1. Mr. Hodgman, the P.E. teacher at Valley Elementary School, needs to paint the markings for the playground games.

Which of the markings require Mr. Hodgman to think about area measurement?

A. How far out from the basketball hoop does he paint the free-throw line?
B. Find a large enough space to fit the foursquare boxes.
C. How far apart to make the bases for the baseball diamond?
D. The placement of the start and end lines for the 50-yard dash.

2. Mrs. Hall’s new home has three garden beds in the backyard. Each one is a different size and shape. She wants to use the largest garden bed for her vegetables.

Which strategy below is best to estimate which bed has the largest area?

A. She walks and counts her foot-lengths around the border of each garden and compares the totals.
B. She cuts rope to match the length and width of each garden bed and then compares the lengths.
C. She cuts tarp to match the size of one bed and then uses it to compare how much it covers the space in the other two.
D. She looks at each garden bed and thinks that one is larger than the other two.
3. Sara has a newly furnished living room. She still has some money to buy a few more items.

Which situation below does not require Sara to think about area?

A. How tall should the table lamp be?
B. What’s the best size for the rug?
C. Which mirror best fills the space on the wall above the book case?
D. What size lamp base that will leave enough room for magazines on the side table?

4. Jack traced around his hand twice. The first time he held his fingers apart. The second time he held his fingers together. Look at the 2 tracings below.

Which statement is true?

A. The area of each hand tracing is the same.
B. The area of hand A is larger than hand B.
C. The area of hand B is larger than hand A.
D. You can’t compare the area of the two hands.
5. You want to plant a flower garden with 3 different colors of flowers. You want half of the area to be covered with yellow flowers, a fourth of the area with orange flowers, and the rest of the area with blue flowers.

Which diagram shows the flower areas that match your plan?
6. Hillside High school needs an official regulation sized basketball court. Which of these parts of the court could be an area measurement?

A. Free throw line, hoop height, half court line.
B. Court side lines, hoop diameter, placement of the hoop pole along the end line.
C. Jump ball circle, under the basket “key,” the size of the backboard.
D. Length of team bench, length of time keepers’ table, height of scoreboard.
7. Sandy is out shopping and has located these two different shaped area rugs for her bedroom. She wants to estimate which one will cover the most floor space.

Which of these ideas for comparing the rugs will help her determine the rug that covers the most floor space?

A. Sandy measures the length of each rug and discovers that they are the same length.
B. Sandy measures all the way around the border of each rug and finds out that one is bigger around.
C. Sandy stands in the middle of each rug and considers how much rug she sees all around her.
D. Sandy places the oval rug on top of the rectangular rug and notices that the oval fits inside the rectangle.
8. Here are five shapes.

Which order of the figures is correct from smallest to largest area?

A. The order is E, B, A, C, D  
B. The order is E, B, C, A, D  
C. The order is E, A, B, C, D  
D. The order is E, C, A, B, D
9. Jack is estimating the size of a circular mirror with square unit tiles. He realizes that he has leftover space around the edges.

Which is the closest estimate for the area of the circular mirror?

A. 94 square units
B. 30 square units
C. 108 square units
D. 12 square units
10. Sally cuts one rectangle in half.

![Rectangle cut in half]

Then she rearranges it to make the shapes below.

![Rearranged shapes]

Which statement is correct?
A. All shapes have the same area.
B. Only two shapes have the same area.
C. All three shapes have different areas.
D. It is not possible to compare the area of the shapes.

11. Mrs. Dornhecker gave her students tools to measure and compare objects in the classroom:

Which tool should a student use to measure the area of an object?
A. String
B. Square unit tiles
C. Measuring cups
D. Scale
12. Joe has the task of measuring a brand new tissue box in as many ways as possible.

Which situation below describes Joe measuring area?

A. He puts the tissue box on a scale.
B. He covers one face of the box with sticky notes.
C. He uses a ruler to measure the width.
D. He wraps string around the entire box.
WHAT DOES AREA MEAN?
12 MULTIPLE CHOICE ASSESSMENT TASKS ANSWER KEY

1 = B
2 = C
3 = A
4 = A
5 = B
6 = C
7 = D
8 = A
Shape A = 18 square units
Shape B = 12
Shape C = 20
Shape D = 24
Shape E = 8
9 = C
A. 94 square units (student counts whole units and does not deal with the leftover space – partial units.)
B. 30 square units (student counts square units touching the perimeter of the circle)
C. 108 square units (student counts all the whole square units and combines leftover spaces – partial units, adding them to the total).
D. square units (student just counts the leftover space – partial units.)
10 = A
11 = B
12 = B
Grade 5

Strand: Measurement

(MEO4) Learning Target: Estimate areas of irregular figures using manipulatives or pictures (1.2.6)

2-point response: The student shows understanding of estimating area by doing the following:
  • provides the correct answer - signs with more than half black are B, D, E
  • Gives a strategy to support the chosen sign.

1-point response: The student does one of the two above

0-point response: The student shows very little or no mathematical understanding of the task
13. Look at the five signs below. Decide which signs have black paint that covers more than half of the entire sign’s area.

The following signs have black paint that covers more than half of the sign’s area:

___________________________

Choose one of the signs. Use one or more of the strategies below to explain what you did with the black and white areas to estimate more or less than half.

**Strategies:**

- Looking at the areas in black and seeing them all together.
- Looking at the areas in white and seeing them all together.
- Comparing the whole area of the sign to the area of the black and white parts.

**END TOLLWAY**

*For example: I looked at the white letters and imagined them scrunched together as one area. The white would be less area than the black, so the black covers more than half of the sign.*

Sign choice (give the letter label) ______

Your strategy:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
Item 2
Scoring Rubric

Grade 5

Strand: Measurement

(MEO1) Learning Target: Demonstrate understanding of the concept of area (1.2.1)

2-point response: The student shows understanding of area by doing the following:
• provides the correct answer of brown for the carpet that has enough area to cover the room
• indicates that Sandy’s floor area is 61 square units and that the brown carpet has enough area, 64 square units, to cover the floor

1-point response: The student does one of the two above

0-point response: The student shows very little or no mathematical understanding of the task
Item 2

Sandy has a big brown piece of carpet and a big green piece of carpet. She needs to cover her floor with one color of carpet and needs to figure out which carpet has enough area.

Here is the size and shape of the floor in Sandy’s room.

Which carpet below has enough area to cover Sandy’s floor (it is okay to cut and sew the carpet pieces together).
I chose the _______________ color carpet for Sandy’s room because it has enough area to cover the floor.
Grade 5  
Strand: Measurement  
(MEO4) Learning Target: Estimate areas of irregular figures using manipulatives or pictures (1.2.6)  

2-point response: The student shows understanding of estimating area by doing the following:  
- provides the correct answer of A for the arrangement of square units that will lead to the best estimate  
- indicates that the arrangement of square units that best covers the oval needs to have no gaps or overlaps between units.  

1-point response: The student does one of the two above  

0-point response: The student shows very little or no mathematical understanding of the task
Sue tries three times to estimate the area of her oval table top. Each time she arranges square units on top of the table and counts the total. Which arrangement of units will provide Sue with the best estimate for the area of the table top?

A

B

C
Support your answer with words, numbers, and/or pictures.

Sue’s best estimate will be a total of units from oval A, B, or C? _______
Grade 5

Strand: Measurement

(MEO1) Learning Target: Demonstrate understanding of the concept of area (1.2.1)

2-point response: The student shows understanding of area by doing the following:

- Draws two different shapes. (on first grid)
- The total square units depicted for each shape is the same (on first grid)

- Draws two shapes that are the same (both rectangles OR both triangles OR both trapezoids OR both rhombi (on second grid)
- The total square units depicted for each shape is different (on second grid).

1-point response: The student correctly depicts shapes and areas for only one grid.

0-point response: The student shows very little or no mathematical understanding of the task.
Item 4

The fifth graders at Washington Elementary School are playing a game with flat plastic tiles of different shapes and sizes. Two students sit back to back, each holding a tile that the other cannot see.

Tile shapes are rectangles, triangles, rhombi (diamonds), or trapezoids.

Draw the pair of tiles for each situation described below:

- Each student is holding a tile with a different shape, but both have the same area.

- Each student is holding a tile of the same shape, but different areas.
Grade 5

Strand: Measurement

(MEO1) Learning Target: Demonstrate understanding of the concept of area
(GLE 1.2.1)

2-point response: The student shows understanding of area by doing the following:

- Correctly circles YES for following items.

| The surface of one sticker | The front face of the suitcase | The bottom face of the suitcase |

1-point response: The student labels at least 2 items from the above list.

0-point response: The student shows little or no understanding of the concept of area.
Joe was given the task of measuring this suitcase. Here is a list of what he measured:

<table>
<thead>
<tr>
<th>What Joe measured</th>
<th>Area Measurement?</th>
</tr>
</thead>
<tbody>
<tr>
<td>The length of the handle</td>
<td>NO    YES</td>
</tr>
<tr>
<td>The face of one sticker</td>
<td>NO    YES</td>
</tr>
<tr>
<td>The front face of the suitcase</td>
<td>NO    YES</td>
</tr>
<tr>
<td>The bottom face of the suitcase</td>
<td>NO    YES</td>
</tr>
<tr>
<td>The distance between two wheels</td>
<td>NO    YES</td>
</tr>
<tr>
<td>The weight of the suitcase</td>
<td>NO    YES</td>
</tr>
<tr>
<td>The height of the suitcase</td>
<td>NO    YES</td>
</tr>
</tbody>
</table>

Which items on his list are measurements of area?

Circle YES or NO to complete the chart.
Grade 5

Strand : Measurement

(MEO1) Learning Target: Demonstrate understanding of the concept of area (1.2.1)

2-point response: The student shows understanding of area by doing the following:

- Provides a reasonable estimate: twelve, thirteen, fourteen, fifteen, or sixteen stones.

- Provides a description of how they arrived at their estimate by explaining how all the garden surface area is covered without stacking stones or leaving gaps.

1-point response includes one of the above parts.

0-point response shows little or no mathematical understanding of the task.
Item 6

How does the surface area of all the flat stones compare with the surface area of the garden?

Estimate:

About how many flat stones fit inside the garden area? _________

Describe how you compared the surface area of all the flat stones with the surface area of the garden.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
WHAT DOES AREA MEAN?
EXTENDED RESPONSE ASSESSMENTS
2 Tasks and Scoring Rubrics

Item 19
Scoring Rubric

Grade 5
Strand: Measurement

(MEO4) Learning Target: Estimate measures of areas of rectangles

4-point response: The student shows understanding of estimating area by doing the following:
  • provides the correct answer of Yes for estimates being reasonable.
  • provides the correct answer of Yes for the area being the same for all 3 books.
  • Provides the correct answer of B to indicate that card B requires the fewest duplicates to cover one book.
  • Draws the correct number of cards without gaps or overlaps to show the correct covering of the area for each book.

3-point response includes three of the four listed above
2-point response includes two of the four listed above
1-point response includes one of the four listed above
0-point response shows little or no mathematical understanding of the task
Three students in Mrs. Hall’s class are each given an identical book to measure. Each student is given a different sized card for the purpose of measuring the area of the book front. Here are the books and an example of the card size used to measure the area of each book.

Are the estimates of area given for each book reasonable?  ____yes  ____no

Is the area the same for all three books, even though a different size of card is used to cover each book?  
_____ yes  
_____ no

Which card requires fewer duplicates to cover the area of one book?
_____ A  _____B  _____C
Draw in the correct number of cards to show how the area of each book is covered to match the area measurement.

Area = 12 cards  Area = 4 cards  Area = 36 cards
Grade 5

Strand: Measurement

(ME01) Learning Target: Demonstrate understanding of the concept of area (1.2.1)

4-point response: The student shows understanding of area and perimeter by doing the following:

- Correctly identifies the shapes with the largest and smallest areas. (largest area = C, smallest area = B).
- Describes the strategy of counting square units in order to determine the area of each shape.
- Correctly identifies the shapes with the largest and smallest perimeter. (largest perimeter = C, smallest perimeter = B).
- Describes the strategy of counting linear units outlining each shape.

3-point response includes three of the four listed above.

2-point response includes two of the four listed above.

1-point response includes one of the four listed above.

0-point response shows little or no mathematical understanding of the task.
Here are four shapes.

1. Which shape has the largest area? _____

2. Which has the smallest area? _____

3. Describe how you got your answers for #1 and #2.

---

4. Which shape has the largest perimeter? _____

---
5. Which shape has the smallest perimeter? _____

6. Describe how you got your answers for #4 and #5.

____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________