**Areas of Rectangles**

What does it mean for a rectangle to have area 12 square centimeters? How can you measure area in a simple (though somewhat primitive) way?

A more advanced way of finding the area of a rectangle is the formula:

Let's explain why this formula works first using the example of a rectangle with length 4 cm and width 3 cm.

Why is it incorrect to say that the shaded squares in the figure below represent the 4 cm length used in the length $\times$ width formula to find the area of the rectangle?
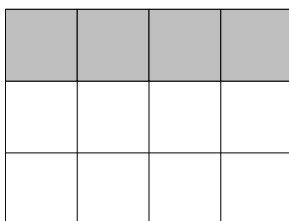
The length × width formula applies to rectangles whose side lengths aren't whole numbers. For example, show how the rectangle below can be divided into $3\frac{1}{2}$ groups of $7\frac{1}{2}$ one-square-unit squares and explain why the area is $3\frac{1}{2} \times 7\frac{1}{2}$ square units.
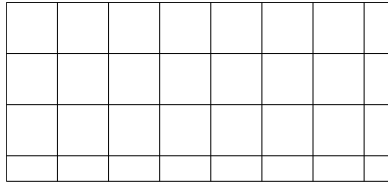
Moving and Additivity Principles of Area

The *Moving Principle* says that area does not change if

The *Additivity Principle* says that

Use the Moving and Additivity Principles to find the area of the shape below in several ways. Explain your reasoning. Some suggestions of strategies include

- A simple subdividing strategy
- A takeaway strategy
- A move and reattach strategy
- A combine two copies and take half strategy