OA	NBT	NBT	NF	NF	MD	MD	MD	G	G						O
6	1	RP	NS	NS	NS	EE	EE	EE	G	SP	SP							O
7	1	RP	NS	EE	EE	G	G	SP	SP	SP								O
8	1	NS	EE	EE	EE	F	F	G	G	G	SP							O
HS	1	N	N	N	A	A	A	A	A	A	A	F	F	F	F	G	S	O

Table b-2: Math grade and target to Domain (claim must be 1)

*See **Appendix A** regarding special treatment of domains in Math v6 legacy identifiers.*

Math Emphasis

For Math Claim 1, the emphasis of any target may be “Main” (m) or “Additional/Supporting” (a/s). Claims 2-4 do not have an emphasis and in legacy identifiers it is listed as “NA”.

	Target															
Grade	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
3	m	m	m	m	a/s	m	m	a/s	m	a/s	a/s					
4	m	a/s	a/s	m	m	m	m	m	a/s	a/s	a/s	a/s				
5	a/s	a/s	m	m	m	m	a/s	a/s	m	a/s	a/s					
6	m	m	a/s	m	m	m	m	a/s	a/s	a/s						
7	m	m	m	m	a/s	a/s	a/s	a/s	a/s							
8	a/s	m	m	m	m	m	m	m	a/s	a/s						
HS	a/s	a/s	m	m	m	a/s	a/s	m	m	m	m	m	m	m	m	m

Table b-3: Math grade and target to Emphasis (Claim must be 1)

*See **Appendix A** regarding special treatment of emphasis in Math v6 legacy identifiers.*

Target Set

For Math Claim 1, each target belongs to a target set numbered between 1 and 10. Claims 2-4 do not have a target set and in legacy identifiers it is listed as “NA”.

	Target															
Grade	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
3	3	1	1	2	4	2	1	5	1	4	4					
4	1	6	6	3	1	1	2	4	5	6	5	7				
5	5	5	3	3	1	2	5	5	1	4	4					
6	2	3	5	4	1	1	3	5	5	5						
7	1	2	2	1	3	3	4	4	4							
8	4	2	1	1	2	3	2	3	4	4						
HS	9	9	10	1	1	2	3	3	3	4	5	6	6	6	7	8

Table b-4: Math grade and target to Target Set (Claim must be 1)

Appendix C: Smarter Balanced Format Usages

The Content Specification Format has been added to two existing formats at Smarter Balanced. This appendix covers how the Content Specification Format was integrated and the associated Smarter Balanced Applications containing those modifications.

The two formats updated:

- Item Metadata
- Enhanced Test Administration Packages

Item Metadata

This section covers the updates to the item metadata formats. Detailed information can be found on the Smarter App Specifications site in the Item Data Dictionary. The SAAIF metadata.xml file associated with items has been updated to include the content specification ids. This currently is optional, but in the future will become mandatory. If possible, one should include both the existing legacy identifiers and the new content specification ids.

The StandardPublication element containing the Content Specification Ids should always have the Publication element value "SBAC". The PrimaryStandard element should always contain the primary Content Specification Id. When SecondaryStandard elements are present the elements should be in the following order:

1. Secondary
2. Tertiary
3. Quaternary

The example snippet below includes both legacy identifiers and content specification ids for a Math item.

```
<StandardPublication>
  <Publication>SBAC-MA-v4</Publication>
  <PrimaryStandard>SBAC-MA-v4:3|G|E-6|NA|NA</PrimaryStandard>
  <SecondaryStandard>SBAC-MA-v5:1|G|H-6|NA|6.G.A</SecondaryStandard>
  <SecondaryStandard>SBAC-MA-v5:2|G|A-6|NA|NA</SecondaryStandard>
</StandardPublication>
<StandardPublication>
  <Publication>SBAC-MA-v6</Publication>
  <PrimaryStandard>SBAC-MA-v6:3|N|NA|E-6</PrimaryStandard>
</StandardPublication>
<StandardPublication>
  <Publication>SBAC</Publication>
  <PrimaryStandard>M.G6.C3G.TE.NA</PrimaryStandard>
  <SecondaryStandard>M.G6.C1G.TH.6.G.A</SecondaryStandard>
  <SecondaryStandard>M.G6.C2G.TA.NA</SecondaryStandard>
</StandardPublication>
```

Enhanced Test Administration Package

This section covers the updates to the Enhanced Test Package format. Detailed information can be found on the Smarter App Specifications site in the Enhanced Test Administration Package Format.

The BlueprintElement id attribute should continue to contain the legacy identifier. The label attribute for the BlueprintElement id attribute must contain the equivalent Content Specification Id. It is invalid to have a Content Specification Id in the label attribute that differs for from the id attribute legacy identifier.

The example snippet below is an Enhanced Test Administration Package's blueprint section containing both the legacy identifiers and Content Specification Ids.

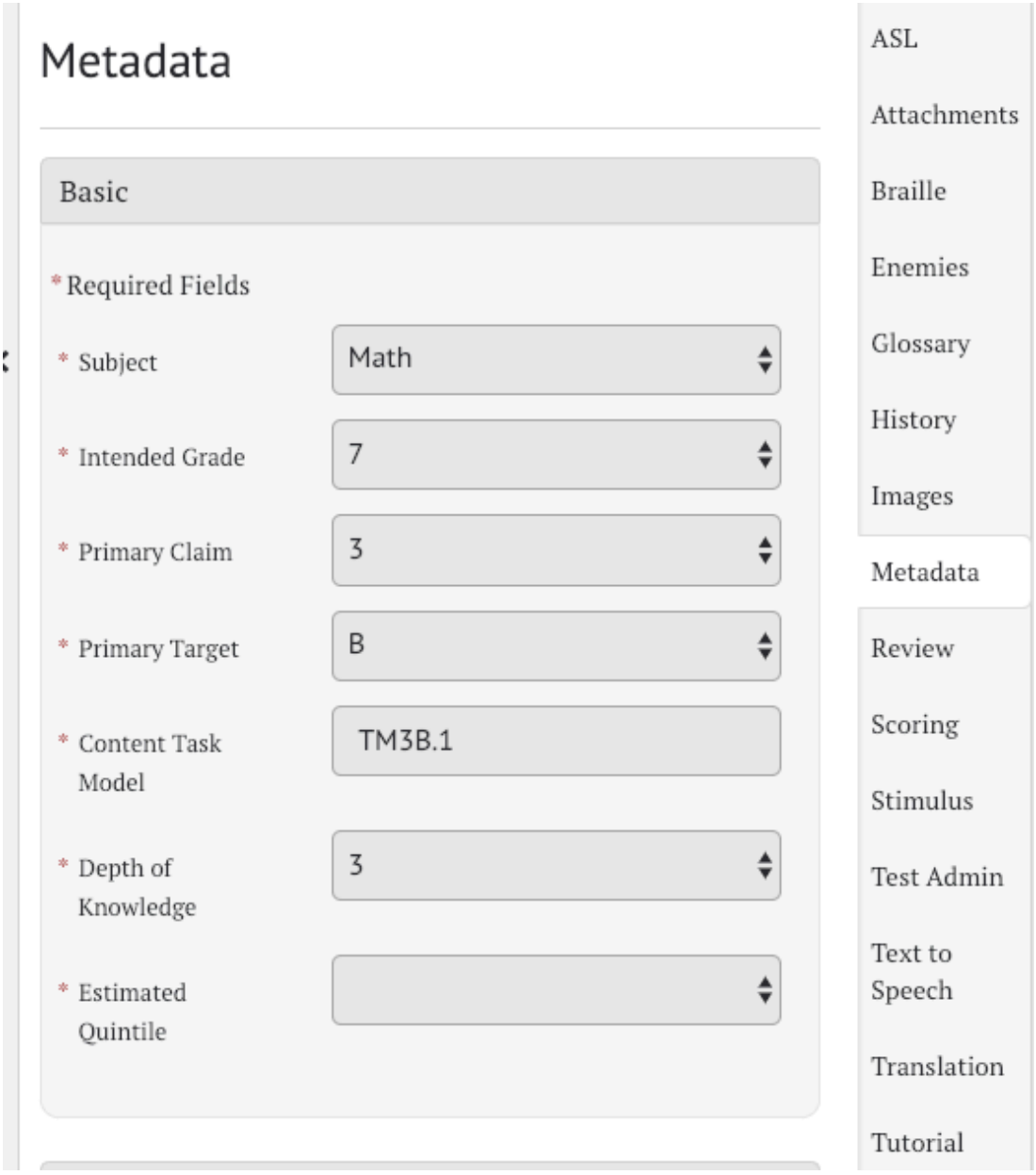
```
<BlueprintElement id="1" type="claim" label="M.GHS.C1">
 <BlueprintElement id="1|P" type="target" label="M.GHS.C1">
  <BlueprintElement id="1|P|TS03" type="target" label="M.GHS.C1">
   <BlueprintElement id="1|P|TS03|G" type="target" label="M.GHS.C1A.TG"/>
   <BlueprintElement id="1|P|TS03|I" type="target" label="M.GHS.C1A.TI"/>
  </BlueprintElement>
 </BlueprintElement>
</BlueprintElement>
```

Test and Item Management System (TIMS) integration

This section covers how the Test and Item Management System (TIMS) handles the Content Specification Ids. It follows the rules as specified in this document and in the content specification libraries developed by Smarter Balanced. The Content Specification Ids are displayed on the metadata tab for a specific item in the Content Spec section.

The picture above is an example section for a Math item which may have primary, secondary, tertiary, and quaternary ids. ELA items will only have a primary id displayed.

TIMS uses the data entered throughout the metadata tab to populate the data. Primary Claim, Primary Target, and Content Task Model are located in the Basic section with the remaining fields (Primary Content Domain, Primary Emphasis, Primary Common Core Standard, etc.) located in the Alignment Section.



TIMS uses the data provided and Smarter Balanced libraries to create the content specification ids. Those libraries are open source projects on GitHub. There is a C# (to be used in .NET applications) and Java implementation.

- C#: https://github.com/SmarterApp/SC_ContentSpecId
- Java: https://github.com/SmarterApp/SS_ContentSpecId

The data entered in TIMS should use the Legacy identifier values, and the Java library is used to derive the content specification values using the matrices identified in the Appendices A and B (tables a-1, b-1, b-2, and b-3).

Example Conversions in TIMS and Content Specification Libraries

TIMS requires the following data for each type of id. If any data is missing, TIMS will not create the content specification id.

Primary ID	Subject Intended Grade Primary Claim Primary Content Domain Primary Target Primary Common Core Standard Optional - Primary Emphasis (Math Only)
Secondary ID (Math only)	Subject Intended Grade Secondary Claim Secondary Content Domain Secondary Target Secondary Common Core Standard
Quaternary ID (Math only)	Subject Intended Grade Quaternary Claim Quaternary Content Domain Quaternary Target Quaternary Common Core Standard
Tertiary ID (Math only)	Subject Intended Grade Tertiary Claim Tertiary Content Domain Tertiary Target Tertiary Common Core Standard

The below examples will be focused on primary ids but the same logic can be applied to the other ids.

Math Example

If a user entered the following information, TIMS would produce the enhanced Primary ID M.GHS.C3.TN.A. Primary Content Domain is not applicable for claims 2-4 yet is required for TIMS to create content specification ids. Users can set the primary content domain to "NA" which will be ignored by the content specification library.

- Subject: Math
- Grade: 11
- Primary Claim: 3
- Primary Target: N
- Primary Content Domain: NA
- Primary Common Core Standard: A
- Primary Emphasis: N/A or blank

ELA Example

If a user entered the following information, TIMS would produce the enhanced Primary ID E.G3.C1RL.T1. Note, the primary claim and content domain were used to derive the C1RL value. This is driven by the Legacy Domain to Content Specification domain values (Table a-1).

- Subject: ELA
- Grade: 3
- Primary Claim: 1
- Primary Target: 1
- Primary Content Domain: LT
- Primary Common Core Standard: blank