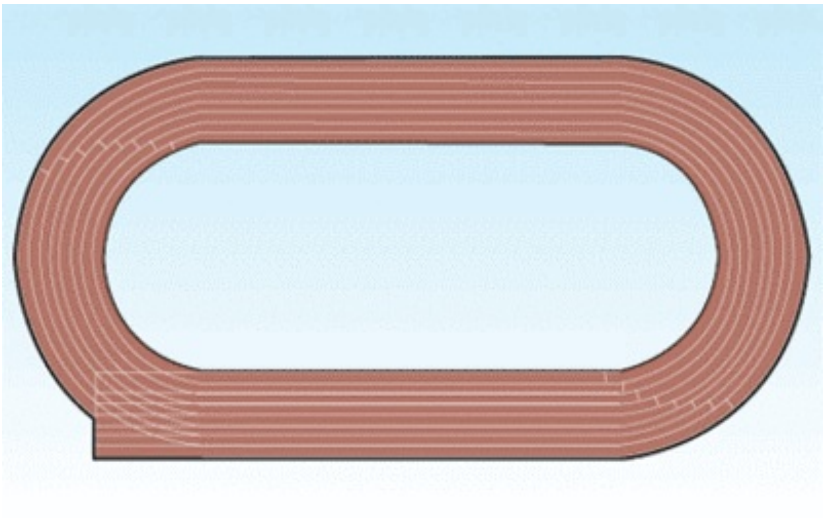
5.NF Mrs. Gray's Homework Assignment

Task

1/4 mile Track



1 lap = 1/4 mile

Part One

Mrs. Gray gave a homework assignment with a fraction problem:

Will ran $1\frac{2}{3}$ laps of a $\frac{1}{4}$ mile track. How far, in miles, did Will run? Jenna and Steve worked together on solving the problem. Jenna said that Will ran about $\frac{1}{2}$ mile because

$1\frac{2}{3} \times \frac{1}{4}$ is equal to about $\frac{1}{2}$. Steve answered that Will must have run more than $\frac{1}{2}$ mile because when you multiply, the product is always larger than the factors and $\frac{1}{2}$ is not larger than $1\frac{2}{3}$.

a. Solve the problem. How far, in miles, did Will run?

b. Is Jenna or Steve correct? Explain your reasoning using words, numbers, and/or pictures.

Part Two

Steve and Jenna continued to work on their homework. The next problems were:

$$\frac{1}{3} \times 5 =$$

$$\frac{1}{2} \times 2\frac{2}{3} =$$

Steve said to Jenna, “Now I get it! When you multiply, the product is always bigger than **one** of the factors. In the first problem, $\frac{1}{3} \times 5$ equals $\frac{5}{3}$ which is bigger than $\frac{1}{3}$. In the second problem $\frac{1}{2} \times 2\frac{2}{3}$ equals $1\frac{1}{3}$ which is bigger than $\frac{1}{2}$."

c. Is Steve’s reasoning correct? Does his rule that the product is always bigger than one of the factors always work?

d. Give at least two examples to prove that Steve is correct or incorrect.