Student Work

Comparing and Scaling Problem 2.1

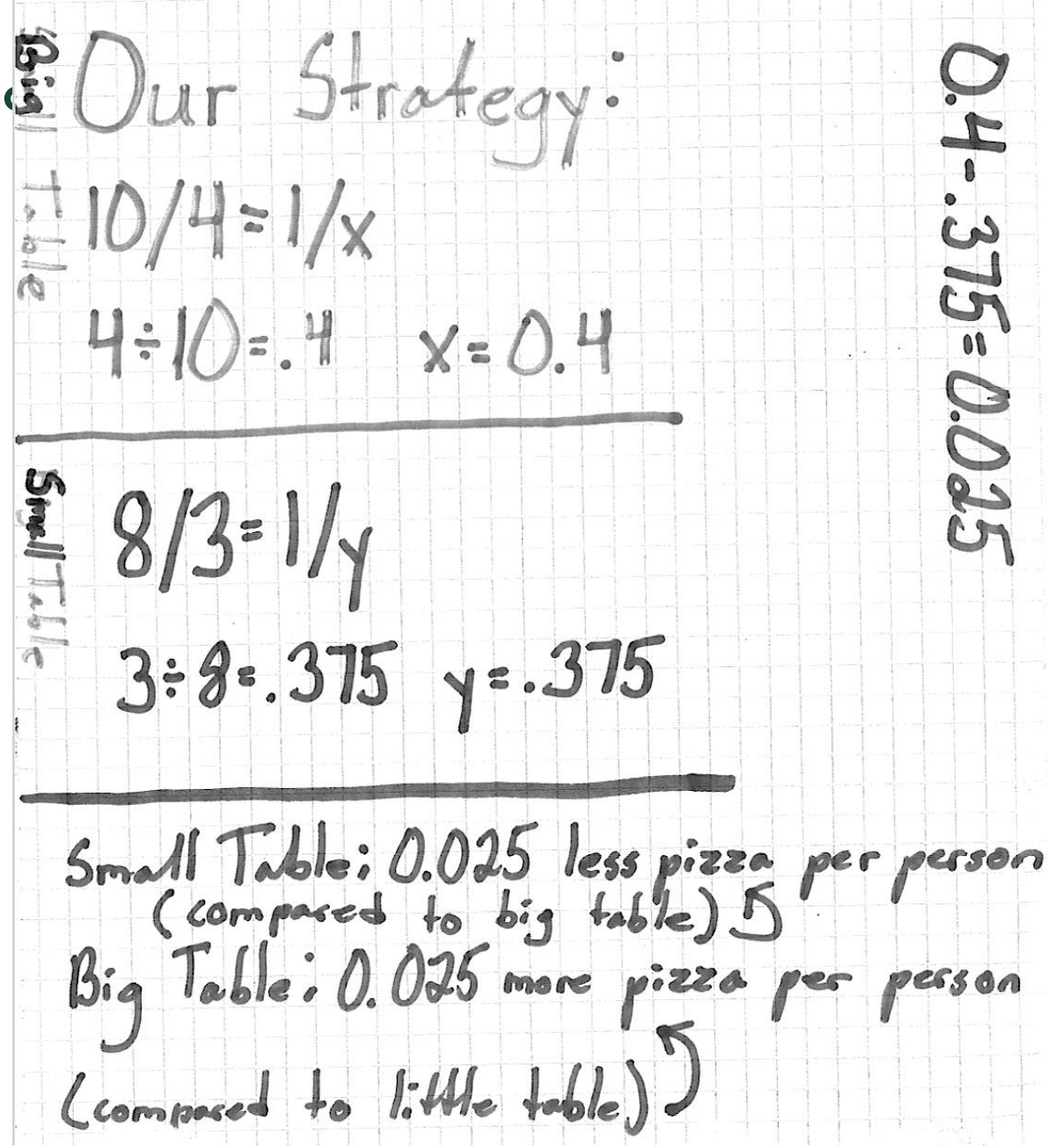
Sharing Pizza: Comparison Strategies

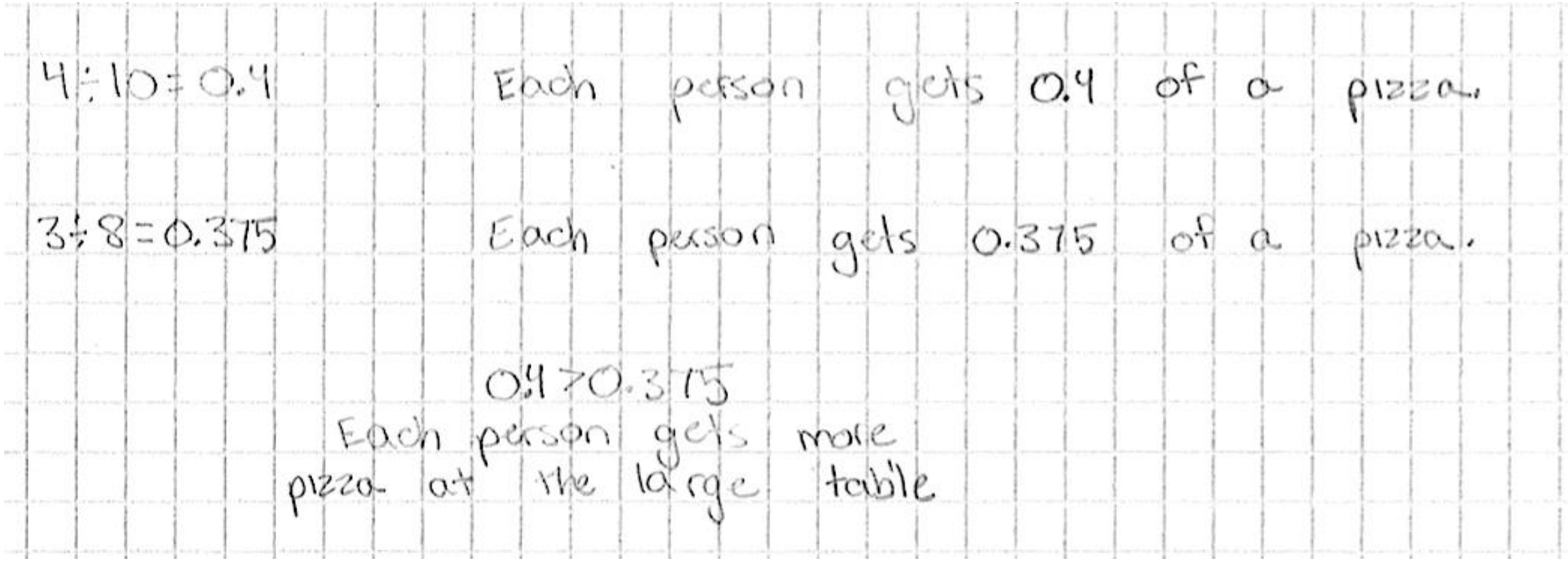
2.1 Sharing Pizza
Comparison Strategies

The dining room at a camp has two sizes of table. A large table seats ten people, and a small table seats eight people. When the campers come for dinner one night, there are four pizzas on each large table and three pizzas on each small table.

CONNECTED MATHEMATICS 3
Comparing and Scaling
Ratios, Rates, Percents, and Proportions

A The campers at each table share the pizzas equally. Does a person sitting at a small table get the same amount of pizza as a person sitting at a large table? Explain your reasoning.


Big Table
Our Strategy:
10/4=1/x
4÷10=.4 x=0.4
Small Table
8/3=1/y
3÷8=.375 y=.375
0.4-.375=0.025
Small Table: 0.025 less pizza per person
(compared to big table)
Big Table: 0.025 more pizza per person
(compared to little table)


4÷10=0.4
Each person gets 0.4 of a pizza.
3÷8=0.375
Each person gets 0.375 of a pizza.
0.4>0.375
Each person gets more pizza at the large table

Percents

Large table

100÷10=10
4×10=40%

40%

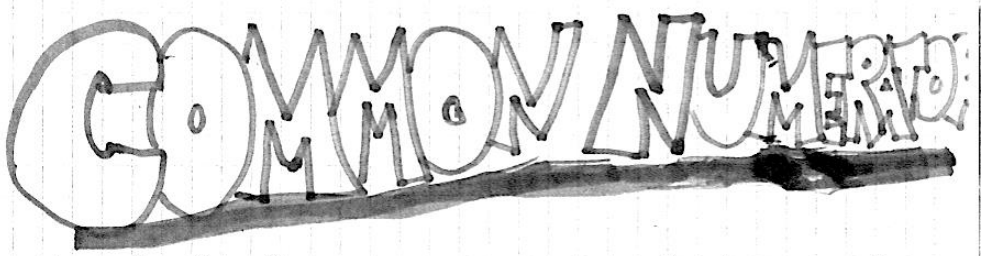
Small table

100÷8=12.5
12.5×3=37.5%

37.5%

Explanation

We believe that the large table is the place to sit if you want more pizza. At the large table, you will get 40% of a pizza.



Step 1: Find a common numerator

$\frac{4}{10} \times \frac{3}{3} = \frac{12}{30}$ $\frac{3}{8} \times \frac{4}{4} = \frac{12}{32}$

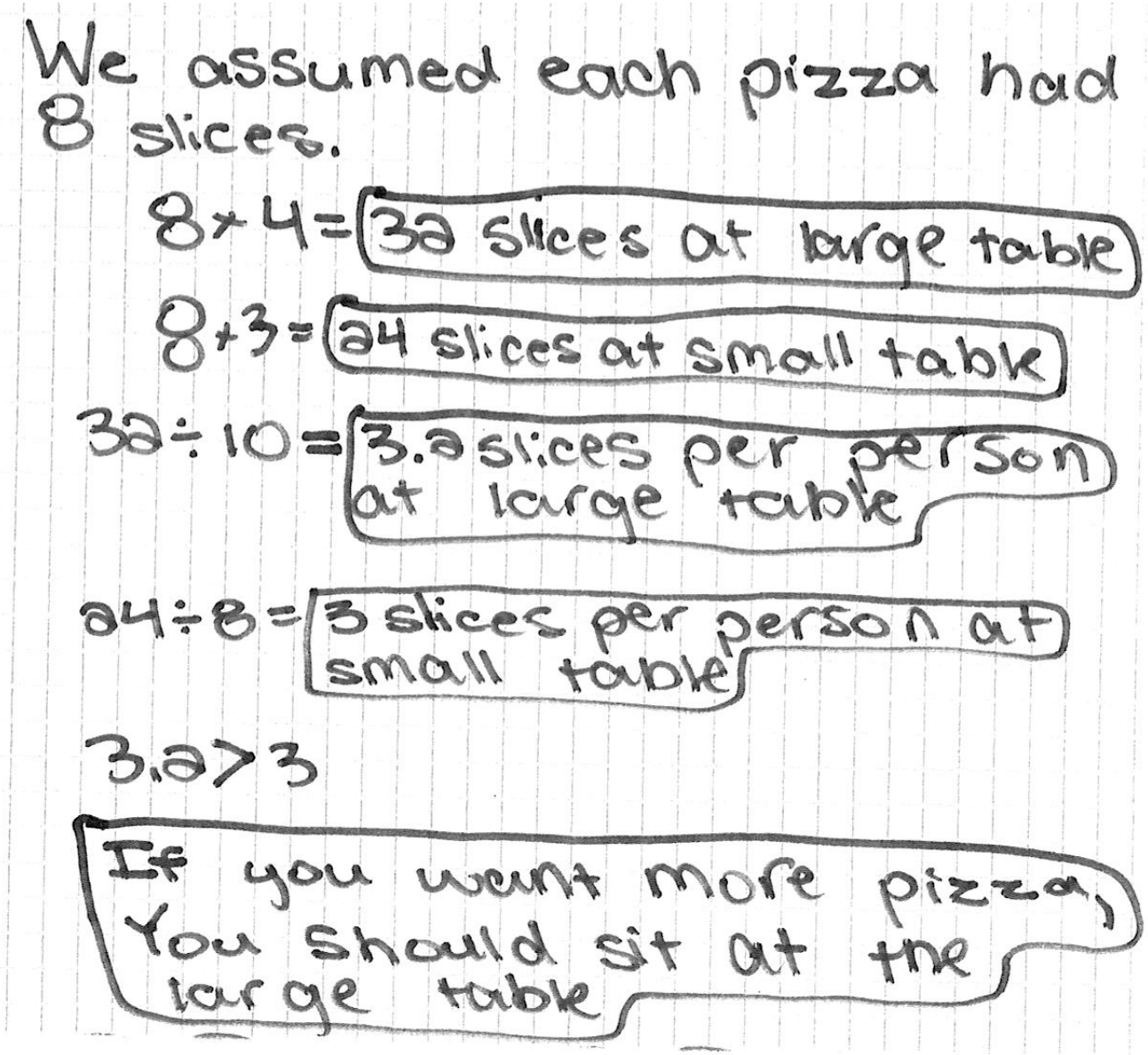
Step 2: See which fraction is greater (fraction with smaller denomenator)

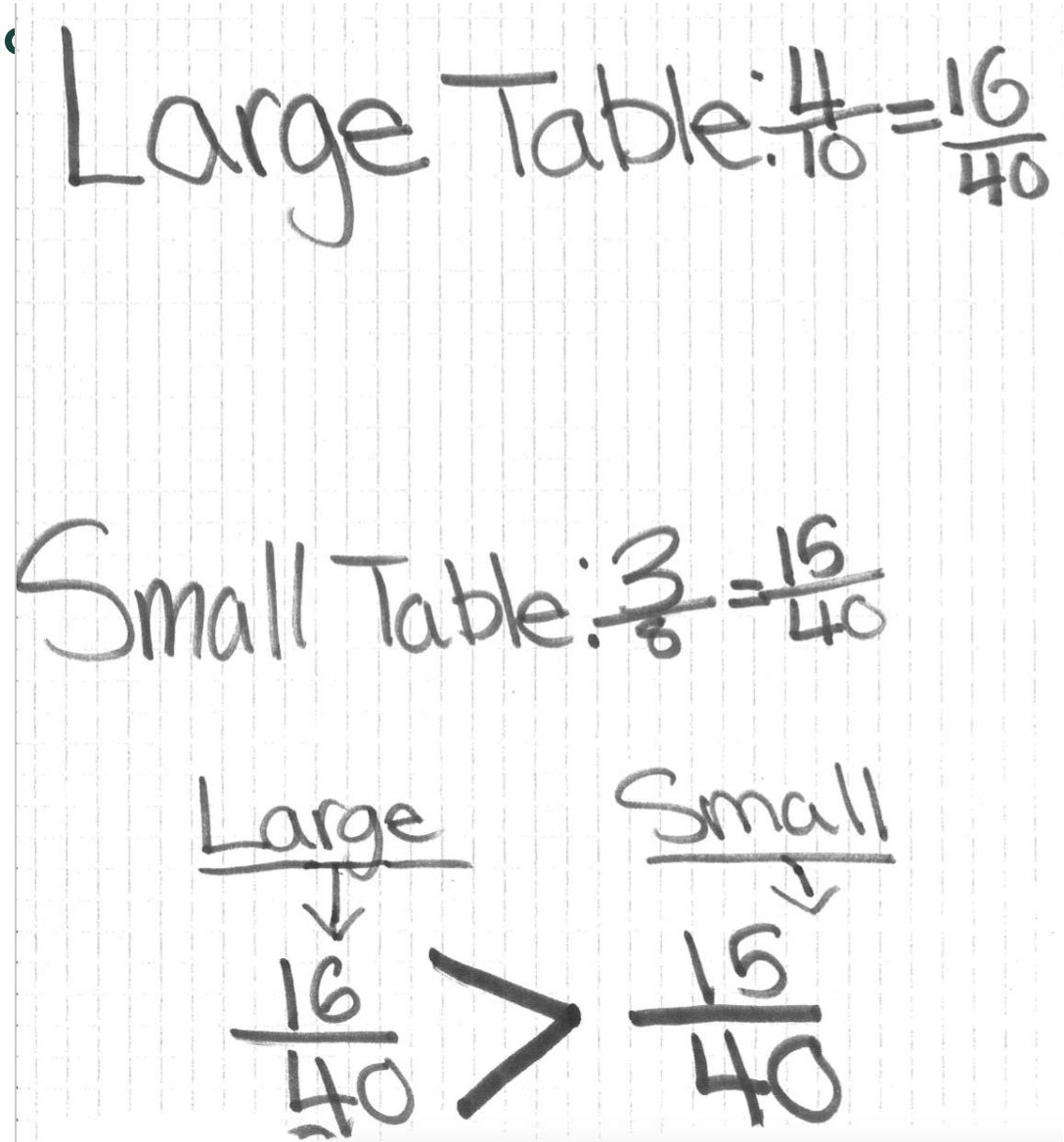
$\frac{12}{30} > \frac{12}{32}$

The large table is better, because the amount of pizza (numerator) is the same for a smaller amount of people (denomenator), so there will be more pizza per person.

People per Pizza

1. Find the number of people and pizzas at each table.
   Large: 10 people, 4 pizzas Small: 8 people, 3 pizzas.
2. Then you divide the number of people by the number of pizzas.
   Large: $10 \div 4 = 2.5$ Small: $8 \div 3 = 2.\overline{6}$
3. The one with the lesser answer has fewer people eating that pizza, and therefore more pizza for each person.
   $2.5 < 2.6$
   more pizza for each person at the large table.


We assumed each pizza had 8 slices.
8 × 4 = 32 slices at large table
8 × 3 = 24 slices at small table
32 ÷ 10 = 3.2 slices per person at large table
24 ÷ 8 = 3 slices per person at small table
3.2 > 3
If you want more pizza, You should sit at the large table


Large Table: $\frac{4}{10} = \frac{16}{40}$
Small Table: $\frac{3}{8} = \frac{15}{40}$
Large
Small
$\frac{16}{40} > \frac{15}{40}$