

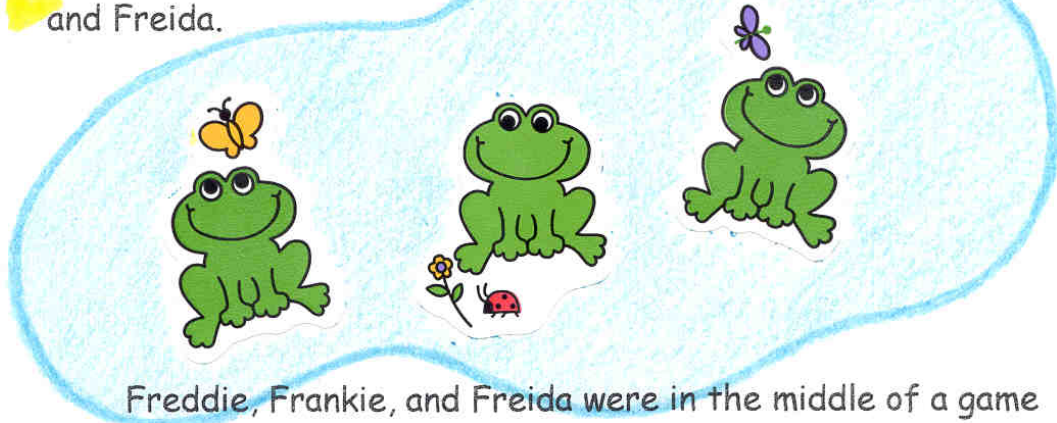
The
TROUBLE
with
TRAPEZOIDs

The title is decorated with several small, colorful ladybugs. There are red ladybugs with black spots and yellow ladybugs with black spots scattered around the text.

By Kendel Lewellen



One sunny spring day, three frogs were playing in a pond. The frogs were friends. Their names were Freddie, Frankie, and Freida.



Freddie, Frankie, and Freida were in the middle of a game of tag when Freddie realized that he had hopped onto a lily pad that was a special shape. It was a **TRAPEZOID**.



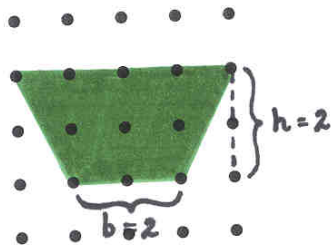
(A trapezoid is a four-sided polygon that has at least one pair of opposite sides parallel)

The frog friends wondered if they could find a way to figure out the area of this lily pad.

Freddie



"I think that we can find the area of the trapezoid by using the same formula as for a triangle. If we take the base of the trapezoid and multiply it by the height of the trapezoid, then divide by two, we will get the right answer."



$$A = \frac{1}{2} bh$$

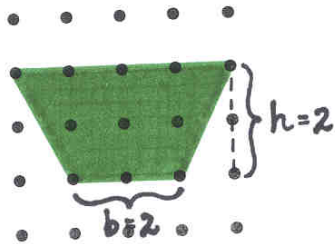
$$A = \frac{1}{2} (2)(2)$$

$$A = \text{Wrong!}$$

Frankie



"No Freddie, you're wrong. I think that we can find the area of the trapezoid using the same formula as for a parallelogram. All we need to do is multiply the base of the trapezoid by the height to find the answer."



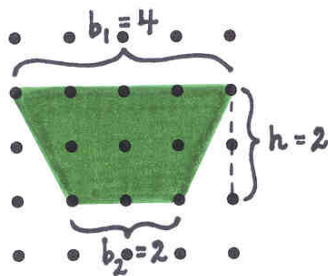
$$A = bh$$

$$A = (2)(2)$$

$$A = \text{Wrong!}$$

Freida

"Freddie and Frankie, you're BOTH wrong. To find the area of the lily pad, we need to use a *special* formula for a trapezoid. First, we **average** lengths of the top and bottom of the shape. (The top and bottom can be labeled base 1 and base 2, and the average is found by adding them together and dividing by two.) Then, we multiply that average number by the height of the trapezoid. **MY WAY** is the **RIGHT WAY** to figure out the area of the trapezoid lily pad."



$$A = \left(\frac{b_1 + b_2}{2} \right) h$$

$$A = \left(\frac{4 + 2}{2} \right) 2$$

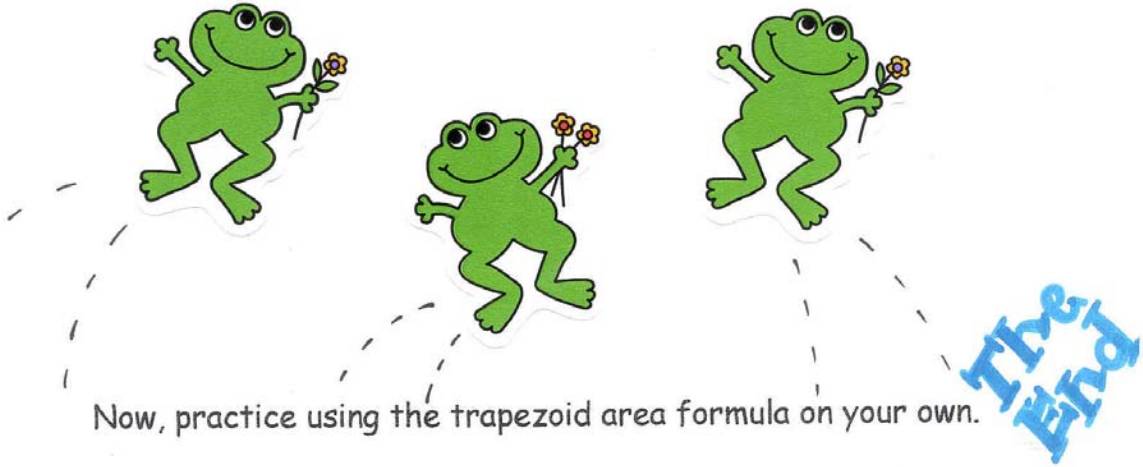
$$A = (3)(2)$$

$$A = 6$$

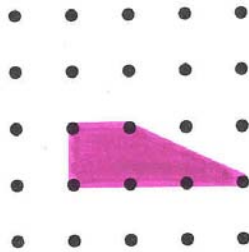
right!



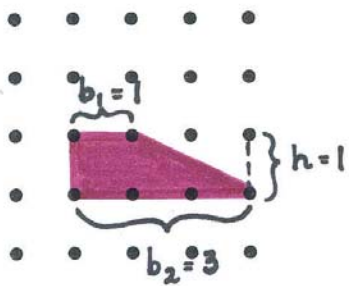
Freddie, Frankie, and Freida jump for joy! They are HAPPY FROGS, because now they can calculate the area of trapezoidal lily pads!



Now, practice using the trapezoid area formula on your own.



Answers:

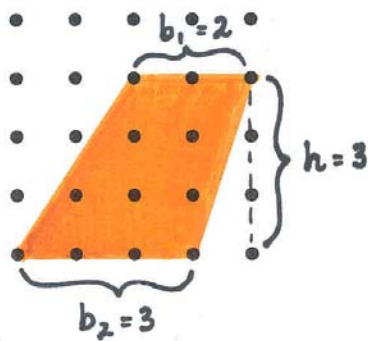


$$A = \left(\frac{b_1 + b_2}{2} \right) h$$

$$A = \left(\frac{1 + 3}{2} \right) 1$$

$$A = (2)(1)$$

$$A = 2$$



$$A = \left(\frac{b_1 + b_2}{2} \right) h$$

$$A = \left(\frac{2 + 3}{2} \right) 3$$

$$A = (2.5)(3)$$

$$A = 7.5$$