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| **Claim 1:** Concepts and Procedures<br>Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency. | |
| Content Domain: **Numbers and Operations in Base Ten** | |
| **Target D [m]:** Generalize place value understanding for multi-digit whole numbers. (DOK 1, 2)<br><br>Tasks for this target will ask students to compare multi-digit numbers using >, =, and <. Tasks should tap into students' understanding of place value (e.g., by asking students to give a possible digit for the empty box in 4357 < 43□9 that would make the inequality true). A smaller number of these tasks will incorporate student understanding of rounding (e.g., explaining why rounding to a certain place would change the symbol < or > to =).<br>In Claims 2–4, students should see contextual problems associated with this target that highlight issues with precision, including problems in Claim 3 that ask students to explain how improper estimation can create unacceptable levels of precision and/or lead to flawed reasoning. | |
| Standards:<br>4.NBT.A, 4.NBT.A.1, 4.NBT.A.2, 4.NBT.A.3 | **4.NBT.A Generalize place value understanding for multi-digit whole numbers.**<br><br>**4.NBT.A.1** Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. *For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.*<br><br>**4.NBT.A.2** Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.<br><br>**4.NBT.A.3** Use place value understanding to round multi-digit whole numbers to any place. |
| Related Below-Grade and Above-Grade Standards for Purposes of Planning for Vertical Scaling:<br><br>3.NBT.A, 3.NBT.A.1<br><br>5.NBT.A, 5.NBT.A.1 | **Related Grade 3 Standards**<br><br>**3.NBT.A Use place value understanding and properties of operations to perform multi-digit arithmetic.**<br><br>**3.NBT.A.1** Use place value understanding to round whole numbers to the nearest 10 or 100.<br><br>**Related Grade 5 Standards**<br><br>**5.NBT.A Understand the place value system.**<br><br>**5.NBT.A.1** Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. *For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.* |
| DOK Levels: | 1, 2 |

| **Achievement Level Descriptors:** | |
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| **RANGE Achievement Level Descriptor (Range ALD)** Target D: Generalize place value understanding for multi-digit whole numbers. | **Level 1** Students should be able to read and write multi-digit whole numbers less than or equal to 1000 using base-ten numerals, number names, and expanded form; compare multi-digit numbers up to 1000 using <, >, and =; and round multi-digit whole numbers up to 1000 to any place. |
| | **Level 2** Students should look for and use repeated reasoning to generalize place value understanding to be able to read and write multi-digit whole numbers less than or equal to 100,000 using base-ten numerals, number names, and expanded form; compare multi-digit numbers up to 100,000 using <, >, and =; and round multi-digit whole numbers up to 100,000 to any place. |
| | **Level 3** Students should look for and use repeated reasoning to generalize place value understanding to be able to read and write multi-digit whole numbers less than or equal to 1,000,000 using base-ten numerals, number names, and expanded form; compare multi-digit numbers up to 1,000,000 using <, >, and =; round multi-digit whole numbers up to 1,000,000 to any place; and recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. |
| | **Level 4** No Descriptor |
| Evidence Required: | 1. The student compares two multi-digit whole numbers in the same form using >, <, and = symbols.<br>2. The student rounds multi-digit whole numbers to any place.<br>3. The student identifies multi-digit whole numbers that, when rounded to a given place value, will be closest to a given number.<br>4. The student compares two multi-digit whole numbers in different forms.<br>5. The student explains the difference between the values of a numeral in the tens and the ones place, the hundreds place and the tens place, or the thousands place and the hundreds place in mathematical situations. |
| Allowable Response Types: | Multiple Choice, single correct response; Multiple choice, multiple correct responses; Matching Table; Equation/Numeric |
| Allowable Stimulus Materials: | • Multi-digit whole numbers less than or equal to 1,000,000 in any of these forms:<br>o Numeric form (e.g., 427)<br>o Expanded form (e.g., 400 + 20 + 7)<br>o "Expanded word" form (e.g., 4 hundreds + 2 tens + 7 ones)<br>• Comparisons using <, >, or =<br>• Numbers that include a 0 in one or more place values |

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| Construct-Relevant Vocabulary: | nearest ten, nearest hundred, nearest thousand, nearest ten thousand, nearest hundred thousand, ones, tens, hundreds, thousands, ten thousands, hundred thousands, millions |
| Allowable Tools: | None |
| Target-Specific Attributes: | Items will include multi-digit whole numbers less than or equal to 1,000,000. |
| Non-Targeted Constructs: | None |
| Accessibility Guidance: | Item writers should consider the following Language and Visual Element/Design guidelines[1] when developing items.<br><br>Language Key Considerations:<br>• Use simple, clear, and easy-to-understand language needed to assess the construct or aid in the understanding of the context<br>• Avoid sentences with multiple clauses<br>• Use vocabulary that is at or below grade level<br>• Avoid ambiguous or obscure words, idioms, jargon, unusual names and references<br><br>Visual Elements/Design Key Considerations:<br>• Include visual elements only if the graphic is needed to assess the construct or it aids in the understanding of the context<br>• Use the simplest graphic possible with the greatest degree of contrast, and include clear, concise labels where necessary<br>• Avoid crowding of details and graphics<br><br>Items are selected for a student's test according to the blueprint, which selects items based on Claims and targets, not task models.<br>As such, careful consideration is given to making sure fully accessible items are available to cover the content of every Claim and target, even if some item formats are not fully accessible using current technology.[2] |
| Development Notes: | In Claims 2–4, students should see contextual problems associated with this target that highlight issues with precision, including problems in Claim 3 that ask students to explain how improper estimation can create unacceptable levels of precision and/or lead to flawed reasoning. A small number of Claim 3 tasks will incorporate student understanding of rounding (e.g., explaining why rounding to a certain place would change the symbol < or > to =). |

[1] For more information, refer to the General Accessibility Guidelines at: http://www.smarterbalanced.org/wordpress/wp-content/uploads/2012/05/TaskItemSpecifications/Guidelines/AccessibilityandAccommodations/GeneralAccessibilityGuidelines.pdf

[2] For more information about student accessibility resources and policies, refer to http://www.smarterbalanced.org/wordpress/wp-content/uploads/2014/08/SmarterBalanced_Guidelines.pdf

**Task Model 1a**

**Response Type: Matching Table**

**DOK Level 1**

**4.NBT.A.2**
Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.

**Evidence Required:**
1. The student compares two multi-digit whole numbers in the same form using >, <, and = symbols.

**Tools:** None

**Version 3 Update:**
Changed TM1a from an equation/numeric response type to a matching table response type. Updated the stimulus and stem to match the new format. Retired TM1b (redundant due to new response type).

**Prompt Features:** The student is prompted to compare place values in two pairs of whole numbers.

**Stimulus Guidelines:**
- Items should be equally distributed across these number bands: small numbers (up to 1,000), medium numbers (from 1,000 up to 100,000), and large numbers (from 100,000 up to 1,000,000).
- Items should be equally distributed across these item types:
  - Numbers given in numeric form
  - Numbers given in expanded form
- Item difficulty can be adjusted by changing the number of digits in the numbers being compared.

**TM1a**
**Stimulus:** The student is presented with two pairs of multi-digit whole numbers and directed to compare them using (<, >, or =).

**Example Stem:**
Select the symbol (<, >, or =) that correctly compares each pair of numbers.

| | < | > | = |
|---|---|---|---|
| 6,285 ☐ 6,258 | | | |
| 47,385 ☐ 47,299 | | | |

**Rubric:** (1 point) The student selects the correct symbols (e.g., >, >).

**Response Type:** Matching Table

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| **Task Model 1c**<br><br>**Response Type: Equation / Numeric**<br><br>**DOK Level 2**<br><br>**4.NBT.A.2**<br>Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.<br><br>**Evidence Required:**<br>1. The student compares two multi-digit whole numbers in the same form using >, <, and = symbols.<br><br>**Tools:** None<br><br>**Version 3 Update:**<br>Clarified the wording of the stem in TM1c. | **Prompt Features:** The student is prompted to compare two numbers.<br><br>**Stimulus Guidelines:**<br>• In any comparison, numbers have the same number of place values.<br>• Items should be equally distributed across these number bands: small numbers (up to 1,000), medium numbers (from 1,000 up to 100,000), and large numbers (from 100,000 up to 1,000,000).<br>• Digits in place values to the left of the unknown digit should be the same. Digits to the right of the unknown digit may be different.<br>• Numbers should be chosen so that there are no more than three correct digits possible.<br>• Item difficulty can be adjusted via these example methods:<br>  o The location of the unknown digit within the number<br>  o Which number has the unknown digit<br><br>**TM1c**<br>**Stimulus:** The student is presented with two multi-digit whole numbers in numeric form. One number has a box to represent an unknown digit.<br><br>**Example Stem:** Identify a digit that, when placed in the box (□), makes this comparison true.<br><br>524,9□7 < 524,932<br><br>Enter the digit in the response box.<br><br>**Rubric:** (1 point) The student enters a digit to create a correct comparison (e.g., 2, 1, or 0).<br><br>**Response Type:** Equation/Numeric |

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| **Task Model 1d**<br><br>**Response Type: Equation / Numeric**<br><br>**DOK Level 2**<br><br>**4.NBT.A.2**<br>Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.<br><br>**Evidence Required:**<br>1. The student compares two multi-digit whole numbers in the same form using >, <, and = symbols.<br><br>**Tools:** None<br><br>**Version 3 Update:**<br>Added new TM1d. | **Prompt Features:** The student is prompted to generate a number using given digits that is larger or smaller than a given number.<br><br>**Stimulus Guidelines:**<br>• In any comparison, numbers have the same number of place values.<br>• Digits used should be unique and create only one correct possibility.<br>• Items should be equally distributed across these number bands: small numbers (up to 1,000), medium numbers (from 1,000 up to 100,000), and large numbers (from 100,000 up to 1,000,000).<br><br>**TM1d**<br>**Stimulus:** The student is prompted to generate a multi-digit number from a given set of digits to create a larger number for the given context.<br><br>**Example Stem:** Joe and Kate were playing a number game with the following four cards.<br><br>**3** **1** **7** **6**<br><br>The winner of the game is the person that makes the number with the greatest value.<br><br>Joe made the number 6731. Using the same cards, what number could Kate make to win the game?<br><br>**Rubric:** (1 point) The student enters a number greater than 6731 (e.g., 7631, 7613, 7361, 7316, 7163, 7136, etc.).<br><br>**Response Type:** Equation/Numeric |

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| **Task Model 2**<br><br>**Response Type: Equation / Numeric**<br><br>**DOK Level 1**<br><br>**4.NBT.A.3**<br>Use place value understanding to round multi-digit whole numbers to any place.<br><br>**Evidence Required:**<br>2. The student rounds multi-digit whole numbers to any place.<br><br>**Tools:** None | **Prompt Features:** The student is prompted to round a whole number.<br><br>**Stimulus Guidelines:**<br>• Items should be equally distributed across these number bands: small numbers (up to 1,000), medium numbers (from 1,000 up to 100,000), and large numbers (from 100,000 up to 1,000,000).<br>• Item difficulty can be adjusted via these example methods:<br>  o Whether the focus is on rounding to the greatest place value, the second greatest place value, or any other place value in the number<br>  o The value of digits beyond the next place value to the right (e.g., when rounding 56,489 to the nearest thousand, a student must consider only the 4, which will round it down, despite all of the other digits being 5 or greater)<br><br>**TM2**<br>**Stimulus:** The student is presented with a multi-digit whole number in numeric form and the name of a place value to which the number should be rounded.<br><br>**Example Stem 1:** Round 4108 to the nearest thousand. Enter your answer in the response box.<br><br>**Example Stem 2:** Round 658,749 to the nearest ten thousand. Enter your answer in the response box.<br><br>**Rubric:** (1 point) The student enters the number correctly rounded to the nearest designated place value (e.g., 4000; 660,000).<br><br>**Response Type:** Equation/Numeric |

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| **Task Model 3a**<br><br>**Response Type: Equation / Numeric**<br><br>**DOK Level 2**<br><br>**4.NBT.A.3**<br>Use place value understanding to round multi-digit whole numbers to any place.<br><br>**Evidence Required:**<br>3. The student identifies multi-digit whole numbers that, when rounded to a given place, will be closest to a given number.<br><br>**Tools:** None | **Prompt Features:** The student is prompted to identify the smallest or largest number that rounds to a given number.<br><br>**Stimulus Guidelines:**<br>• Items should be equally distributed across these number bands: small numbers (up to 1,000), medium numbers (from 1,000 up to 100,000), and large numbers (from 100,000 up to 1,000,000).<br>• Item difficulty can be adjusted via this example method:<br>  o Whether the focus is on rounding to the greatest place value, the second greatest place value, or any other place value in the number<br><br>**TM3a**<br>**Stimulus:** The student is presented with a multi-digit whole number in numeric form and the name of a place value.<br><br>**Example Stem:** When rounding to the nearest thousand, what is the least whole number that rounds to 16,000? Enter your answer in the response box.<br><br>**Rubric:** (1 point) The student enters the correct number (e.g., 15,500).<br><br>**Response Type:** Equation/Numeric |

**Task Model 3b-c**

**Response Types: Matching Tables, Multiple Choice, multiple correct responses**

**DOK Level 1**

**4.NBT.A.3**
Use place value understanding to round multi-digit whole numbers to any place.

**Evidence Required:**
3. The student identifies multi-digit whole numbers that, when rounded to a given place, will be closest to a given number.

**Tools:** None

**Version 3 Update:**
Added new TM3c.

**Prompt Features:** The student is prompted to identify the numbers that round to a given number.

**Stimulus Guidelines:** Same as for TM3a.

**TM3b**
**Stimulus:** The student is presented with a multi-digit whole number in numeric form.

**Example Stem:** When rounding to the nearest thousand, which numbers round to 16,000?

Select Yes if the number rounds to 16,000. Select No if the number does **not** round to 16,000.

| | Yes | No |
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| 15,179 | | |
| 16,523 | | |
| 15,545 | | |

**Rubric:** (1 point) The student correctly identifies whether three numbers round to a given number (e.g., N, N, Y).

**Response Type:** Matching Tables

**TM3c**
**Stimulus:** The student is presented with a multi-digit whole number in numeric form.

**Example Stem:** When rounding to the nearest thousand, select **all** numbers that round to 16,000.

A. 16,204
B. 15,179
C. 16,523
D. 15,545

**Rubric:** (1 point) The student correctly identifies the numbers that round to a given number (e.g., A, D).

**Response Type:** Multiple choice, multiple correct responses

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| **Task Model 4a**<br><br>**Response Type: Matching Tables**<br><br>**DOK Level 2**<br><br>**4.NBT.A.2**<br>Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.<br><br>**Evidence Required:**<br>4. The student compares two multi-digit whole numbers in different forms.<br><br>**Tools:** None | **Prompt Features:** The student is prompted to compare two numbers in different forms.<br><br>**Stimulus Guidelines:**<br>• Items should be equally distributed across these number bands: small numbers (up to 1,000), medium numbers (from 1,000 up to 100,000), and large numbers (from 100,000 up to 1,000,000).<br>• Within each comparison, multi-digit numbers are represented in two of these forms:<br>  o Numeric form (e.g., 625)<br>  o Expanded form (e.g., 600 + 20 + 5)<br>  o "Expanded word" form with a mix of numerals and place value names (e.g., 6 hundreds + 2 tens + 5 ones)<br>• Items should be equally distributed across these types:<br>  o The numbers require distinguishing between small and large numbers in different place values (e.g., 398 and 400 + 20 + 5).<br>  o The numbers have one place value that differs (e.g., 3 hundreds + 8 tens + 5 ones and 300 + 90 + 5).<br>  o The numbers contain the same digits in different place value locations (e.g., 3 hundreds + 8 ones + 9 tens and 300 + 80 + 9).<br>• Item difficulty can be adjusted via these example methods:<br>  o Whether numbers are represented in numeric form, expanded form, or "expanded word" form<br>  o In expanded and "expanded word" forms, whether the place values are presented in order<br>  ▪ In place value order (e.g., 600 + 20 + 5, 6 hundreds + 2 tens + 5 ones)<br>  ▪ Not in place value order (e.g., 20 + 600 + 5, 2 tens + 6 hundreds + 5 ones)<br>  o In "expanded word" form, how precisely the number is presented<br>  ▪ Precise (e.g., 6 hundreds + 2 tens + 5 ones)<br>  ▪ Low degree of imprecision (e.g., 5 hundreds + 12 tens + 5 ones)<br>  ▪ High degree of imprecision (e.g., 4 hundreds + 18 tens + 45 ones) |

**Task Model 4a**

**Response Type: Matching tables**

**DOK Level 2**

**4.NBT.A.2**
Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.

**Evidence Required:**
4. The student compares two multi-digit whole numbers in different forms.

**Tools:** None

**Version 3 Update:**
Retired TM4b.

**TM4a**
**Stimulus:** The student is presented with three comparisons of two multi-digit whole numbers in different forms.

**Example Stem:** Select True or False for each comparison.

| | True | False |
|---|---|---|
| 5 hundreds + 4 tens > 50 + 400 | | |
| 524 < 50 + 200 + 4 | | |
| 50 tens + 20 ones = 520 | | |

**Rubric:** (1 point) The student correctly identifies three comparisons as true or false (e.g., T, F, T).

**Response Type:** Matching Tables

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| **Task Model 5a**<br><br>**Response Type: Multiple Choice, single correct response**<br><br>**DOK Level 1**<br><br>**4.NBT.A.1**<br>Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. *For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.*<br><br>**Evidence Required:**<br>5. The student explains the difference between the values of a numeral in the tens and the ones place, the hundreds place and the tens place, or the thousands place and the hundreds place in mathematical situations.<br><br>**Tools:** None | **Prompt Features:** The student is prompted to explain the difference between the values of the same digit in different place values.<br><br>**Stimulus Guidelines:**<br>• Follow any stated guidelines on allowable number ranges.<br>• In each item, the numbers presented differ by a factor of 10 (e.g., 8 and 80, or 1725 and 17,250).<br>• Items should be equally distributed across these number bands: small numbers (up to 1,000), medium numbers (from 1,000 up to 100,000), and large numbers (from 100,000 up to 1,000,000).<br>• Answer choices should be in the form of sentences that use multiplication to explain how the values of the numbers differ.<br>• Item difficulty can be adjusted via this example method:<br>  o Whether the student is prompted to consider the same digit in the tens and ones places, the hundreds and tens places, or the thousands and hundreds places (e.g., the 7 in 720 vs. the 7 in 72)<br><br>**TM5a**<br>**Stimulus:** The student is presented with two multi-digit whole numbers.<br><br>**Example Stem:** Select the statement that explains how the values of the numbers 420 and 4200 are different.<br><br>A. 4200 is 1000 times as large as 420.<br>B. 4200 is 100 times as large as 420.<br>C. 4200 is 10 times as large as 420.<br>D. 4200 is 1 time as large as 420.<br><br>**Rubric:** (1 point) The student selects the correct statement (e.g., C).<br><br>**Response Type:** Multiple Choice, single correct response |

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| **Task Model 5b**<br><br>**Response Type: Equation / Numeric**<br><br>**DOK Level 1**<br><br>**4.NBT.A.1**<br>Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. *For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.*<br><br>**Evidence Required:**<br>5. The student explains the difference between the values of a numeral in the tens and the ones place, the hundreds place and the tens place, or the thousands place and the hundreds place in mathematical situations.<br><br>**Tools:** None<br><br>**Version 3 Update:**<br>Added new TM5b. | **Prompt Features:** The student is prompted to determine difference between the values of the same digit in different place values.<br><br>**Stimulus Guidelines:** Same as TM5a.<br><br>**TM5b**<br>**Stimulus:** The student is presented with two multi-digit whole numbers in context.<br><br>**Example Stem:** Jim and Tom collected empty soda cans to raise money. Jim collected 70 cans and Tom collected 700 cans.<br><br>The number of cans Tom collected is how many times greater than the number of cans Jim collected?<br><br>Enter your answer in the response box.<br><br>**Rubric:** (1 point) The student enters the correct value (e.g., 10).<br><br>**Response Type:** Equation/Numeric |