

6.EE Rectangle Perimeter 3

Alignments to Content Standards: 6.EE.A

Task

Sadie computes the perimeter of a rectangle by adding the length, l , and width, w , and doubling this sum. Eric computes the perimeter of a rectangle by doubling the length, l , doubling the width, w , and adding the doubled amounts.

- Write an expression for Sadie's way of calculating the perimeter. Write an expression for Eric's way as well.
- Use both of the expressions to find the perimeter of a rectangle with length 30 and width 75.
- Explain why Sadie and Eric always get the same answer, no matter what the length and width of the rectangle are.

IM Commentary

The purpose of this task is to ask students to write expressions and to consider what it means for two expressions to be equivalent. This is another variation of the Rectangle Perimeter problem shown in "6EE Rectangle Perimeter 1" and "6EE Rectangle Perimeter 2." It goes one step further than "6EE Rectangle Perimeter 1" by asking students to explore the idea of equivalent expressions in addition to writing and using an expression.

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Solution

a. Sadie first adds l and w to obtain $l + w$ and then doubles the sum. So her expression is $2(l + w)$.

Eric first doubles the length and the width, getting $2l$ and $2w$, respectively. He then adds these amounts to obtain the expression $2l + 2w$ for the perimeter of the rectangle.

b. With $l = 30$ and $w = 75$ using Sadie's expression we have $2(l + w) = 2(30 + 75) = 210$.

Using Eric's expression we have $2l + 2w = 2(30) + 2(75) = 210$.

c. Sadie and Eric will always get the same answer, no matter the length and width of the rectangle, because they are both using correct methods for computing the perimeter of a rectangle. Sadie's expression is equivalent to Eric's expression by the distributive property: $2(l + w) = 2l + 2w$.

