Organizing Your Toolbox

Sixth Graders

Declarative Knowledge

I can tell you about. . .

Declarative knowledge refers to information that can be stated verbally.

Here is one example:

1. Tell me what is meant by area of a rectangle?

The formal answer is: The area of a closed region is the number of square units of space within the boundary of the region.

Procedural Knowledge

Procedural knowledge –I can **show** you how to get the answer…

Here is one example: Show me how to find the value of the length (L) of a rectangle with an area of 108 square units and a width of 9 units.

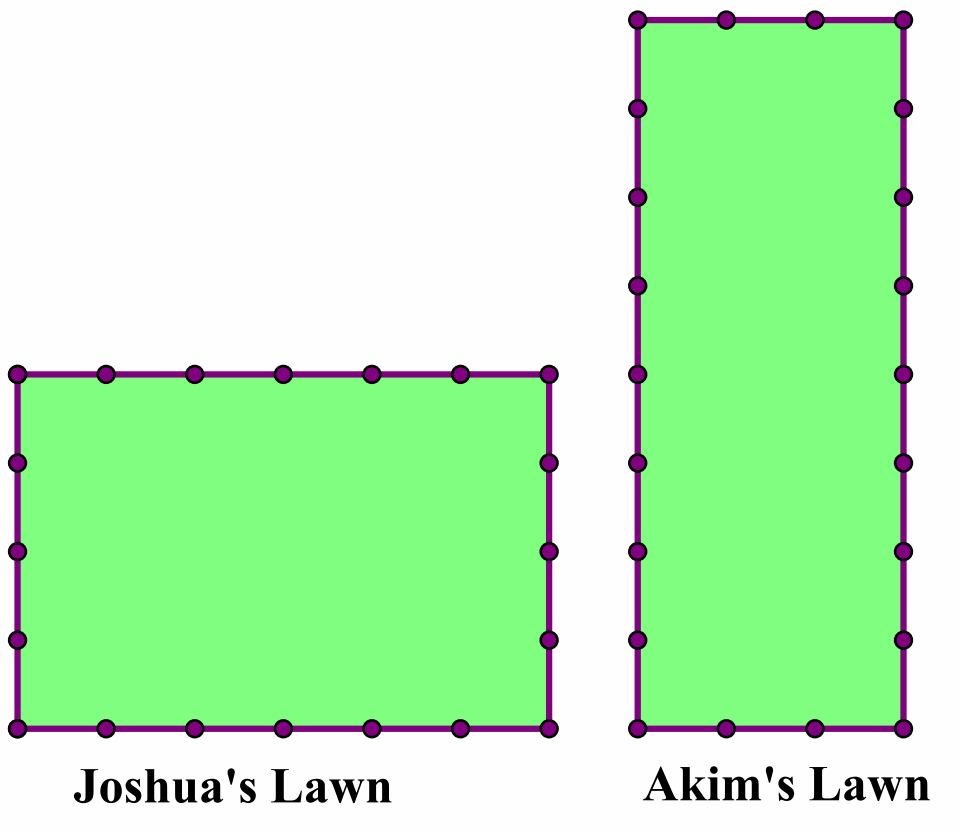
This requires one to recall and apply the formula for computing the area of a rectangle when given the values of the length (l) by applying the formula- $Area_{Rectangle}$ = length (l) times width (w) = Area (A) = $l \times w$.

Length (l)	Width (w)	Area (A)	Solve for length (l)
?	9	108	$108 = l(9)$ $\frac{108}{9} = \frac{l(9)}{9}$ $12 = l$ *Check* $108 = 12(9)$ $108 = 108$

Conceptual understanding **- I can explain and show you why my answer is correct.**

Here is one example:

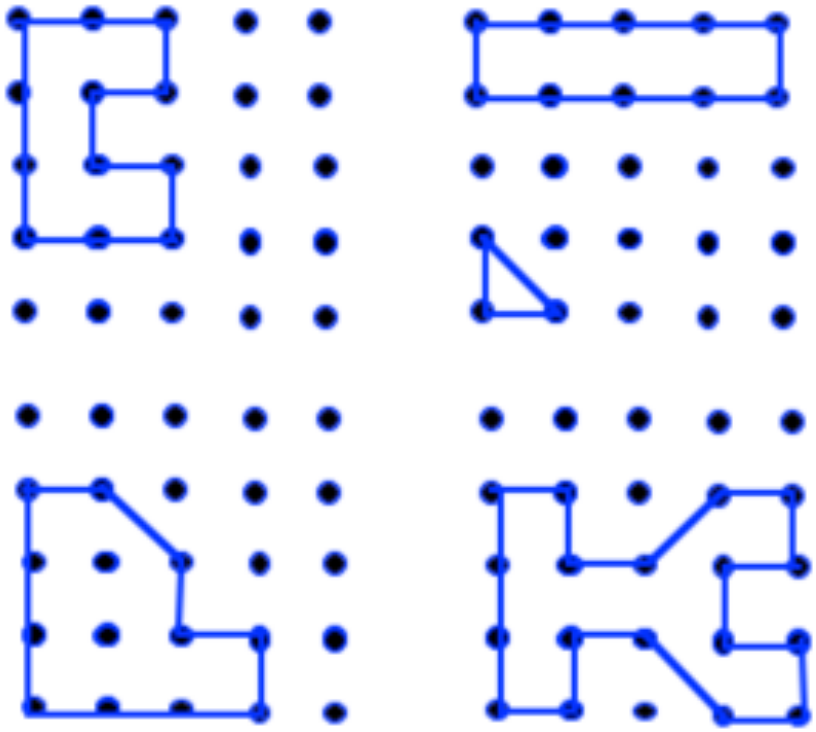
Joshua and Akim both have a grass lawn in their backyard. Joshua say his lawn is bigger than Akim's. Do you agree, or disagree with Joshua? **Explain** and **show** how you determined your answer. You may draw on the images below to illustrate your strategy.



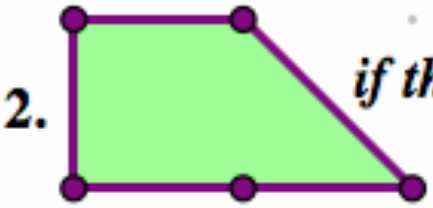
Problem Solving

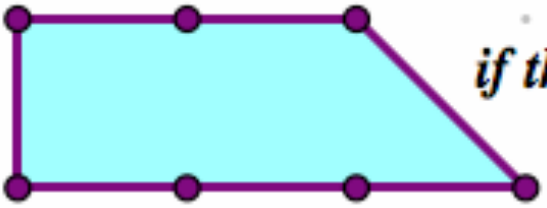
A **problem** to be solved exists when one has a goal and has not yet identified a means for reaching that goal.

1. Find the area of these figures using ■ as 1 square unit.



Find the areas of the closed plane figure above if the area unit are changed to:

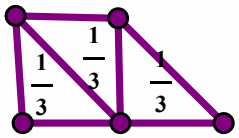
2.  *if this is now the area unit*

3.  *if this is now the area unit*

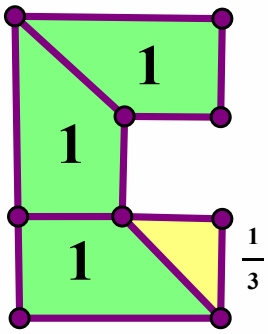
How does the change of the units affect your thinking about area?

Write your response in your toolbox.

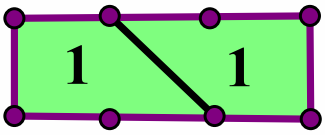
Keys 1



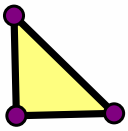
$$1 = \frac{1}{3} + \frac{1}{3} + \frac{1}{3} = \frac{3}{3}$$



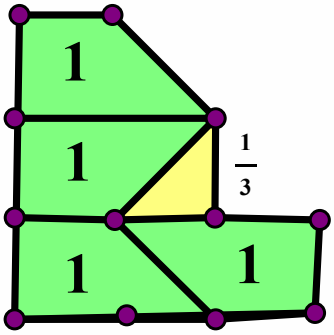
$3\frac{1}{3}$ area units



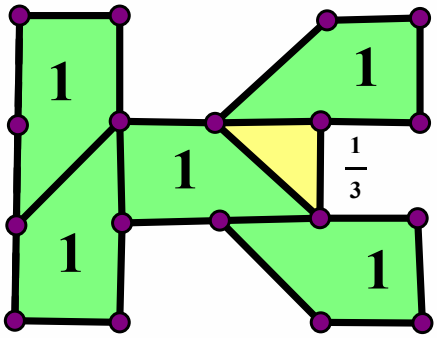
2 area units



$\frac{1}{3}$ area units

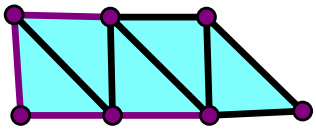


$4\frac{1}{3}$ area units

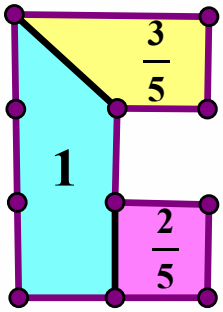


$5\frac{1}{3}$ area units

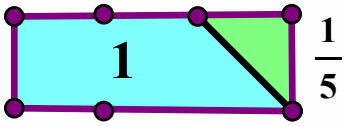
Keys 2



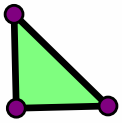
1 area unit $= \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} = \frac{5}{5}$



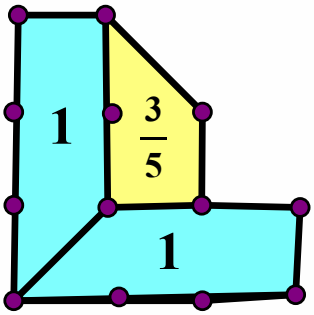
2 area units



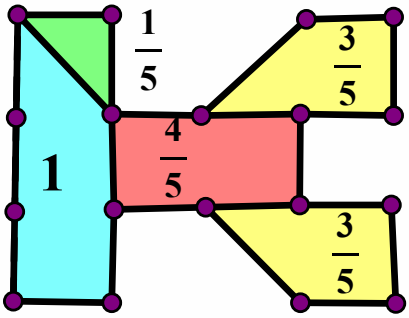
$1\frac{1}{5}$ area units



$\frac{1}{5}$ of the area units



$2\frac{3}{5}$ area units



$3\frac{1}{5}$ area units