



## Resource Overview

**Quantile® Measure:** 450Q

**Skill or Concept:** Determine the area of rectangles, squares, and composite figures using nonstandard units, grids, and standard units. (QT-M-192)

**Excerpted from:**



**The Math Learning Center**

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**[www.mathlearningcenter.org](http://www.mathlearningcenter.org)**

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## Set D5 ★ Activity 2



### ACTIVITY

## Ladybug Dream House

### Overview

Students estimate and measure area in square centimeters as they draw floor plans for ladybug dream houses.

### Skills & Concepts

- ★ determine area by finding the total number of same-sized units of area that cover a shape without gaps or overlaps
- ★ select appropriate units, strategies, and tools for solving problems that involve estimating or measuring area
- ★ solve problems involving areas of rectangles and squares
- ★ find the areas of complex shapes by dividing those figures into basic shapes (e.g., rectangles, squares)
- ★ measure necessary attributes of shapes to use area formulas to solve problems

### You'll need

- ★ Centimeter Grid Paper (page D5.11, class set plus a transparency)
- ★ Ladybug Dream House Planning Sheet (pages D5.9 and D5.10, class set)
- ★ rulers (class set)
- ★ calculators (half-class set)

### Instructions for Ladybug Dream House

1. Place the Centimeter Grid Paper on display at the overhead. Tell students that they have been hired to design and draw the plans for the Ladybug family's new house. As students watch, use your ruler to draw a 14-by-18-centimeter rectangle on the grid. These are the outside dimensions of the Ladybug Dream House. Ask students to pair-share estimates of the total area of the house in square centimeters. Have volunteers share and explain their estimates. Then work with input from the class to find the actual area, using methods the students suggest. If it doesn't come from the class, ask them to use their calculators to confirm their results by multiplying the dimensions of the rectangle.
2. Give each students each a sheet of Centimeter Grid Paper. Ask them to draw a  $14 \times 18$  centimeter rectangle on their own sheet, using their ruler to help make the lines straight.
3. As students watch, draw a  $6 \times 8$  centimeter rectangle in one of the corners of the house floor plan at the overhead. Explain that this is one of the bedrooms. Ask students to estimate the area of the rectangle you just drew and then work with you to find the actual area. Label the room with its dimensions, area, and room name. Then ask students to choose a place on their ladybug floor plan to draw and label a  $6 \times 8$  centimeter bedroom. Let them know that they can place it anywhere in the house they want, but they'll want to make good use of the space because the Ladybug family needs lots of other rooms.

**Activity 2** Ladybug Dream House (cont.)

Set D5 Measurement: Area in Metric Units Blackline Run a class set on paper and 1 copy on a transparency.

NAME Mrs. Odell DATE March 14

**Centimeter Grid Paper**

4. Give each student a copy of the Ladybug Dream House Planning Sheet. Review both pages with the class. Be sure students understand that the rooms listed on the first page have to be at least as big as the areas specified on the sheet, but can be bigger. Remind students that they can put the rooms anywhere in the house they want. Encourage them to make optimal use of the space, because they may want to design extra rooms and put in hallways, as suggested on the second page.

5. When students understand what to do, let them go to work. Circulate to provide encouragement and assistance as needed.

**Extension**

- If some of your students need an extra challenge, encourage them to make rooms that aren't square or rectangular. They can make some of the rooms triangular, hexagonal, or even irregular as long as they use the area specifications on the first sheet and follow the grid lines when they can so they're able to calculate the area of each room.

**INDEPENDENT WORKSHEET**

See Set D5 Independent Worksheet 1 for more practice estimating and measuring area in metric units.

NAME \_\_\_\_\_

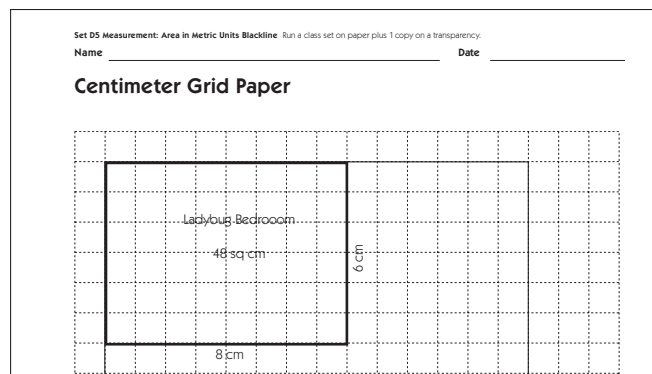
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# Ladybug Dream House Planning Sheet page 1 of 2

Congratulations! The Ladybug family has hired you to design and draw the plans for their new house.

**1** Draw a rectangle on your grid paper that is 14 centimeters by 18 centimeters. Use your ruler to help make the lines straight. This is the outside of your Ladybug Dream House.

**2** Inside the house, wherever you'd like, draw a rectangle that is 6 centimeters by 8 centimeters for one of the bedrooms. Record the dimensions, the area, and the name of the room on your plan. Your work will look something like this:



**3** Design your Ladybug Dream House by adding the rooms listed below. The rooms have to be at least as big as the number of square centimeters on the chart, but you can make them bigger if you want. Label each one with its dimensions and the actual area. (Hint: Leave space between the rooms for hallways.)

| Room                  | Minimum Area (the room has to be at least this big) | Actual Area (sq. cm) |
|-----------------------|-----------------------------------------------------|----------------------|
| Ladybug Kids' Bedroom | 40 sq. cm                                           |                      |
| Ladybug Baby's Room   | 20 sq. cm                                           |                      |
| Ladybug Bathroom      | 24 sq. cm                                           |                      |
| Ladybug Living Room   | 64 sq. cm                                           |                      |
| Ladybug Kitchen       | 32 sq. cm                                           |                      |

# Ladybug Dream House Planning Sheet

page 2 of 2

**4** If there is any space left after you’ve drawn the rooms listed on the first page, design your own rooms. (Perhaps the Ladybug family needs a computer room, a guest room, a playroom, an art room, a music room, or some other creative spaces?) Label each one of your extra rooms with its dimensions, area and name. Also, list them below. You can pick the best size for each extra room you design.

| Room | Area (in sq. cm) |
|------|------------------|
|      |                  |
|      |                  |
|      |                  |
|      |                  |
|      |                  |

**5** If you have time, use colored pencils to add doorways, ladybug furniture, and other fun features to your house plan.

NAME \_\_\_\_\_

DATE \_\_\_\_\_

# Centimeter Grid Paper

