

5.NF Scaling Up and Down

Task

The fifth grade teachers are in charge of planning the annual Davis Elementary Fun Run. The teachers decide that each adult should run $\frac{6}{4}$ as far as each student in grade 5 and each student in grade 1 should run $\frac{3}{4}$ as far as each student in grade 5.

- Who has to run the longest distance? Who has to run the shortest distance? Explain your reasoning.
- The fifth grade students decide that they should each run four laps around the track. How many laps should each adult and each first grade student run?
- Peyton, a fifth grader calculates that he will run a $\frac{1}{2}$ mile. Write two multiplication equations involving $\frac{1}{2}$, one that shows how many miles each adult will run and one that shows how many miles each first grade student will run.
- When Peyton showed the adults his calculations, some of them were confused. Some of the adults thought multiplication always makes a number larger, for example 2×5 is bigger than 5. When calculating the distance the first graders ran, Peyton used multiplication but got a smaller number. Explain why the product of 5 and another number is not always greater than 5, and write an example to help the adults understand.
- Presley, another fifth grade student, wanted to write the distance she ran in eighths. She noticed that you could write this equation: $\frac{4}{4} \times \frac{1}{2}$ miles = $\frac{4}{8}$ miles. Explain why in this case multiplying by $\frac{1}{2}$ results in a product that is neither larger nor smaller than $\frac{1}{2}$.



