WHAT DOES AREA MEAN?
Teacher’s Guide

INTRODUCTION
“To measure anything meaningfully, the attribute to be measured must be understood” and this is “the first and most critical goal. (Van de Walle, 2006).” GLE - MEO1 (attributes and dimensions) states that students should be able to “demonstrate understanding of the concept of area.” This sounds straightforward until you delve into the professional literature and realize that an understanding of this abstract mathematical concept requires students to engage in many hours of activity, observation, discussion and written reflection. Only then can a student personally build an explanation of “What area means” that is enduring and foundational to later learning.

After careful research, the authors of this lesson have designed activities that allow students to construct the concept of area with concrete materials, models, and drawings. Students use an inquiry approach and math notebooks to record observations (data and thinking) from each activity and then describe what they discovered. Regular class discussions give opportunities for questioning, probing and challenging of ideas. This is a slow process that gives students the necessary time to make sense out of the experiences and it’s very different from being told a definition or watching a teacher demonstrate a few examples of area. “Even in middle school, some ‘filling’ and ‘covering’ activities can be worthwhile tasks to further strengthen students’ understanding of various attributes and what it means to measure (Van de Walle, 2006).” The NCTM measurement standard in Principles and Standards of School Mathematics states that students should use informal units and engage in many experiences comparing and estimating area before focusing on tools and formulas (NCTM, 2000).

The format of the student booklet supports the inquiry process. Each stage of the inquiry process has a title written in large, bold font.

GETTING STARTED includes a pre-assessment activity and an introduction to locating surfaces with area.

COLLECTING EVIDENCE allows students to make and record observations while investigating the attribute of area. This gives them the concrete experiences to draw upon when asked to demonstrate the understanding of the concept of area.

EXPLAIN YOUR DATA asks students to use their data to build an important explanation about area that requires the background knowledge built from discussions and personal reflections related to all the investigations.

NEW UNDERSTANDINGS asks students to reflect on their experiences and written notes in order to summarize the big ideas about area, especially any new understandings that differ from or deepen their initial ideas.
Each investigation has a student friendly title and guiding question. The numbering matches the Teacher Guide notes to make it easier for teacher and students to stay in sync. For example 1.1 is the first investigation and the first experience related to a big idea discussed in the teacher notes.

ICONS:

The icons in the student booklet have the following meanings:

- Alerts the students to a place where their math notebook is needed for recording observations (data and ideas).

- Indicates it’s time for a class discussion. Most but not all activities are followed by a class discussion where students either share ideas or the teacher’s questions prompt deeper understandings. Knowing that all students do not finish an activity in the same amount of time, discussions will be tricky to schedule. Giving students an approximate finishing time and reassuring them that partial work is valued will help facilitate moving through the activities as a learning community. If you prefer completed work by all students before the discussion, have extension or alternate activities ready.

- Provides clarifying information (vocabulary) from “mathematicians” who have wrestled with these ideas over time and formed common definitions or insights.

MATERIALS:

If students need materials during an investigation, the student booklet directs them “to the teacher.” Teachers might provide supplies for the whole class at the same time or set up a “materials station.”

TIMING:

The indicated “days” for these activities are just suggestions.
Materials: math notebooks and “What Does Area Mean?” student pages

1.1 A Story About Area – Which strategy makes sense? (Day 1)

Some of your students might already have a solid understanding of the concept of area. This pre-assessment will give all of your students an opportunity to share their thinking and uncover misconceptions. Student responses might help you group students with similar needs and tailor the pace of the activities to each group’s level of expertise. Since the later activities include estimation and design challenges, the more advanced students might benefit from starting there.

Formative Assessment Notes:

Key ideas and misconceptions to look for in student responses –

- Joe is measuring perimeter and not area. He knows how to use a body part as an informal unit of length (not area) and also understands how to compare his step count to determine the largest perimeter. Unfortunately the room with the largest perimeter (distance around the entire floor) does not mean the room has the largest floor area.

- Jim correctly chooses an informal unit of area (the 2-D sheets of newspaper to match the 2-D attribute of area) and covers each floor. As long as he is careful not to overlap or leave gaps between the sheets, his count for each floor area can be compared to determine the room with the largest area.

- Jeff might be measuring the length and width of the room because he remembers that the formula for area needs these measurements. However, this will only work if the room is a rectangle and he finds a way to divide the string lengths into units so he can multiply $L \times W$ and arrive at a total of square units. Instead, Jeff compares the string lengths and incorrectly reasons that these linear measurements alone will tell him something about each floor’s area.
GETTING STARTED

1.1 A Story about Area – Which strategy makes sense?

Below is a story about three brothers who are trying to use what they know about area to make a decision. Read the story carefully and respond to each brother’s ideas in your math notebook.

Three brothers get to choose individual bedrooms in their family’s new house. It’s moving day and before they haul their furniture and belongings into the rooms, each brother examines all three rooms carefully. Of course, each brother owns lots of stuff and wants the room with the largest floor area. Think carefully about the strategy each brother uses to compare the floor areas of the three bedrooms.

Joe determines the room with the largest area by walking along the walls of each room. He places one foot right in front of the other and counts how many foot-lengths it takes to move along all the walls. After he compares his count for each room, he’s sure that he’s discovered the room with the largest floor area.

Jim has a different way. He takes apart a Sunday newspaper and places each equal-sized sheet of newspaper flat on the floor. Once he’s covered the entire floor in each room, he compares the number of total sheets in each room. Jim is just as sure as John that he has found the room with the largest floor area.

Jeff has another strategy. He finds some string and lays it across the longest width and length of each room. He cuts a width and length of string for each room and simply compares the strings from each room by lining the strings up side by side. He’s very satisfied that he’s found the room with the largest floor area.

Please record in your math notebook what you think about the strategy each brother used. Tell which strategy you would use and why?

<table>
<thead>
<tr>
<th>I think Joe’s strategy…</th>
</tr>
</thead>
<tbody>
<tr>
<td>I think Jim’s strategy…</td>
</tr>
<tr>
<td>I think Jeff’s strategy…</td>
</tr>
<tr>
<td>I would use _________’s strategy because…</td>
</tr>
</tbody>
</table>
TEACHER NOTES

1.2 Locating Area: Where are the surfaces? (Day 1)

Area is both a measurement concept and a geometry concept. Students first “recognize shapes as wholes” before they “recognize explicit properties of shapes (AAAS, 1993).” This activity gets students thinking about classroom objects and how they’re made up of shapes with surfaces that vary in size (area).

**Formative Assessment:**
Evaluate students’ verbal and written responses to determine if they can focus on the parts of objects that possess the attribute of area.

Correct responses to the prompt might include: floor, face of book, chair seat, wall
Incorrect responses: whole objects such as the computer, the file cabinet, the tissue box.

1.2 Locating Area: Where are the surfaces?
People are surrounded by objects (living and nonliving) that have surfaces. We look at and use these surfaces all the time. For example, we decorate, write on and clean surfaces; we walk, climb or sit on surfaces; we place our belongings on surfaces and we build things with surfaces. We often need to compare objects and decide which surfaces are larger, smaller or the same size. The following investigations will ask you to look carefully at surfaces and determine the important features of area.

Your classroom is full of surfaces. In your math notebook list the surfaces you see.

<table>
<thead>
<tr>
<th>My list of surfaces:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

Be prepared to share your ideas during the class discussion.

1.2 Class Discussion Notes: Big Idea – Surfaces are everywhere!
Allow students to share the various surfaces that they identified and recorded.
2.1 Objects Have Surfaces with Shape, Perimeter and Area:
What’s the difference between these attributes? (Day 2)

Materials: Objects like math manipulatives (geoblocks), office supplies (large erasers, glue sticks, rulers) toy blocks etc..

“Shapes such as circles, squares, and triangles can be used to describe many things that can be seen (AAAS, 1993).” Common objects provide students the opportunity to break an object into describable parts and to identify the area as the extent of the region enclosed by the outline (perimeter) of the shape. “When asked to measure something, the attribute to be measured must be identified – isolated and described in some realistic way (FOSS, 2000).”

Students are not asked to measure the area in this activity, but to isolate the attribute of area and describe it with a shape name and “size.” The added consideration of shape challenges the student to discriminate between the size (area) of the shape and the name of the shape (Van de Walle, 2006).

**Formative Assessment:**

Students should be able to list several surfaces for each object and correctly describe each surface by giving it a shape name and tracing the surface to show “size.”
COLLECTING EVIDENCE (CAREFUL OBSERVATIONS)

2.1 Objects Have Surfaces with Shape, Perimeter and Area:

Developing new understandings requires learners to:
- Make careful observations
- Record data and thinking from observations in a notebook
- Explain new understandings based on experiences and data.

What’s the difference between these attributes?

Find a partner to work with.

Get a set of three objects to explore from your teacher. Take time to look carefully at each object and note some surfaces that are familiar shapes. For each object, list the surfaces and describe each surface with a shape name and show the size of the shape by tracing the surface onto your notebook paper. Follow the example below.

Challenge: Some surfaces of objects are curved or folded – what shape would they make if you could open and flatten the surface?

**Eraser**

<table>
<thead>
<tr>
<th>Surface Description</th>
<th>Shape and Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 rectangles have this size and shape</td>
<td>Sides of eraser</td>
</tr>
<tr>
<td>2 rectangles have this size and shape</td>
<td>Top and bottom of eraser</td>
</tr>
<tr>
<td>2 rectangles have this size and shape</td>
<td>Front and back of eraser</td>
</tr>
</tbody>
</table>

When an object has many surfaces, how do you decide where one surface stops and another surface begins?

I think a surface stops when…
2.1 CLASS DISCUSSION NOTES – Distinguishing between shape, outline (perimeter), and area

Teacher:

- “When we describe the area of an object are we simply describing the shape? Why or not? For example, if I told you the area of the tabletop was bigger than a bed; would you know the shape of the tabletop? (No)

- “So area is not the same as shape, but using a shape name to isolate an area is helpful so you know what to measure. If you have an irregular shape, like a bedroom floor with alcoves, you can divide the floor into parts that have regular shapes and then you can measure the area of each shape and add them together. When we name a shape, are we describing the area or the outline, or both?” What do you think? (the outline)

- “If two shapes have the same area are they always the same shape? (Take a shape like a rectangle, cut it diagonally into 2 pieces and rearrange it into a second shape with the same area). Has the area changed?”

- If two shapes have the same name (circle for example), do they always have the same area?” (Point to examples of circles in the classroom).

Mathematicians call the outer edge of a shape or figure perimeter. It is the distance around the shape’s outline, encloses the shape, and helps us give the shape its name.

Objects are made up of surfaces. Mathematicians call each flat surface a face. A face has shape (determined by its outline or perimeter) and size (determined by area).
Here are some important ideas to remember from
the class discussion:

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**TEACHER NOTES**

2.2 *Surfaces Come in Different Sizes: How can you compare them?* (Day 2)

When students look at the areas of plant leaves, they again must isolate the attribute of area and compare the size (area) of each leaf to the reference items (coin, hand, paper) in order to estimate area and group them. Student focus is again on the attribute of area because this experience involves comparison of that attribute.

**Formative Assessment:**

As students work, ask them to explain why they are placing a specific plant into one or the other group. If they base their explanation on leaf area, then they are isolating the correct attribute. If they comment on number of leaves, isolated length or width of leaves, or height of plant, redirect student by pointing out a leaf’s surface and comparing it to a reference item.

2.2 *Surfaces come in different sizes: How can you compare them?*

Botanists study how plants survive in different light conditions. They know that plants living in shaded conditions need leaves with large surface areas compared to plants living in very bright conditions that need leaves with smaller surface areas.

Look carefully at the surface area of the leaves drawn below. Which plants would you guess are living in shaded conditions and which plants might live in bright conditions?

Record your ideas in your math notebook. Use the illustrations of a nickel, hand, and a piece of paper to help you estimate the surface size (area) of each plant’s leaves.
Use the hand, paper, and coin to estimate the size of one leaf from each plant.

The plants living in shaded conditions are _____ because …

The plants living in bright conditions are _____ because …
3.1 Adding Up Area: How do you put the area chunks together? (Day 3)

When students compare objects on the basis of some measurable attribute, that attribute becomes the focus of the activity (Van de Walle, 2006). Again, students are not asked to measure the area, but to focus on the attribute of area by making comparisons. When the student organizes the signs into groups, his focus is on the correct attribute – the space (area) inside the perimeter and how much of it is black. The student must identify the whole area in order to think of the fractional part (in this case half). This experience also helps students understand that area is “an additive measure (Wilson, 1993).” By “adding up” or putting together all the black areas on a sign, the student sees the total black area as a fraction of the whole area on the face of the sign.

3.1 Adding up Area: How do you put the area chunks together to estimate?
Imagine you walked to school and noticed all the signs along the way. Could you sort the 10 signs into three groups based on the amount of surface area that the black lettering and designs take up on each sign. Estimate it! Do you think the black takes up less than half, about half, or more than half of the entire area on each sign? Fill in your chart.
CLASS DISCUSSION NOTES

Materials: Overhead transparencies or enlarged copies of the “signs”.

Provide time for students to share how they grouped the signs and the strategies that helped them make their decisions.

Students’ strategies might include:

- I imagined scrunching together all of the black parts and it looked like it would be more than half.

- I divided black parts into chunks and thought about fractions.

- I looked at the white parts and compared that to the black parts.

- It was obvious that most of the sign’s surface was black compared to very little white.

Mathematicians recognize that some measures are additive. Length is additive. For example if you had 3 pieces of string and you wanted to know the total length you could add the lengths of string together to find the total length. Area works the same way. For each sign you added all the black “chunks” of area to arrive at a total estimate for the black area.
3.2 Adding up Area: How can you illustrate areas with parts? (Day 3)

Materials: colored pencils
   Optional - examples of items that have the whole divided into fractional parts
   (cross section of a log, rock, fabric designs, artwork etc.)

In contrast to the sign activity above, students get to try their hand at illustrating faces of rocks that require thinking about how a whole area is divided into fractional parts.

Take time to discuss various ways to describe the surface areas of the example given.

3.2 Adding up Area: How can you illustrate it?

Geologists look at the surfaces or cross-sections of rocks and need to estimate how much of the area is covered by each type of mineral (rock ingredient) in order to identify the rock by name.

Example: A flat rock surface showing 3 minerals.

(see hard copy for example that needs to be added)

Try to draw the following imaginary rocks in your notebook with the described surface areas:

Rock A (chunkstone): a green mineral background with half the area taken up with yellow mineral chunks.

Rock B (Zebracite): a rock with equal layers of black and white on the flat surface.

Rock C (Polka dot stone): an equal mixture of blue, red, yellow and green mineral chunks across the surface.

Be prepared to share your rock drawings.
4.1 Comparing Area: Is there more than one strategy? (Day 4)

Materials: Shapes handout

This investigation asks students to compare areas for the purpose of focusing in on the attribute of area. Some areas can be directly compared by using the strategy of placing one area on top of the other. When shapes only partially cover each other it reveals subdivisions of a shape that can be rearranged or combined to help with the comparison.

(See hard copy – add graphics to show comparison strategy.
- a trapezoid next to a rectangle
- same trapezoid as above on top of the rectangle revealing the area that is leftover.)

Grid lines support students with the strategy of comparing the number of units when a direct comparison is not possible

4.1 Comparing Area: Is there more than one strategy?

Your teacher has traced around the faces of different objects onto grid paper. Get this set of 10 faces. Cut out each shape. Order all 10 shapes from largest area to smallest area.

The order from largest area to smallest area is: _____, _______, _______, _______, _______, _______, _______, _______, _______, _______

Explain what you did to determine the order of the shapes.
4.1 SHAPES HANDOUT: Copy each page onto 1 centimeter grid paper

What Does Area Mean?

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4.1 **CLASS DISCUSSION NOTES**

Materials: Overhead transparency of the area shapes on grid paper

Ask for volunteers to use the area shapes on the overhead to demonstrate how they compared the areas.

Mathematicians use equal-sized units of various sizes to measure, estimate or compare area. “Many areas can be calculated by counting squares or by subdividing the figure into sections.” (West, 1982)

Area = 112 square units
4.2 Comparing Area: Can different shapes have the same area? (Day 4)

Materials: Grid paper, blank white paper, scissors, and rulers.

“Constructing or making something that is the same in terms of a measurable attribute is another type of comparison activity” (Van de Walle, 2006) when students determine the area of the rectangle traced on grid paper, they can then produce many shapes that have the same area. Again the focus is on the attribute of area (the size of the region enclosed by the perimeter).

4.2 Comparing Area: Can different shapes have the same area?

- Get grid paper from you teacher and make a shape that has 30 square units.

- Use your grid paper to make 4 more different shapes that have the same area (use the same number of square units for each shape).

- Now take a blank piece of 8½ x 11 white paper and draw a shape with 8 sides.

- Cut out your 8 sided shape, label it shape A and then trace and cut a duplicate. Cut this shape into 4 pieces by using a ruler and making only straight cuts (now you have 4 “chunks of area” or subdivisions that together were Shape A).

- Rearrange the 4 chunks by lining up sides to design a new shape that has the same area as Shape A. Trace the perimeter of this shape and label it with letter B. Rearrange again, to make a third shape and label it C.

- Paste all your shapes into your math notebook.
I know that my grid paper shapes each have the same area because…

I know the blank paper shapes have the same area because. . .

How do we know when one shape has the same, more or less area than another?
5.1 Estimating areas: How can you measure area using non-standard units? 
(Day 5)

“Informal units make it easier to focus directly on the attribute being measured. For example, instead of using square inches to measure area, an assortment of different units, some of which are not square, can be used to help understand the essential features of area and units of area . . .The use of informal units can avoid conflicting objectives.” (Van de Walle, 2006). This activity is about what it means to measure area, not about understanding square units.

“Estimation helps students focus on the attribute being measured and the measuring process (Van de Walle, 2006).” Area is “a continuous property” (Wilson, 1993) just like length and “area must be subdivided in discrete parts so they can be counted. Once you have selected a unit (in this activity – informal) you repeat the unit covering the object. “This process of iterating the unit divides the object into equal subdivisions . . . and the units are counted to produce a measure (in this case an estimate) of the object (Wilson, 1993).” The continuous property of area requires that there is no overlap and no spaces between the units. Any remaining region, smaller than a unit, requires you to decide whether to round, ignore, or combine that smaller region into another unit. The attribute of area requires a unit that is also 2-dimensional to cover the surface. In other words the unit chosen needs to possess the attribute of area (Wilson, 1993).

Formative Assessment:

The focus should be on covering the area with countable equal units. The continuous property of area requires no overlap and no spaces between units.

Student work should provide examples of:
- covering with a 2-dimensional unit
- correct placement of units
- counting and recording
- student decisions addressing leftover areas along perimeter.
5.1 Estimating areas: How do you measure area using non-standard units?

When you completely cover the surface area of an object with duplicates of items (non-standard units that have equal surface area like graph paper squares, sticky notes, envelopes, index cards) you have a way to “measure” surface area by counting the number of duplicates that fit inside the area.

Get a deck of playing cards, a tub of colored tiles, a pad of sticky notes and three different books to investigate.

The front cover of each book has an area equal to the number of cards, tiles or sticky notes it takes to completely cover the surface. How do we know when one shape has the same, more or less area than another?

You will measure each book cover three times because you want to gather and record information about the number of cards, tiles and sticky notes that cover each book.

Caution: do not cover your book with a mix of covering materials.

Estimate first and then cover each book completely.

Create a chart in your notebook.

<table>
<thead>
<tr>
<th>Number of duplicates needed to cover area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Book 1 Estimate/actual</td>
</tr>
<tr>
<td>Playing cards</td>
</tr>
<tr>
<td>Colored Tiles</td>
</tr>
<tr>
<td>Sticky Notes</td>
</tr>
</tbody>
</table>
5.2 Explain your Data: What patterns can you see? (Day 5)

“Some students focus intensely on number at the expense of all other considerations necessary in measuring (Wilson, 1993).” Students need to grapple with the different numbers for the square unit total for the same book. They need to discover that the area of the book remains the same even when you use different sized units.

**Formative Assessment:**

This section asks students to notice the inverse relationship between size of the unit and number of units required to cover the area. Students who really focus on the attribute of area can provide an explanation for why the changing number of units is reasonable. They truly understand what is being measured and that the number requires identification of the unit to be a meaningful measurement (FOSS, 2000).

5.2 Explain your Data (observations): What patterns can you see in the data and what does this tell you?

Look at your data chart for the books.

What happened to the area measurements of the books when you used different covering materials?

<table>
<thead>
<tr>
<th>I noticed…</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

- Do the different totals for each book represent a change in area for each book?
- Tell why or why not.

The area measurements for the books make sense to me because . . .
Be prepared to share what you discovered and learned about measuring the same area with different sized materials.

TEACHER NOTES

6.1 Design: Can You Design Products with Area In Mind? (Day 6)

Materials: One pack of 100 Index cards per 2 students

The design experiences allow students to apply what they know about the attribute of area. As they design each product they have to consider the appropriate size (area) and then measure the area in order to specify the product’s size (e.g. product size equals 16 index cards).

This task illustrates “the merits of drawing as a teaching and learning tool (Outhred, 2000).” When students sketch the layout of their cards, it gives them an opportunity to draw and think about the concept of area. “The attempt to represent a covering in a drawing can help children to examine their experience in new ways and can lead to new insights. This examination does not take place when children merely make a covering using concrete materials (Outhred, 2000).”

Formative Assessment:
As the students are working, check to see that they are not overlapping or leaving gaps between cards. If they do, ask “Why would these gaps or overlaps cause confusion when determining the accurate area of a product?”

Students’ products do not have to be a certain size, but students should be able to articulate why the size (area) they designed makes sense. For example, the total area for each increasing size, also increases (small sizes are made with less index cards than bigger sizes – the area for smaller sizes is smaller than the area for larger sizes in any given product line.)
6.1 Design: Can You Design Products with Area In Mind?

We buy many products that come in small, medium and large sizes. Use the index cards to design the size and shape of the following products and report the surface area in a chart.

**Be sure to include a sketch for each item** and draw the arrangement of cards showing the area of each product.

<table>
<thead>
<tr>
<th>Product</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Towels</strong></td>
<td></td>
</tr>
<tr>
<td>Small baby towel</td>
<td>____ cards</td>
</tr>
<tr>
<td>Medium child towel</td>
<td>____ cards</td>
</tr>
<tr>
<td>Large adult towel</td>
<td>____ cards</td>
</tr>
<tr>
<td><strong>School Pictures</strong></td>
<td></td>
</tr>
<tr>
<td>Wallet size</td>
<td>____ cards</td>
</tr>
<tr>
<td>Desk size</td>
<td>____ cards</td>
</tr>
<tr>
<td>Wall portrait size</td>
<td>____ cards</td>
</tr>
<tr>
<td><strong>Mirror</strong></td>
<td></td>
</tr>
<tr>
<td>Hand-held mirror</td>
<td>____ cards</td>
</tr>
<tr>
<td>Cabinet mirror</td>
<td>____ cards</td>
</tr>
<tr>
<td>Wall or full-length mirror</td>
<td>____ cards</td>
</tr>
<tr>
<td><strong>Writing Paper</strong></td>
<td></td>
</tr>
<tr>
<td>Notepad size paper</td>
<td>____ cards</td>
</tr>
<tr>
<td>Journal size paper</td>
<td>____ cards</td>
</tr>
<tr>
<td>Computer printer paper</td>
<td>____ cards</td>
</tr>
</tbody>
</table>
6.2 Write about your new understandings (Day 6)

Students look back at their responses to “A Story about Area” and consider Jim’s strategy. Based on their observations and new understandings about the attribute of area, they write a final explanation about why Jim’s strategy makes sense.

Formative Assessment:

Compare each student’s earlier response to “A Story about Area” with this response. Note strengths and identify any lingering misconceptions.

Use the extensions recommended in John Van de Walle’s book (Chapter 8) for students you identify as needing more experiences.

6.2 Write about your new understandings

Reread “A Story about Area” at the front of your booklet. As a result of the work and learning you have done to better understand the concept of area, answer the question below in your notebook.

Here’s why I think Jim’s strategy works to compare the floor areas and discover the bedroom with the largest area.

Big Idea: Finding area is all about covering. Every time you find yourself - covering a surface with paint, designing something, or cleaning a surface - practice estimating the area. Remember that when you compare the area of 2 objects, you are simply asking the question whether the 2 areas are about the same, smaller, or bigger.

Now that you know what area is and that it’s everywhere, take advantage of opportunities to notice surfaces and compare them for area. Perhaps you’ll use these skills when you become an artist, builder, designer, or inventor.
TEACHER NOTES

During your regular estimating sessions, include the estimation of area so the concepts developed in these lessons have a better chance of being remembered.

Big Idea: Measuring area is all about covering and comparing surfaces. Every time you find yourself –
   • covering a surface with paint
   • designing something
   • or cleaning a surface
practice, practice, practice estimating area.

Remember that when you compare the area of 2 shapes, you are simply asking – “Are these areas about the same, smaller, or bigger than each other?”

Now that you know what area is and that it’s everywhere, take advantage of opportunities to notice surfaces and compare them for area. Perhaps you’ll use these skills when you become an artist, builder, engineer, designer, gardener, or inventor.
References


