Illustrative Mathematics

5.OA Comparing Products

Alignments to Content Standards

- Alignment: 5.OA.A.2

Tags

• *This task is not yet tagged.*

Leo and Silvia are looking at the following problem:

How does the product of 60×225 compare to the product of 30×225?

Silvia says she can compare these products without multiplying the numbers out. Explain how she might do this. Draw pictures to illustrate your explanation.

Commentary

The purpose of this task is to generate a classroom discussion that helps students synthesize what they have learned about multiplication in previous grades. It builds on

3.OA.5 Apply properties of operations as strategies to multiply and divide

and

4.OA.1 Interpret a multiplication equation as a comparison.

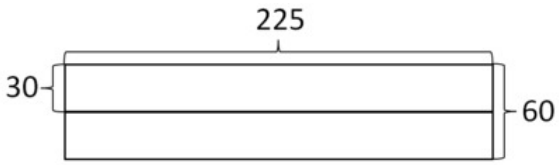
Solutions

Solution: Halving and doubling

Since 60 is twice 30, the product 60×225 is twice the product 30×225. We can write this as an equation:

$$60 \times 225 = (2 \times 30) \times 225 = 2 \times (30 \times 225).$$

The above explanation corresponds to the following picture.



The area of a 225 by 60 rectangle (60×225) is double that of a 225 by 30 rectangle (30×225). If we scale the width of the rectangle by a factor of 2, then the area of the resulting rectangle doubles. In other words, if one of the factors of the product 30×225 is scaled by a factor of 2 then the product is scaled by a factor of 2.