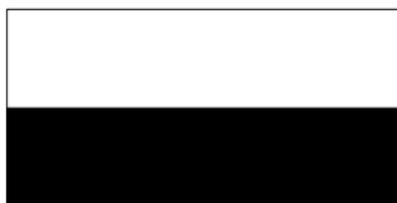
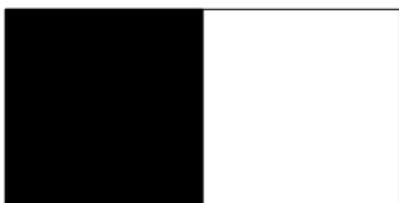


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2.G Representing half of a rectangle

[Alignment 1: 2.G.A.3](#)

Ms. Nim gave her students a picture of a rectangle. Then she asked them to shade in one half of the rectangle. Here are three pictures:



Which ones show $\frac{1}{2}$? Explain.

Commentary:

This task is for assessment purposes, providing a context for identifying different ways of representing half of an object, a rectangle in this case. The task may also be used for instructional purposes but if so the teacher may wish to introduce some other ways of showing one half of the rectangle, such as dividing along a diagonal (and shading in one piece) or dividing it into four equal pieces, shading in two pieces that only touch at a corner. Teachers are referred to "Which pictures show half of a circle?" for more variants on this theme.

Solution: 1

- a. In the picture on the top left, the rectangle has been divided in half vertically while in the picture on the top right it has been divided in half horizontally. In each case, the big rectangle has been divided into two equal pieces, one shaded and one unshaded. So the shaded area represents one half of the big rectangle in both cases.

In the third picture, each side of the rectangle has been divided in half but the small rectangle does not represent one half of the area of the large rectangle. As can be seen in the picture below, the large rectangle can be divided into four rectangles, each equal to the small one so the shaded area only represents one fourth of the area of the large rectangle:



The student who drew the lower incorrect picture does show some understanding of the fraction one half. Each side of the rectangle has been cut in half, demonstrating an understanding of the fraction one half in the context of measuring a length. The mistake is that when *both* linear measurements are cut in half, the area is only one fourth the area of the original shape.



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