

# CLAIM 1: CONCEPTS AND PROCEDURES

# TARGET GUIDE



GRADE  
**3**

## ★ PRIORITY CLUSTER

|                   |   |                      |
|-------------------|---|----------------------|
| ★ <b>TARGET A</b> | Represent and solve problems involving multiplication and division.   | 3.OA.1 –<br>3.OA.4   |
| ★ <b>TARGET B</b> | Understand properties of multiplication and the relationship between multiplication and division.                             | 3.OA.5<br>3.OA.6     |
| ★ <b>TARGET C</b> | Multiply and divide within 100.   | 3.OA.7               |
| ★ <b>TARGET D</b> | Solve problems involving the four operations, and identify and explain patterns in arithmetic.                                | 3.OA.8<br>3.OA.9     |
| <b>TARGET E</b>   | Use place value understanding and properties of operations to perform multi-digit arithmetic.                                 | 3.NBT.1 –<br>3.NBT.3 |
| ★ <b>TARGET F</b> | Develop understanding of fractions as numbers.  | 3.NF.1 –<br>3.NF.3   |
| ★ <b>TARGET G</b> | Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.              | 3.MD.1<br>3.MD.2     |
| <b>TARGET H</b>   | Represent and interpret data.   | 3.MD.3<br>3.MD.4     |
| ★ <b>TARGET I</b> | Geometric measurement: understand concepts of area and relate area to multiplication and to addition.                         | 3.MD.5 –<br>3.MD.7   |
| <b>TARGET J</b>   | Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures. | 3.MD.8               |
| <b>TARGET K</b>   | Reason with shapes and their attributes.  | 3.G.1<br>3.G.2       |

# SMARTER BALANCED ASSESSMENT VOCABULARY

GRADE  
3

|                  |               |                      |
|------------------|---------------|----------------------|
| add              | less than     | rectangle            |
| addend           | line plot     | rhombus              |
| area             | liquid volume | round to the nearest |
| array            | liter(s) (L)  | rounding             |
| circle           | mass          | scaled bar graph     |
| denominator      | measure       | scaled picture graph |
| difference       | metric        | square               |
| divide           | minute        | square centimeter    |
| equal            | multiply      | square feet          |
| equal areas      | number line   | square inch          |
| equation         | numerator     | square meter         |
| estimate         | operation     | square unit          |
| estimation       | parallelogram | standard units       |
| expression       | patterns      | subtract             |
| factor           | pentagon      | sum                  |
| gram(s) (g)      | perimeter     | time                 |
| greater than     | place value   | time intervals       |
| hexagon          | plane figure  | triangle             |
| hour             | polygon       | unit square          |
| kilogram(s) (kg) | product       |                      |
|                  | quadrilateral |                      |
|                  | quotient      |                      |

# Grade 3 Smarter Balanced Assessment Item Specifications Fact Sheet

**Claim 1 - Target A:** Represent and solve problems involving multiplication and division.

**Content Domain:** Operations and Algebraic Thinking

**Claim 1 Priority Cluster**

## Standards Assessed in Target A:

**3.OA.1:** Interpret products of whole numbers, e.g., interpret  $5 \times 7$  as the total number of objects in 5 groups of 7 objects each. For example, describe a context in which a total number of objects can be expressed as  $5 \times 7$ .

**3.OA.2:** Interpret whole-number quotients of whole numbers, e.g., interpret  $56 \div 8$  as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. For example, describe a context in which a number of shares or a number of groups can be expressed as  $56 \div 8$ .

**3.OA.3:** Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

**3.OA.4:** Determine the unknown whole number in a multiplication or division equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations  $8 \times ? = 48$ ,  $5 = \square \div 3$ , and  $6 \times 6 = ?$ .*

## Achievement Level Descriptors

|                |  |
|----------------|--|
| <b>Level 1</b> | Students should be able to represent multiplication and division problems within 100 involving equal groups of objects.  |
| <b>Level 2</b> | Students should be able to use multiplication and division within 100 to solve one-step problems using arrays, to interpret the meaning of multiplication of two whole numbers and to determine the unknown number in a multiplication equation relating three whole numbers.  |
| <b>Level 3</b> | Students should be able to select the appropriate operation (multiplication or division) within 100 to solve one-step problems involving measurement quantities of single-digit whole numbers and determine the unknown number in a division equation relating three whole numbers. They should be able to interpret the meaning of whole-number quotients of whole numbers. |
| <b>Level 4</b> | Students should be able to use multiplication and division within 100 to solve one-step problems involving measurement quantities.   |

## Construct-Relevant Vocabulary

array, divide, equation, grams, kilograms, liquid volume, liters, mass, multiply, product, quotient

## Allowable Stimulus Materials

arrays, equal-group models, drawings, graphics of measuring tools (scale, balance, measuring cup)

# Grade 3 Smarter Balanced Assessment Item Specifications Fact Sheet

**Claim 1 - Target B:** Understand properties of multiplication and the relationship between multiplication and division.

**Content Domain:** Operations and Algebraic Thinking

**Claim 1 Priority Cluster**

## Standards Assessed in Target B:

**3.OA.5:** Apply properties of operations as strategies to multiply and divide. *Examples: If  $6 \times 4 = 24$  is known, then  $4 \times 6 = 24$  is also known. (Commutative Property of Multiplication.)  $3 \times 5 \times 2$  can be found by  $3 \times 5 = 15$ , then  $15 \times 2 = 30$  or by  $5 \times 2 = 10$ , then  $3 \times 10 = 30$ . (Associative Property of Multiplication.) Knowing that  $8 \times 5 = 40$  and  $8 \times 2 = 16$ , one can find  $8 \times 7$  as  $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$ . (Distributive Property.)*

**3.OA.6:** Understand division as an unknown-factor problem. *For example, find  $32 \div 8$  by finding the number that makes 32 when multiplied by 8.*

## Achievement Level Descriptors

|                |  |
|----------------|--|
| <b>Level 1</b> | No Descriptor.   |
| <b>Level 2</b> | Students should be able to apply the Commutative Property of Multiplication to mathematical problems with one-digit factors.   |
| <b>Level 3</b> | Students should be able to apply the Commutative and Associative Properties of Multiplication and the Distributive Property within 100. They should be able to understand the relationship between multiplication and division when solving an unknown factor problem. |
| <b>Level 4</b> | Students should be able to communicate a deep understanding of the Commutative and Associative Properties of Multiplication, and the relationship between multiplication and division.   |

## Construct-Relevant Vocabulary

divide, equal, equation, expression, factor, multiply, operation, product, quotient

## Allowable Stimulus Materials

Area models will be used and should reflect the appropriate property and have a product or dividend within 100 using single-digit factors.

# Grade 3 Smarter Balanced Assessment Item Specifications Fact Sheet

Claim 1 - Target C: Multiply and divide within 100.

Content Domain: Operations and Algebraic Thinking

Claim 1 Priority Cluster

## Standards Assessed in Target C:

**3.OA.7:** Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that  $8 \times 5 = 40$ , one knows  $40 \div 5 = 8$ ) or properties of operations. By the end of Grade 3 know from memory all products of two one-digit numbers.

## Achievement Level Descriptors

|                |   |
|----------------|---|
| <b>Level 1</b> | Students should be able to multiply a one-digit number by 1, 2, and 5.  |
| <b>Level 2</b> | Students should be able to recall from memory all products of two one-digit numbers.  |
| <b>Level 3</b> | Students should be able to apply relevant strategies to fluently multiply and divide within 100, and recognize division as an unknown factor problem. |
| <b>Level 4</b> | Students should be able to use relevant procedures to multiply or divide in a wide range of contexts.   |

## Construct-Relevant Vocabulary

divide, equation, factor, multiply, product, quotient

## Allowable Stimulus Materials

None.

## Grade 3 Smarter Balanced Assessment Item Specifications Fact Sheet

**Claim 1 - Target D:** Solve problems involving the four operations, and identify and explain patterns in arithmetic.

**Content Domain:** Operations and Algebraic Thinking

**Claim 1 Priority Cluster**

### Standards Assessed in Target D:

**3.OA.8:** Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

**3.OA.9:** Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.*

### Achievement Level Descriptors

|                |   |
|----------------|---|
| <b>Level 1</b> | Students should be able to represent and solve one-step problems using addition and subtraction within 100 and multiplication and division within 100.  |
| <b>Level 2</b> | Students should be able to solve two-step problems using addition and subtraction with numbers larger than 100 and solutions within 1000, assess the reasonableness of an answer, and identify patterns in the addition table.  |
| <b>Level 3</b> | Students should be able to solve two-step problems using multiplication and division within 100. They should be able to represent the problem using equations with a letter or symbol to represent an unknown quantity. They should also be able to explain patterns in the multiplication table. |
| <b>Level 4</b> | Students should be able to use the properties of operations to explain arithmetic patterns (including patterns in the addition and multiplication tables).  |

### Construct-Relevant Vocabulary

add, addend, difference, divide, equation, estimate, estimation, factor, multiply, patterns, product, quotient, rounding, subtract, sum

### Allowable Stimulus Materials

addition tables, multiplication tables, number lines

# Grade 3 Smarter Balanced Assessment Item Specifications Fact Sheet

**Claim 1 - Target E:** Use place value understanding and properties of operations to perform multi-digit arithmetic.

**Content Domain:** Numbers and Operations in Base 10

**Claim 1 Priority Cluster**

## Standards Assessed in Target E:

**3.NBT.1:** Use place value understanding to round whole numbers to the nearest 10 or 100.

**3.NBT.2:** Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

**3.NBT.3:** Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g.,  $9 \times 80$ ,  $5 \times 60$ ) using strategies based on place value and properties of operations.

## Achievement Level Descriptors

|                |  |
|----------------|--|
| <b>Level 1</b> | Students should be able to add and subtract within 100, using strategies and algorithms based on place value understanding. They should be able to round two-digit whole numbers to the nearest 10.  |
| <b>Level 2</b> | Students should be able to add and subtract within 1,000, using strategies and algorithms based on the relationship between addition and subtraction. They should be able to round whole numbers to the nearest 100 and multiply one-digit whole numbers by multiples of 10 in the range of 10–90. |
| <b>Level 3</b> | Students should be able to fluently add and subtract within 1,000, using strategies or algorithms based on place value understanding, properties of arithmetic, and/or the relationship between addition and subtraction.  |
| <b>Level 4</b> | Students should be able to use multiple strategies to fluently add and subtract within 1,000.  |

## Construct-Relevant Vocabulary

add, addend, difference, multiply, place value, round to the nearest, subtract, sum

## Allowable Stimulus Materials

None.

# Grade 3 Smarter Balanced Assessment Item Specifications Fact Sheet

**Claim 1 - Target F:** Develop understanding of fractions as numbers.

**Content Domain:** Numbers and Operations - Fractions

**Claim 1 Priority Cluster**

## Standards Assessed in Target F:

**3.NF.1:** Understand a fraction  $1/b$  as the quantity formed by 1 part when a whole is partitioned into  $b$  equal parts; understand a fraction  $a/b$  as the quantity formed by  $a$  parts of size  $1/b$ .

**3.NF.2:** Understand a fraction as a number on the number line; represent fractions on a number line diagram.

**a.** Represent a fraction  $1/b$  on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into  $b$  equal parts. Recognize that each part has size  $1/b$  and that the endpoint of the part based at 0 locates the number  $1/b$  on the number line.

**b.** Represent a fraction  $a/b$  on a number line diagram by marking off a lengths  $1/b$  from 0. Recognize that the resulting interval has size  $a/b$  and that its endpoint locates the number  $a/b$  on the number line.

**3.NF.3:** Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.

**a.** Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.

**b.** Recognize and generate simple equivalent fractions, e.g.,  $1/2 = 2/4$ ,  $4/6 = 2/3$ . Explain why the fractions are equivalent, e.g., by using a visual fraction model.

**c.** Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. *Examples: Express 3 in the form  $3 = 3/1$ ; recognize that  $6/1 = 6$ ; locate  $4/4$  and 1 at the same point of a number line diagram.*

**d.** Compare two fractions with the same numerator or the same denominator by reasoning about their size.

Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols  $>$ ,  $=$ , or  $<$ , and justify the conclusions, e.g., by using a visual fraction model.

## Achievement Level Descriptors

|                |   |
|----------------|---|
| <b>Level 1</b> | Students should be able to identify a fraction as a number and identify a fraction on a number line when the increments are equal to the denominator.   |
| <b>Level 2</b> | Students should be able to understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into $b$ equal parts; recognize simple equivalent fractions; express whole numbers as fractions; and recognize that comparisons are valid only when the two fractions refer to the same whole.  |
| <b>Level 3</b> | Students should be able to understand a fraction $a/b$ as the quantity formed by $a$ parts of size $1/b$ ; represent a fraction on a number line with partitioning; generate simple equivalent fractions and recognize when they are equal to whole numbers; and compare two fractions with the same numerator or the same denominator by reasoning about their size. |
| <b>Level 4</b> | Students should be able to explain why two fractions are equivalent and approximate the location of a fraction on a number line with no partitioning.   |

## Construct-Relevant Vocabulary

denominator, equal, greater than, less than, number line, numerator

## Allowable Stimulus Materials

area models, equations, number lines, visual fraction models, strip diagram models



# Grade 3 Smarter Balanced Assessment Item Specifications Fact Sheet

**Claim 1 - Target G:** Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.

**Content Domain:** Measurement and Data

**Claim 1 Priority Cluster**

## Standards Assessed in Target G:

**3.MD.1:** Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.

**3.MD.2:** Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (L). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.

## Achievement Level Descriptors

|                |   |
|----------------|---|
| <b>Level 1</b> | Students should be able to tell and write time to the nearest five-minute interval and solve addition and subtraction problems involving fifteen-minute time intervals.   |
| <b>Level 2</b> | Students should be able to tell and write time to the nearest minute and solve one-step addition problems involving five-minute time intervals. They should be able to measure liquid volumes using liters and masses of objects using grams and kilograms and add or subtract to solve one-step word problems involving masses or liquid volumes that are given in the same units. |
| <b>Level 3</b> | Students should be able to solve one-step addition and subtraction problems involving time intervals in minutes. They should be able to multiply or divide to solve one-step problems involving masses or volumes that are given in the same units.   |
| <b>Level 4</b> | Students should be able to solve one-step addition or subtraction problems involving all time intervals from hours to minutes.  |

## Construct-Relevant Vocabulary

estimate, grams (g), hour, kilograms (kg), liquid volume, liters (L), mass, measure, metric, minute, standard units, time, time intervals

## Allowable Stimulus Materials

analog clocks, digital clocks, measurement scales, tables, measuring cups, number line diagram

# Grade 3 Smarter Balanced Assessment Item Specifications Fact Sheet

**Claim 1 - Target H:** Represent and interpret data.

**Content Domain:** Measurement and Data

**Claim 1 Priority Cluster**

## **Standards Assessed in Target H:**

**3.MD.3:** Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs. *For example, draw a bar graph in which each square in the bar graph might represent 5 pets.*

**3.MD.4:** Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.

## **Achievement Level Descriptors**

|                |   |
|----------------|---|
| <b>Level 1</b> | Students should be able to draw a picture graph and a bar graph to represent a data set with up to four categories; generate measurement data by measuring length using rulers marked with one inch intervals; and create a line plot to represent a data set where the horizontal scale is marked in whole unit intervals.   |
| <b>Level 2</b> | Students should be able to solve one-step "how many more?" and "how many less?" problems using information presented in picture and bar graphs; generate measurement data by measuring lengths using rulers marked with half-inch intervals; and represent measurement data on a line plot with a horizontal scale marked in half-unit intervals.   |
| <b>Level 3</b> | Students should be able to draw a scaled picture graph and a scaled bar graph to represent a data set; solve two-step "how many more?" and "how many less?" problems using information presented in a scaled bar graph; generate measurement data by measuring length using rulers marked with quarter inch intervals; and create a line plot with a horizontal scale marked in quarter-unit intervals. |
| <b>Level 4</b> | No Descriptor.  |

## **Construct-Relevant Vocabulary**

line plot, scaled bar graph, scaled picture graph

## **Allowable Stimulus Materials**

line plot, scaled bar graph, scaled picture graph

# Grade 3 Smarter Balanced Assessment Item Specifications Fact Sheet

**Claim 1 - Target I:** Geometric measurement: understand concepts of area and relate area to multiplication and to addition.

**Content Domain:** Measurement and Data

**Claim 1 Priority Cluster**

## Standards Assessed in Target I:

**3.MD.5:** Recognize area as an attribute of plane figures and understand concepts of area measurement.

**a.** A square with side length 1 unit, called “a unit square,” is said to have “one square unit” of area, and can be used to measure area.

**b.** A plane figure which can be covered without gaps or overlaps by  $n$  unit squares is said to have an area of  $n$  square units.

**3.MD.6:** Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).

**3.MD.7:** Relate area to the operations of multiplication and addition.

**a.** Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.

**b.** Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.

**c.** Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths  $a$  and  $b + c$  is the sum of  $a \times b$  and  $a \times c$ . Use area models to represent the distributive property in mathematical reasoning.

**d.** Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.

## Achievement Level Descriptors

|                |  |
|----------------|--|
| <b>Level 1</b> | Students should be able to recognize area as an attribute of plane figures and recognize that a square with side lengths of one unit is called a unit square.                                  |
| <b>Level 2</b> | Students should be able to find the area of a rectilinear figure by counting unit squares.   |
| <b>Level 3</b> | Students should be able to find the area of a rectilinear figure by multiplying side lengths and by decomposing a rectilinear figure into non-overlapping rectangles and adding them together. |
| <b>Level 4</b> | Students should be able to find the area of a rectilinear figure in a word problem.  |

## Construct-Relevant Vocabulary

area, plane figure, square centimeter, square feet, square inch, square meter, square unit, unit square

## Allowable Stimulus Materials

None.

## Grade 3 Smarter Balanced Assessment Item Specifications Fact Sheet

**Claim 1 - Target J:** Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.

**Content Domain:** Measurement and Data

**Claim 1 Priority Cluster**

### Standards Assessed in Target J:

**3.MD.8:** Solve real-world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

### Achievement Level Descriptors

|                |  |
|----------------|--|
| <b>Level 1</b> | Students should be able to find the perimeter of polygons when given all side lengths in problems.   |
| <b>Level 2</b> | Students should be able to solve for an unknown side length of a polygon when given the perimeter in problems.                             |
| <b>Level 3</b> | Students should be able to identify rectangles with the same perimeter and different areas or with the same area and different perimeters. |
| <b>Level 4</b> | No Descriptor.   |

### Construct-Relevant Vocabulary

area, perimeter, plane figure, polygon, quadrilateral, rectangle

### Allowable Stimulus Materials

None.

# Grade 3 Smarter Balanced Assessment Item Specifications Fact Sheet

**Claim 1 - Target K:** Reason with shapes and their attributes.

**Content Domain:** Geometry

**Claim 1 Priority Cluster**

## Standards Assessed in Target K:

**3.G.1:** Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

**3.G.2:** Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area, and describe the area of each part as  $\frac{1}{4}$  of the area of the shape.*

## Achievement Level Descriptors

|                |  |
|----------------|--|
| <b>Level 1</b> | Students should be able to recognize rhombuses, rectangles, and squares.   |
| <b>Level 2</b> | Students should be able to reason with the attributes of quadrilaterals to recognize rhombuses, rectangles, and squares as examples of quadrilaterals and reason with shapes to partition them into parts with equal areas.  |
| <b>Level 3</b> | Students should be able to draw examples of quadrilaterals that do not belong to given subcategories by reasoning about their attributes; partition shapes into parts with equal areas and express the area of each part as a unit fraction of the whole; and understand that shapes in different categories may share attributes and that the shared attributes can define a larger category. |
| <b>Level 4</b> | No Descriptor.   |

## Construct-Relevant Vocabulary

circle, divide, equal areas, hexagon, parallelogram, pentagon, quadrilateral, rectangle, rhombus, square, triangle

## Allowable Stimulus Materials

visual models of quadrilaterals and other shapes