

Illustrative Mathematics

6.NS Running to School, Variation 3

Alignments to Content Standards

- [Alignment: 6.NS.A](#)

Tags

- *This task is not yet tagged.*

Rosa ran $\frac{1}{3}$ of the way from her home to school. She ran $\frac{1}{4}$ mile. How far is it between her home and school?

Commentary

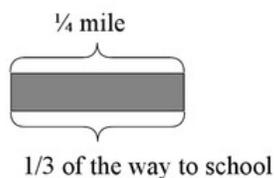
This task builds on a fifth grade fraction multiplication task, “5.NF Running to School, Variation 1.” “6.NS Running to School, Variation 3” uses the identical context, but asks the corresponding “Group Size Unknown” division problem. See “6.NS Running to School, Variation 2” for the “Number of Groups Unknown” version.

The purpose of this task is to help students extend their understanding of division of whole numbers to division of fractions, and given the simple numbers used, it is most appropriate for students just learning about fraction division because it lends itself easily to a pictorial solution.

Solutions

Solution: Solution

We know that Rosa ran $\frac{1}{3}$ of the way to school, which is $\frac{1}{4}$ of a mile.



So far, all we know is that $\frac{1}{3}$ of the trip to school is $\frac{1}{4}$ of a mile. What we are really interested in knowing is the length of the whole trip to school. Thus, the question we're asked to answer is " $\frac{1}{3}$ of what distance is $\frac{1}{4}$ mile?"

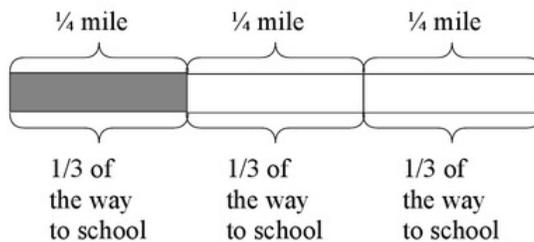
$$\frac{1}{3} \times ? = \frac{1}{4}$$

This is equivalent to the following division problem:

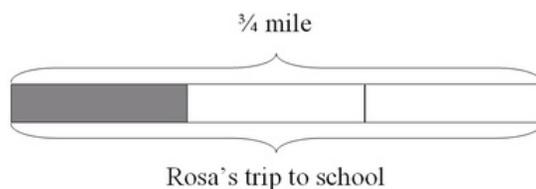
$$\frac{1}{4} \div \frac{1}{3} = ?$$

Since $\frac{1}{4} \div \frac{1}{3} = \frac{1}{4} \times 3 = \frac{3}{4}$ the entire trip is $\frac{3}{4}$ mile.

Alternatively, the whole trip to school is the same as $\frac{3}{3}$ of the way to school. Thus, we need 3 of the above picture to find the answer.



Re-labeling the picture will make the answer much easier to see.



Solution: A computational approach

This question is equivalent to asking, " $\frac{1}{3}$ of what distance is $\frac{1}{4}$ mile?" We can write this symbolically as

$$\frac{1}{3} \times ? = \frac{1}{4}$$

which is equivalent to the division problem

$$\frac{1}{4} \div \frac{1}{3} = ?$$

Since

$$\frac{1}{4} \div \frac{1}{3} = \frac{1}{4} \times \frac{3}{1} = \frac{3}{4}$$

we see we get the same answer as if we did reasoning about the context in the previous solution.

The distance to Rosa's school is $\frac{3}{4}$ miles.



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