Grade 5 Target C

Domain, Target, Standards, DOK, Vertical Alignments, Achievement Levels, Evidence Required, Vocabulary, Response Types, Materials, Attributes, Question Types, and Question Banks (Examples)

Content Domain: Number and Operations in Base Ten
Target C [s]: 5.NBT.A Understand the place value system.
Standards included in Target 5.NBT.A, 5.NBT.A.1, 5.NBT.A.2, 5.NBT.A.3, 5.NBT.A.3a, 5.NBT.A.3b, 5.NBT.A.4
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Claim 1: Concepts and Procedures (DOK 1, 2) Question Banks
Claim 2 Problem Solving Questions Banks
Claim 3 Communicating Reasoning Question Banks

Content Domain: Number and Operations in Base Ten

Target C [s]: 5.NBT.A Understand the place value system.

Standards included in Target 5.NBT.A, 5.NBT.A.1, 5.NBT.A.2, 5.NBT.A.3, 5.NBT.A.3a, 5.NBT.A.3b, 5.NBT.A.4

5.NBT.A Understand the place value system.

5.NBT.A.1 Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.

5.NBT.A.2 Explain patterns in the number of zeroes of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.

5.NBT.A.3 Read, write, and compare decimals to thousandths.

a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (1/1000).

b. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.

5.NBT.A.4 Use place value understanding to round decimals to any place.

Vertical Alignment

Related Grade 4 standards

4.NBT.A Generalize place value understanding for multi-digit whole numbers.

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.

4.NBT.A.2 Read and write multi-digit whole numbers using baseten 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.

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

Related Grade 6 Standards

6.NS.B Compute fluently with multi-digit numbers and find common factors and multiples.

6.NS.B.2 Fluently divide multi-digit numbers using the standard algorithm.

6.NS.B.3 Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

6.NS.C Apply and extend previous understandings of numbers to the system of rational numbers.

6.NS.C.7 Understand ordering and absolute value of rational numbers.

a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. For example, interpret –3 > –7 as a statement that –3 is located to the right of –7 on a number line oriented from left to right.
b. Write, interpret, and explain statements of order for rational numbers in real-world contexts. For example, write –3 ºC > –7 ºC to express the fact that –3 ºC is warmer than –7 ºC.

Achievement Level Descriptors

Level 1 Students should be able to read and write decimals to the thousandths using base-ten numerals, number names, and expanded form and round decimals to the hundredths.

Level 2 Students should be able to use repeated reasoning to understand that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left. They should be able to explain patterns in numbers of zeroes and/or placement of a decimal point when a number is multiplied or divided by 10.

Level 3 Students should be able to use whole-number exponents to denote powers of 10; use repeated reasoning to understand and explain patterns in numbers of zeroes and/or placement of a decimal point when a number is multiplied or divided by powers of 10; read, write, and compare two decimals to the thousandths using base-ten numerals, number names, and expanded form, using the symbols >, =, and < to record the results of the comparison; and round decimals to any place.

Level 4 Students should be able to combine multiplying by powers of 10, comparing, and rounding to highlight essential understandings.

Evidence Required

1. The student represents powers of 10 by using whole-number exponents.

2. The student reads and writes decimals to the thousandths using base-ten numerals, number names, and expanded form.

3. The student compares two decimals to the thousandths by using >, =, and < symbols.

4. The student rounds decimals to the nearest whole number, tenth, or hundredth.

Vocabulary
round, digit, value, greater than, less than, equal to, equivalent, expression, expanded form, hundredths, tenths, thousandths, word form

Response Types
Equation/Numeric; Multiple Choice, single correct response; Matching Tables

Materials
>, <, or = symbols; multi-digit numbers less than or equal to 1,000,000; base-ten models; decimals to the thousandths (except when rounding, which can be to the hundredths)

Attributes
For division problems with whole numbers, numbers are limited to 4-digit dividends and 2-digit divisors. Reading, writing, and comparing decimal numbers should not exceed the thousandths place. Decimal numbers can be rounded to the hundredths. Use positive exponents only.

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Claim 1: Concepts and Procedures (DOK 1, 2) Question Banks

Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.

5.NBT.A.2 DOK Level 1

Explain patterns in the number of zeroes of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.

Evidence Required

The student represents powers of 10 by using whole number exponents.

Question Type 1: The student is presented with a multi-digit whole number that is a power of 10.

Enter 10,000 as a power of 10.

Example Stem 2: What power of 10 makes this expression equal to 5000? $5 \times 10^{\square}$

Rubric: (1 point) The student enters the correct value (e.g., 104; 3).

Response Type: Equation/Numeric

5.NBT.A.3a DOK Level 1

Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (1/1000).

Evidence Required:

The student reads and writes decimals to the thousandths using base-ten numerals, number names, and expanded form.

Question Type 1: The stem will present a decimal number written as a base-ten numeral.

Which expression is equal to 473.923?

A. $(4 \times 100) + (7 \times 10) + (3 \times 1) + (9 \times \frac{1}{1}) + (2 \times \frac{1}{10}) + (3 \times \frac{1}{100})$
B. $(4 \times 100) + (7 \times 10) + (3 \times 1) + (9 \times 10) + (2 \times 100) + (3 \times 1{,}000)$
C. $(4 \times 100) + (7 \times 10) + (3 \times 1) + (9 \times \frac{1}{10}) + (2 \times \frac{1}{100}) + (3 \times \frac{1}{1000})$
D. $(4 \times 100{,}000) + (7 \times 10{,}000) + (3 \times 1{,}000) + (9 \times 100) + (2 \times 10) + (3 \times 1)$

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Rubric: (1 point) The student selects the correct expression (e.g., C).

Response Type: Multiple Choice, single correct response

Claim 1 5.NBT.A.3a DOK Level 1

Question Type 2: The student is presented with a decimal number in expanded form.

1. Enter a number equal to the value of the expression.

$(4 \times 100) + (7 \times 10) + (3 \times 1) + (9 \times \frac{1}{10}) + (2 \times \frac{1}{100}) + (3 \times \frac{1}{1000})$

2. Enter a number equal to the value of the expression.

$(4 \times 100) + (3 \times 1) + (2 \times \frac{1}{100}) + (7 \times 10) + (9 \times \frac{1}{10}) + (3 \times \frac{1}{1000})$

3. Enter a number equal to the value of the expression.

(7 x 10) + (4 x 1) + (5 x 0.1) + (3 x 0.01)

Rubric: (1 point) The student correctly enters the decimal number that is equivalent to the expression (e.g., 473.923; 473.923; 74.53).

Response Type: Equation/Numeric

Claim 1 5.NBT.A.3a DOK Level 2

Question Type 3: The student will be presented with a decimal number in numeric form.

Determine whether each expression is equivalent to 638.4. Select Yes or No for each expression.

	Yes	No
63 tens + 8 ones + 4 tenths		
63 hundreds + 8 ones + 4 tenths		
6 hundreds + 3 tens + 84 tenths		
6 hundreds + 38 ones + 4 tenths		

Rubric: (1 point) The student identifies equal expansions for the number (e.g., Y, N, Y, Y).

Response Type: Matching Tables

5.NBT.A.3b DOK Level 2

Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (1/1000).

Evidence Required:

The student compares two decimals to the thousandths by using >, =, and < symbols.

Question Type 1: The student is presented with two pairs of decimals and directed to compare them using (<, >, or =).

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

	<	>	=
0.03 □ 0.3			
187.36 □ 187.35			

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

Response Type: Matching Table

Question Type 2: The student is presented with an incomplete comparison using decimals and a comparison symbol of >, =, or <.

Which number makes the comparison true? 3.45 < □

A. 3.249
B. 3.38
C. 3.436
D. 3.47

Rubric: (1 point) The student selects the correct number (e.g., D).

Response Type: Multiple Choice, single correct response

Question Type 3: The answer choices present three unique decimal number comparisons using >, =, and <.

Determine if each comparison is true or false. Select True or False for each comparison.

	True	False
4.3 = 4.300		
48.2 > 4.829		
56.78 < 56.760		

Rubric: (1 point) The student correctly selects True or False for each comparison (e.g., T, T, F).

Response Type: Matching Tables

5.NBT.A.4 DOK Level 1

Use place value understanding to round decimals to any place.

Evidence Required:

The student rounds decimals to the nearest whole number, tenth, hundredth or thousandth.

Question Type 1: The student is presented with a multi-digit decimal number.

Round 45.643 to the nearest hundredth. Enter your answer in the response box.

Rubric: (1 point) The student enters the correct value (e.g., 45.64).

Response Type: Equation/Numeric

Claim 2 Problem Solving Questions Banks

Claim Descriptors and Targets

Students can solve a range of complex well-posed problems in pure and applied mathematics, making productive use of knowledge and problem-solving strategies.

Janet has some money. She spends $\frac{1}{2}$ of her money on books. She spends some more money on videos.
Which number is a reasonable choice for the fraction of Janet's total money that she spends on books and videos?

A. $\frac{2}{7}$
B. $\frac{3}{5}$
C. $\frac{3}{2}$
D. $\frac{1}{2}$

Rubric: (1 point) The student enters the most reasonable choice (B).

Response Type: Multiple Choice, single correct response

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Claim 3 Communicating Reasoning Question Banks

Claim Descriptors and Targets

Students can clearly and precisely construct viable arguments to support their own reasoning and to critique the reasoning of others.

Example 1

Mr. Spivak's class was finding the volume of a right rectangular prism with dimensions 20 cm, 45 cm, and 80 cm.
Brigit said, "I tried two ways of multiplying the dimensions and got different answers. I can't figure out what went wrong."
She explained her two ways to Mr. Spivak.

First method:

Step 1: I distributed.
20 × (45 × 80) = (20 × 45) + (20 × 80)

Step 2: I multiplied 20 by 45 and 20 by 80.
= 900 + 1600

Step 3: Then I added.
= 2500

Second method:

Step 1: I broke apart the numbers.
20 × 45 × 80 = (2 × 10) × (5 × 9) x (8 × 10)

Step 2: I rearranged the numbers.

Step 3: Then I multiplied everything.
= 72 × (10 × 100) = 72,000

Which method has an error? Which step has the first error in that method?

Brigit's [drop-down options: first, second] method has an error.

She made the error in step [drop-down options: 1, 2, 3].

Rubric: (1 point) The student selects the incorrect method (first) and identifies the step in which the error occurred (1).

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Response Type: Drop-down Menu

Example 2

Jenny says, “To round a decimal d between 3.2 and 3.3 to the nearest tenth, you just see which tenth it is closest to on the number line. For example, 3.28 is closer to 3.3 than 3.2, so it rounds to 3.3.”

In which cases will Jenny’s method work? (Select all that apply.)
A. Case 1: $3.25 < d \leq 3.3$
B. Case 2: $d = 3.25$
C. Case 3: $3.2 \leq d < 3.25$
D. Jenny’s method doesn’t usually doesn’t work—it just worked for this example.

Rubric: (1 point) The student selects the correct cases (A and C).
Response Type: Multiple Choice, multiple correct response