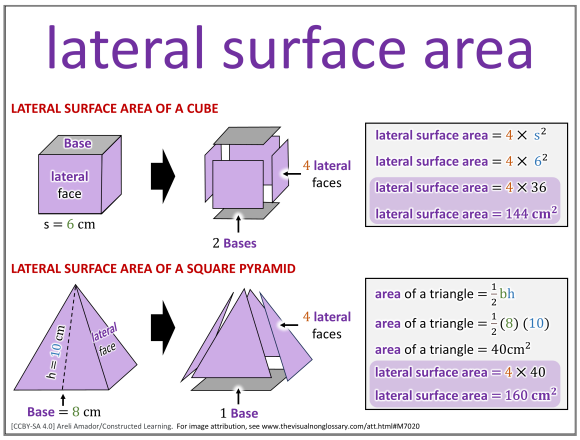
Teacher Guide for the Lesson on **lateral surface area**



Standard:
7.9(D)

Content Objective:
We can determine the **lateral surface area** of three-dimensional figures by analyzing their faces and using **area** formulas.

Language Objective: Answer the following question in complete sentences using the sentence stem and the key vocabulary of the lesson:

> Why do you think its important to consider the **lateral surface area** when constructing a building?
>
> *I think its important to consider the **lateral surface** area when constructing a building because...*

Other key vocabularies: Base, lateral surface

By studying this visual, students might:

Notice	Wonder
• The lateral surface area includes only the side faces of the shapes	• Why are there 4 lateral faces in both shapes?
• The Base is not included in the lateral surface area	• How do we know which faces are lateral faces and which are the Base?
• The cube has 4 equal side faces	• Why are the lateral faces different shapes (squares vs. triangles)?
• The pyramid has triangular side faces instead of square ones	• How do we find the area of each lateral face?

• The area of each face is calculated and then added together	• Why do we multiply the area of one face by 4?

EXTENDING THE DISCUSSION

- After randomly calling on students, if there is anything from this list that was not mentioned, then ask the class, "Did anyone notice...?"
- After students have shared what they notice, ask the class, "Did anyone wonder...?" using the suggestions above or anything else you might think is interesting or relevant to the lesson.

Structured Conversation Prompts

OBSERVATIONAL	RELATIONAL	INFERENTIAL
What is **lateral surface area**? **Lateral surface area** is...	How is **lateral surface area** related to a **Base**? **Lateral surface area** is related to a **Base** because...	Why do you think its important to consider the **lateral surface area** when constructing a building? I think its important to consider the **lateral surface** area when constructing a building because...

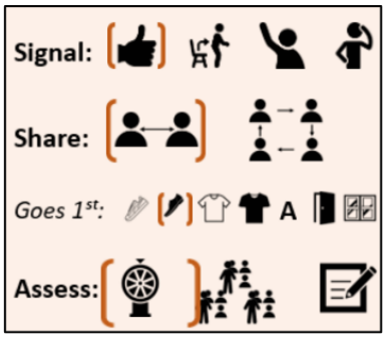
Example Student Responses to the Observational Question

Low-Level	High-Level
Lateral surface area is the **area** of the sides of a shape.	**Lateral surface area** is the total **area** of all the faces of a three-dimensional figure except for the bases.

RESPONDING TO RESPONSES

Emphasize and celebrate each student's use of the key vocabulary to support a culture of "no wrong answers."

STRUCTURING STUDENT CONVERSATIONS



Have students list observations from the visual as a warm-up, then use the Q-SSS-A process to guide small-group conversations. In the slide decks, brackets can be moved to prepare the structured conversation. In the example to the right, students will be instructed: Q-SSS-A.

- To put a thumb up, then lower their hand when they are ready to answer the question
- To share with their elbow/shoulder partner, and that the student with the darkest shoe will share first
- That they will be randomly called on after the conversation

Here is an example of structuring a conversation with Q-SSS-A.

Note: the inferential question is the same as the language objective. It is recommended that students answer the inferential question in a small-group discussion before answering it individually as the closure or exit ticket of the lesson.

Structured Reading

READING PURPOSE	PAT LIST	POST-READING DISCUSSION
The purpose for reading is to understand how **lateral surface area** is used to decide which surfaces of a package should be wrapped.	• Which faces are included in the lateral surface area • How the Base is different from the lateral faces • What surfaces are actually being wrapped in each example • How the shape changes the side faces • Why only certain surfaces need to be covered	How does **lateral surface area** help the company decide which parts of the pyramid-shaped package to wrap? ***Lateral surface area*** *helps the company decide which parts of the pyramid-shaped package to wrap because...*

STRUCTURING THE READING

Communicate the purpose of reading to the students and instruct them to make a note every time they see something on the PAT ("Pay Attention To") list. How you have students note items on the PAT list is up to you. This could include:

- Putting an asterisk in the margin
- Underlining text that supports the PAT list
- Putting a comment in the margin

Follow the reading with the post-reading discussion. Structure this discussion using the Q-SSS-A process just like the structured conversations in this lesson.

Note: you might find the relational question is better discussed before or after the reading. This depends on whether the relational question is directly related to the reading or might make connections across units.

DIFFERENTIATING THE READING

You will notice that three different reading passages are provided with this lesson. Look at the shapes in the top-left of each passage to determine the grade level.

BELOW GRADE LEVEL	ON GRADE LEVEL	ABOVE GRADE LEVEL
		
Triangle is bottom-left	*Square is bottom-left*	*Circle is bottom-left*

In a class with students at diverse reading level proficiencies, you can give the appropriate reading passage to different students, while having all students follow the same PAT list and post-reading discussion.