About the Field Guide

What are Field Guides?

Field Guides for Teachers succinctly organize the information teachers and PLCs need to effectively plan meaningful instruction for students by:

- Connecting TEA standards to the curriculum
- Providing relevant context that shows how each Student Expectation fits into the big picture, as well as the specifics that inform instruction
- Building content knowledge with explanations, stimulus identification, and essential vocabulary
- Making connections to instructional implications
- Looking at "interesting items" from previous released tests to provide insight into the types of mistakes students make

When to Use the Field Guides

- The team needs a guided conversation (desired state)
- Longitudinal data about a concept shows opportunities for growth (the data isn't good)
- The PLC is stuck (a good team has exhausted what it knows)
- The team or teacher is new to the grade level or new to the profession
- A team or teacher needs support in understanding the roles standards play in instruction

Kick-Start the Discussion and Prepare for Instruction

Scaffold

- Is this the first time the concept is being introduced?
- How does the concept change in rigor from last year to this year?
- How might we assess students to determine where to begin instruction?
- How are we going to make connections to what was learned in an earlier grade or earlier in the year?

Content Builder

- How many parts does this standard have?
- Which of the parts are new to your team or to the students?
- How many different question types could be generated from this student expectation?
- How will we support those scenarios in instruction?

Instructional Implications

- In designing instruction, what should the PLC consider?
- Which of these implications might students struggle with?
- Is there content where we, as teachers, might need a refresher?

Learning from Mistakes

- How do these common mistakes inform instruction?
- In addition to these common errors that students make in learning, what else have you observed?
- What misconceptions do students have?
- How can we use this information to pre-teach or proactively address what is likely to emerge?

Stimulus

- Which visuals are typically used to develop understanding of this concept?
- Which visuals help students access content and transfer learning?
- How can we vary the visuals to teach this concept in more than one way?

Academic Vocabulary

- What academic vocabulary is important for concept development?
- Do students (or any particular group of students) struggle with these terms? Why?
- How will you use these terms during instruction to reinforce the context in which these words occur?

Interesting Items

- How do these particular released test assessment items inform instruction?

How to Read Readiness Standards Analysis Pages

Standard and indication of "Readiness" or "Supporting"

Subcluster
What part of the overall TEKS Cluster concept does this standard address?

4.2(B) Readiness

Subcluster: Representation of Whole Numbers and Decimals

TEKS Scaffold
What did students learn in previous grades to prepare them for this content? What do they need to know to prepare them for what's ahead?

Knowledge and Skills Statement

Student Expectation

TEKS Scaffold

TEKS	Student Expectation
5.2(A)	represent the value of the digit in decimals through the thousandths using expanded notation and numerals (S)
4.2(B)	**4.2 Number and operations.** The student applies mathematical process standards to represent, compare, and order whole numbers and decimals and understand relationships related to place value. The student is expected to: **(B) represent the value of the digit in whole numbers through 1,000,000,000 and decimals to the hundredths using expanded notation and numerals**
3.2(A)	compose and decompose numbers up to 100,000 as a sum of so many ten thousands, so many thousands, so many hundreds, so many tens, and so many ones using objects, pictorial models, and numbers, including expanded notation as appropriate (R)
2.2(B)	use standard, word, and expanded forms to represent numbers up to 1,200 (R)

Stimulus
What visuals have been assessed, but more importantly, which visuals help students access content and transfer learning?

Stimulus

Word Problem	Verbal Description*	Chart/Table	Graph
Equation/ Expression*	Manipulatives	Diagram/Image	Number Line
Base Ten Blocks	Measurement Tool	Formula	Geometric Figures

Interesting Items
What released assessment items help inform instruction?

Interesting Items

English	*Spanish*
4.2(B) 2021 #24	4.2(B) 2018 #2
4.2(B) 2019 #17	4.2(B) 2017 #3
	4.2(B) 2017 #27

Content Builder (see Appendix for Tree Diagram)

- Represent the value of the digit in whole numbers through 1,000,000,000 using:
  - expanded notation
  - numerals
- Represent the value of the digit in tenths using:
  - expanded notation
  - numerals
- Represent the value of the digit in hundredths using:
  - expanded notation
  - numerals

Content Builder
What's the content of the standard?

Instructional Implications

Students must identify the place value position and represent the value in expanded notation (e.g., 452,638 = 4 x 100,000 + 5 x 10,000 + 2 x 1,000 + 6 x 100 + 3 x 10 + 8 x 1). In conjunction with 4.2(E)/(F), instruction should emphasize how to represent the values in expanded notation as students begin representing decimals with base ten blocks (e.g., if a hundred flat represents one whole then two hundred flats represents two wholes, three ten longs represent three-tenths and five unit cubes represent five-hundredths; 2 x 1 + 3 x 0.1 + 5 x 0.01). The operations of each of these values are not the instructional piece; the value of each representation is the focus of this concept.

Encourage students to represent a number in more than one way as a means of building flexibility with numbers (e.g., 2.35 can also be represented with 2 hundred flats, 2 tens longs and 15 unit cubes = 2 x 1 + 2 x 0.10 + 15 x 0.01 = 2 + 0.20 + 0.15). This understanding lends itself to regrouping in subtraction (e.g., 2.35 − 1.29 = ___; 5 hundredths would have to be regrouped as 15 hundredths). In conjunction with 4.2(G), students should also see that 2.35 in expanded notation could also be represented with fractions (e.g., $2 \times 1 + 3 \times \frac{1}{10} + 5 \times \frac{1}{100}$).

Instructional Implications
What should we pay attention to in instruction? Students struggle with...so this year make sure to...

Learning from Mistakes

Students may make the following mistakes:

- Confusing the tenths/hundredths and tens/hundreds place value*
- Misidentifying the hundredths place value as the oneths
- Confusing the place value position for a given digit and the value of the digit (e.g., when asked the value of the 4 in 3.45, responding "in the tenths place or 4" instead of 0.4)
- Confusing the value of the base ten blocks, as they have been used to represent both whole numbers and fractional parts of a whole*
- Misrepresenting the value of a number when a zero value is not represented in expanded notation [e.g., (4 x 10) + (6 x 1) + (5 x 0.01) = 465 or 460.5 instead of 46.05]*

Learning from Mistakes
How do we learn from patterns of mistakes to inform tier I intervention?

Academic Vocabulary

billion	hundreds/hundredths	place value*
decimal*	million	tens/tenths
expanded notation*		

TEKS Cluster
To what "big picture" concept does this standard belong?

Academic Vocabulary
What academic vocabulary is important for concept development?

How to Read Supporting Standards Analysis Pages

Standard and indication of "Readiness" or "Supporting"

Subcluster
What part of the overall TEKS Cluster concept does this standard address?

4.2(A) Supporting

Subcluster: Representation of Whole Numbers and Decimals

Knowledge and Skills Statement

Student Expectation

4.2(A) **4.2 Number and operations.** The student applies mathematical process standards to represent, compare, and order whole numbers and decimals and understand relationships related to place value. The student is expected to:

(A) interpret the value of each place-value position as 10 times the position to the right as one-tenth of the value of the place to its left

Stimulus
What visuals have been assessed, but more importantly, which visuals help students access content and transfer learning?

Stimulus

Word Problem	Verbal Description*	Chart/Table	Graph
Equation/ Expression	Manipulatives	Diagram/Image	Number Line
Base Ten Blocks	Measurement Tool	Formula	Geometric Figures

Academic Vocabulary
What academic vocabulary is important for concept development?

Academic Vocabulary

place value
one-tenth*
ten-times*

Interesting Items
What released assessment items help inform instruction?

Interesting Items

English
4.2(A) 2018 #13

Spanish
4.2(A) 2018 #13

Role in Concept Development

Supports
- 4.2(B) represent the value of the digit in whole numbers through 1,000,000,000 and decimals to the hundredths using expanded notation and numerals
- 5.2(B) compare and order two decimals to thousandths and represent comparisons using the symbols >, <, or =

Connection/ Relevance
This standard describes the mathematical relationship found in the base ten place value system; this understanding supports students in identifying the value of each digit in a number in order to represent numbers in expanded notation and to effectively compare/order numbers.

When to Teach
Before/Prerequisite to 4.2(B)

Instructional Implications
As students represent numbers using the base ten blocks, instruction should demonstrate how the values of each place value position become ten times larger as we move left on a place value chart (e.g., a ten long is ten times larger than the ones units; the hundred flat is ten times larger than the ten longs). Students should also recognize how the values of each place value position become ten times smaller as we move right on a place value chart (e.g., a one unit is one-tenth the size of a ten long; a ten long is ten times smaller than a hundred flat).

Demonstrating the value and representation of money may support students with understanding the relationship of related place values (e.g., if you had $1.00 and you wanted to make ten times more, you would have $10.00; if you have $10.00 and wanted to make ten times more, you would have $100.00; if you have $100.00 and you wanted to have ten times less, you would have $10.00; if you have $10.00 and wanted one-tenth as much, you would have $1.00).

Learning from Mistakes
Students may make the following mistakes:
- Reversing the value of digits when moving left and/or right on the place value chart (e.g., dividing when moving left and multiplying when moving right instead of the other way around)
- When verbalizing place value, confusing "one-tenth" the value as "ten times" more*

TEKS Cluster
To what "big picture" concept does this standard belong?

Which Readiness standard(s) does this support?

How does this support the Readiness standard(s) or concept development?

Is this best taught before, with, or after the Readiness standard or concept?

What should we pay attention to in instruction? Students struggle with… so this year make sure to...

How do we learn from patterns of mistakes to inform tier I intervention?