

Grid Expressions

Grade 3

Multiplication and Area

7 levels

Probing Questions

- How do you know how to build the rectangles so they will fit on the shape?

Classroom Connection

Using grid paper let students create their own rectangles and share ways they find the total area.

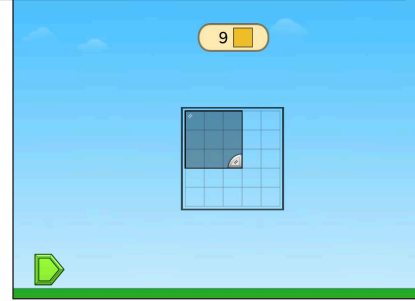
What's Important Here?

In level 5 students must use spatial temporal reasoning to decide which rectangle goes with which expression.

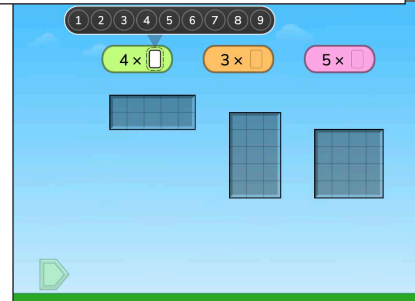
ST Math.

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Select a square to start on and use the cursor to define the rectangle.



In levels 1-2 students draw the rectangle, in 3-5 they find the missing side.



Multiplication and Area - 1



Area Select

Grade 3

Multiplication and Area

3 levels

Probing Questions

- How do you calculate the area?
- How is finding the area different from finding the perimeter

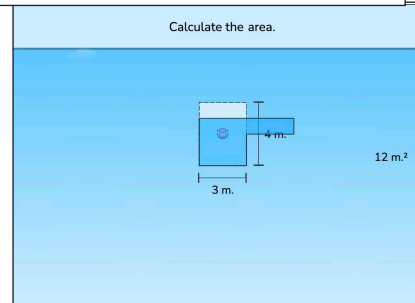
Something to Think About

JiJi is scaled according to the units used. Help students connect the square units they are counting in levels 1 and 2 with the square unit notation in levels 3.

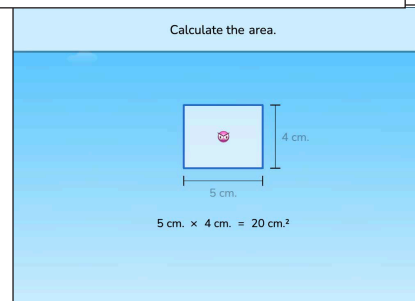
Pause the Animation

After students have explained how they find the area, use the scrub bar to verify the student's answer. Pause the animation to show how each row is filled. Then connect the animation to the equation.

Students count their answer in square units on the grid.



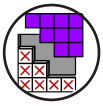
Pausing the animation shows how the units are stacked and then shows an equation.



Multiplication and Area - 2

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Complete Box

Grade 3

Multiplication and Area

5 levels

Probing Questions

- How do you decide how many square tiles there are?
- How would you write that out as an expression or equation?

What's Important Here?

This game provides an easy way to introduce composite shapes and discuss how the area is additive. Ask students to label the dimensions of all sides of the composite shape.

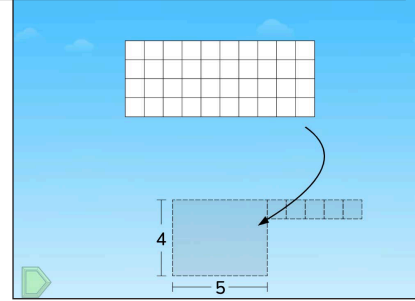
Classroom Connection

Have students generate their own composite shapes on grid paper and label the dimensions for all parts of the drawing. Trade papers and ask students to write expressions to show how to calculate the area.

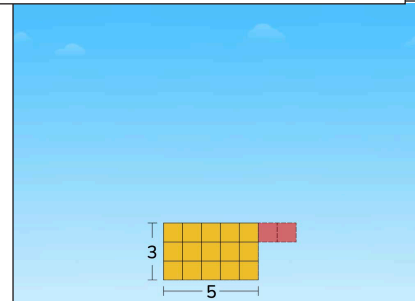
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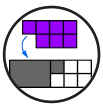
The visuals allow students to connect multiplication concepts to repeated addition.



Showing errors is a good conversation starter.



Multiplication and Area - 3



Complete Box Fill

Grade 3

Multiplication and Area

2 levels

Probing Questions

- How do you decide how many to fill in?
- How would you write out the computation you are doing in your head?

What Strategies Are Being Used?

Ask students to explain how they are calculating. Write out their multiple-step thinking using equations. Compare different strategies and different equations students generate.

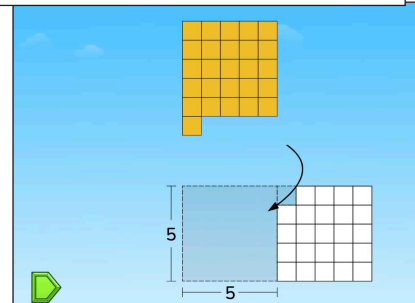
What do the Standards Say?

CC.3.MD.7d: Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts.

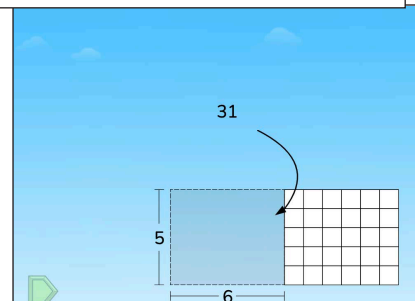
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Multiple steps are required.



The number refers to the total area.



Multiplication and Area - 4