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?

Item Types

- How do we ensure students can show what they know in more than one way?
- How do we help students effectively respond in writing (short-constructed response)?

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?

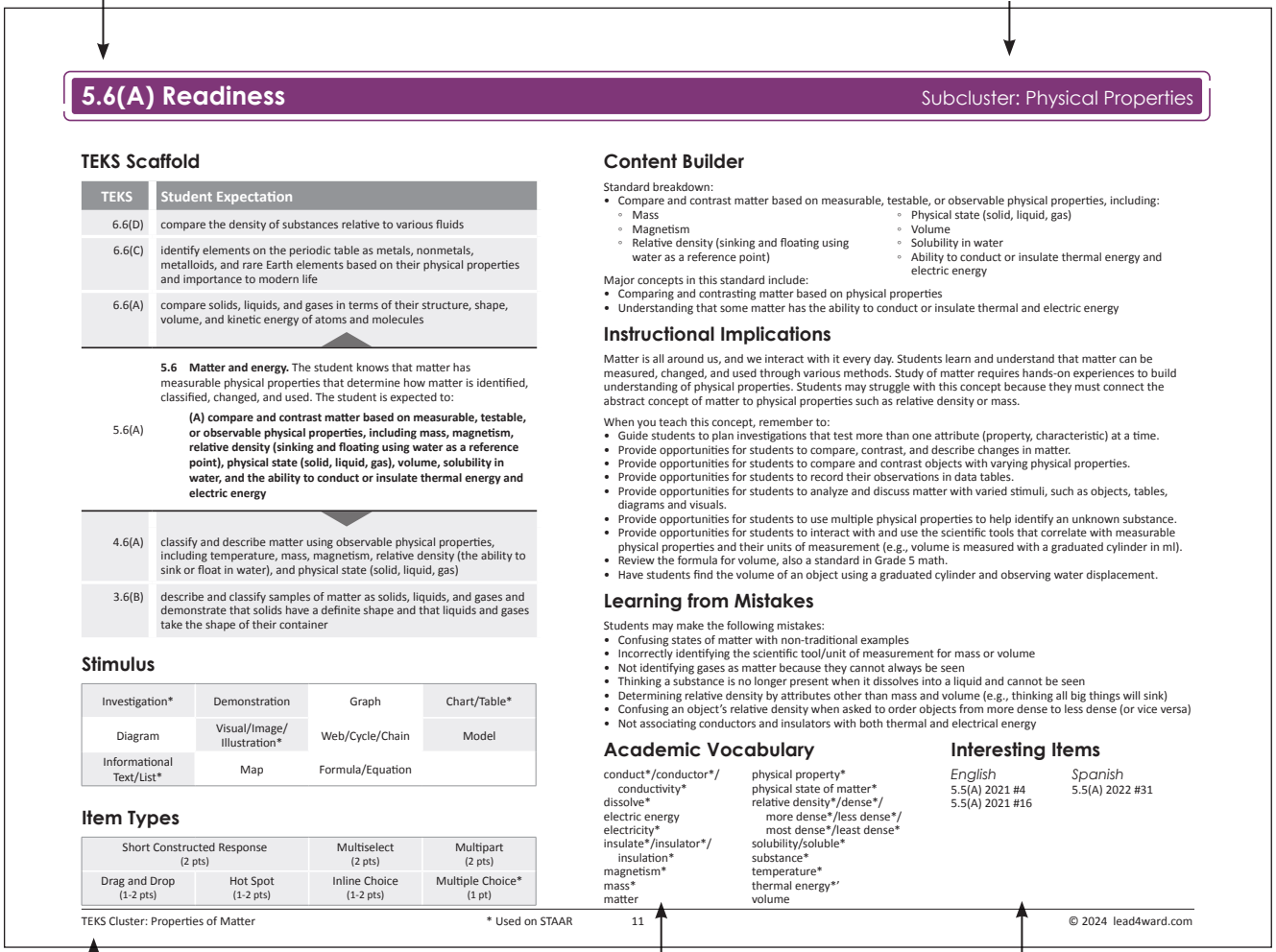
Interesting Items

- 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?



5.6(A) Readiness

Subcluster: Physical Properties

TEKS Scaffold

TEKS	Student Expectation
6.6(D)	compare the density of substances relative to various fluids
6.6(C)	identify elements on the periodic table as metals, nonmetals, metalloids, and rare Earth elements based on their physical properties and importance to modern life
6.6(A)	compare solids, liquids, and gases in terms of their structure, shape, volume, and kinetic energy of atoms and molecules
	5.6 Matter and energy. The student knows that matter has measurable physical properties that determine how matter is identified, classified, changed, and used. The student is expected to:
5.6(A)	**(A) compare and contrast matter based on measurable, testable, or observable physical properties, including mass, magnetism, relative density (sinking and floating using water as a reference point), physical state (solid, liquid, gas), volume, solubility in water, and the ability to conduct or insulate thermal energy and electric energy**
4.6(A)	classify and describe matter using observable physical properties, including temperature, mass, magnetism, relative density (the ability to sink or float in water), and physical state (solid, liquid, gas)
3.6(B)	describe and classify samples of matter as solids, liquids, and gases and demonstrate that solids have a definite shape and that liquids and gases take the shape of their container

Stimulus

Investigation*	Demonstration	Graph	Chart/Table*
Diagram	Visual/Image/ Illustration*	Web/Cycle/Chain	Model
Informational Text/List*	Map	Formula/Equation	

Item Types

Short Constructed Response (2 pts)		Multiselect (2 pts)	Multipart (2 pts)
Drag and Drop (1-2 pts)	Hot Spot (1-2 pts)	Inline Choice (1-2 pts)	Multiple Choice* (1 pt)

Content Builder

Standard breakdown:
- Compare and contrast matter based on measurable, testable, or observable physical properties, including:
  - Mass
  - Magnetism
  - Relative density (sinking and floating using water as a reference point)
  - Physical state (solid, liquid, gas)
  - Volume
  - Solubility in water
  - Ability to conduct or insulate thermal energy and electric energy

Major concepts in this standard include:
- Comparing and contrasting matter based on physical properties
- Understanding that some matter has the ability to conduct or insulate thermal and electric energy

Instructional Implications

Matter is all around us, and we interact with it every day. Students learn and understand that matter can be measured, changed, and used through various methods. Study of matter requires hands-on experiences to build understanding of physical properties. Students may struggle with this concept because they must connect the abstract concept of matter to physical properties such as relative density or mass.

When you teach this concept, remember to:
- Guide students to plan investigations that test more than one attribute (property, characteristic) at a time.
- Provide opportunities for students to compare, contrast, and describe changes in matter.
- Provide opportunities for students to compare and contrast objects with varying physical properties.
- Provide opportunities for students to record their observations in data tables.
- Provide opportunities for students to analyze and discuss matter with varied stimuli, such as objects, tables, diagrams and visuals.
- Provide opportunities for students to use multiple physical properties to help identify an unknown substance.
- Provide opportunities for students to interact with and use the scientific tools that correlate with measurable physical properties and their units of measurement (e.g., volume is measured with a graduated cylinder in ml).
- Review the formula for volume, also a standard in Grade 5 math.
- Have students find the volume of an object using a graduated cylinder and observing water displacement.

Learning from Mistakes

Students may make the following mistakes:
- Confusing states of matter with non-traditional examples
- Incorrectly identifying the scientific tool/unit of measurement for mass or volume
- Not identifying gases as matter because they cannot always be seen
- Thinking a substance is no longer present when it dissolves into a liquid and cannot be seen
- Determining relative density by attributes other than mass and volume (e.g., thinking all big things will sink)
- Confusing an object's relative density when asked to order objects from more dense to less dense (or vice versa)
- Not associating conductors and insulators with both thermal and electrical energy

Academic Vocabulary

conduct*/conductor*/ conductivity*
dissolve*
electric energy
electricity*
insulate*/insulator*/ insulation*
magnetism*
mass*
matter
physical property*
physical state of matter*
relative density*/dense*/ more dense*/less dense*/ most dense*/least dense*
solubility/soluble*
substance*
temperature*
thermal energy*'
volume

Interesting Items

English	*Spanish*
5.5(A) 2021 #4	5.5(A) 2022 #31
5.5(A) 2021 #16	

TEKS Cluster: Properties of Matter * Used on STAAR 11 © 2024 lead4ward.com

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

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

Item Types
How do we ensure students can show what they know in more than one way?

Content Builder
What's the content of the standard?

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

Learning from Mistakes
How do we learn from patterns of mistakes to inform Tier 1 intervention?

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

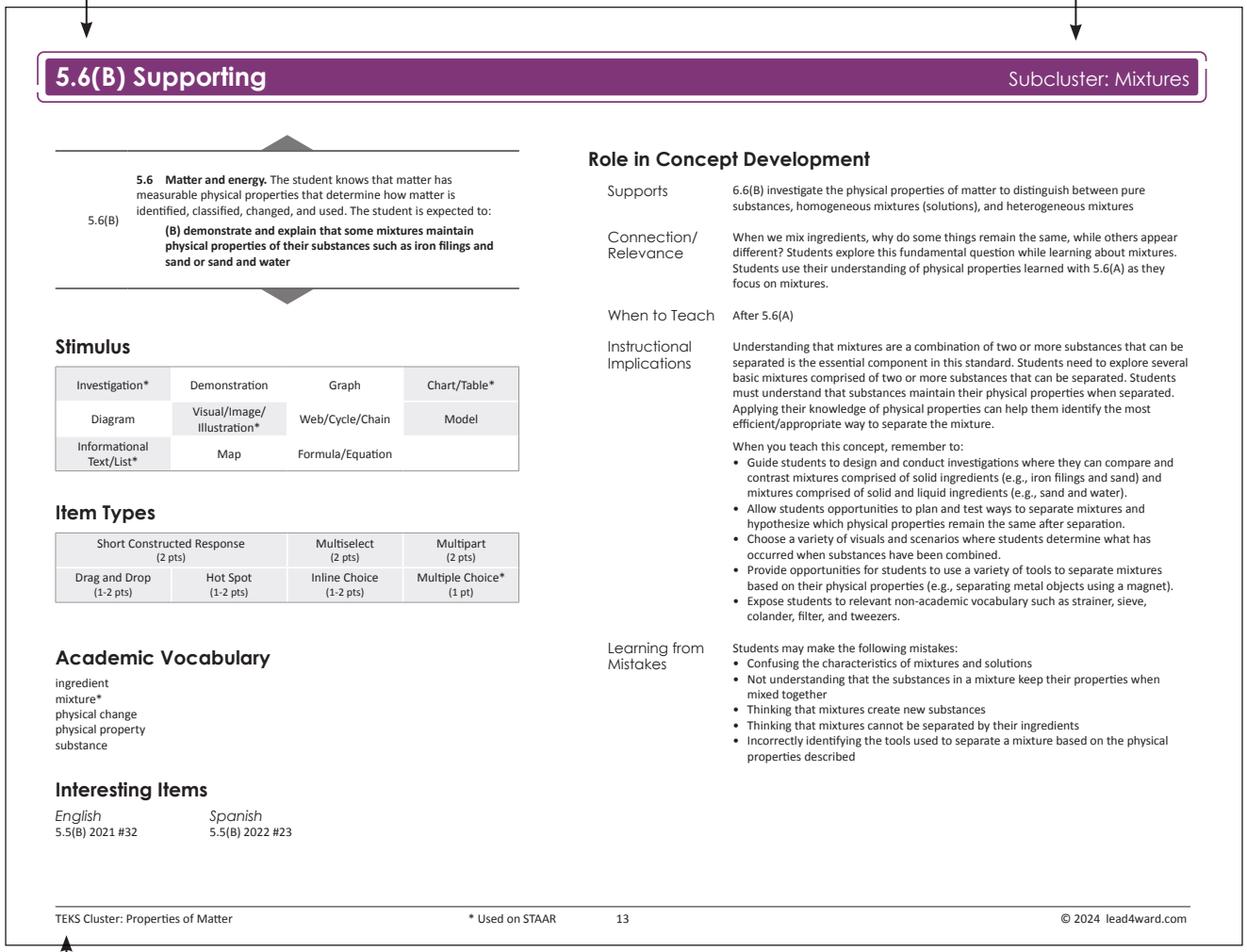
Academic Vocabulary
What academic vocabulary is important for concept development?

Interesting Items
What released assessment items help inform instruction?

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?



5.6(B) Supporting

Subcluster: Mixtures

5.6(B) **5.6 Matter and energy.** The student knows that matter has measurable physical properties that determine how matter is identified, classified, changed, and used. The student is expected to:

(B) demonstrate and explain that some mixtures maintain physical properties of their substances such as iron filings and sand or sand and water

Stimulus

Investigation*	Demonstration	Graph	Chart/Table*
Diagram	Visual/Image/ Illustration*	Web/Cycle/Chain	Model
Informational Text/List*	Map	Formula/Equation	

Item Types

Short Constructed Response (2 pts)		Multiselect (2 pts)	Multipart (2 pts)
Drag and Drop (1-2 pts)	Hot Spot (1-2 pts)	Inline Choice (1-2 pts)	Multiple Choice* (1 pt)

Academic Vocabulary

ingredient
mixture*
physical change
physical property
substance

Interesting Items

English	*Spanish*
5.5(B) 2021 #32	5.5(B) 2022 #23

Role in Concept Development

Supports
6.6(B) investigate the physical properties of matter to distinguish between pure substances, homogeneous mixtures (solutions), and heterogeneous mixtures

Connection/ Relevance
When we mix ingredients, why do some things remain the same, while others appear different? Students explore this fundamental question while learning about mixtures. Students use their understanding of physical properties learned with 5.6(A) as they focus on mixtures.

When to Teach
After 5.6(A)

Instructional Implications
Understanding that mixtures are a combination of two or more substances that can be separated is the essential component in this standard. Students need to explore several basic mixtures comprised of two or more substances that can be separated. Students must understand that substances maintain their physical properties when separated. Applying their knowledge of physical properties can help them identify the most efficient/appropriate way to separate the mixture.

When you teach this concept, remember to:

- Guide students to design and conduct investigations where they can compare and contrast mixtures comprised of solid ingredients (e.g., iron filings and sand) and mixtures comprised of solid and liquid ingredients (e.g., sand and water).
- Allow students opportunities to plan and test ways to separate mixtures and hypothesize which physical properties remain the same after separation.
- Choose a variety of visuals and scenarios where students determine what has occurred when substances have been combined.
- Provide opportunities for students to use a variety of tools to separate mixtures based on their physical properties (e.g., separating metal objects using a magnet).
- Expose students to relevant non-academic vocabulary such as strainer, sieve, colander, filter, and tweezers.

Learning from Mistakes
Students may make the following mistakes:

- Confusing the characteristics of mixtures and solutions
- Not understanding that the substances in a mixture keep their properties when mixed together
- Thinking that mixtures create new substances
- Thinking that mixtures cannot be separated by their ingredients
- Incorrectly identifying the tools used to separate a mixture based on the physical properties described

TEKS Cluster: Properties of Matter * Used on STAAR 13 © 2024 lead4ward.com

Knowledge and Skills Statement

Student Expectation

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

Item Types
How do we ensure students can show what they know in more than one way?

Academic Vocabulary
What academic vocabulary is important for concept development?

Interesting Items
What released assessment items help inform instruction?

Which standard(s) does this support?

How does this support the 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?

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