## Making Ratio Tables (3-5)

1. Ratio tables can be drawn vertically, as show at the right, or horizontally (shown below).
2. Label columns and rows clearly to make relationships easily distinguishable.
3. Ratio tables can be quickly drawn on paper, whiteboards, or even with sidewalk chalk to bring learning outdoors.



Another strategy for solving 243 ÷ 9

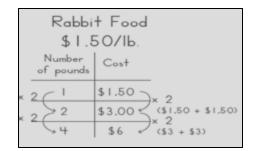| Groups | Total | |
|--------|-------|--------|
| 1 | 9 | $1 \times 9 = 9$ |
| 10 | 90 | $10 \times 9 = 90$ |
| 20 | 180 | $20 \times 9 = 180$ |
| 5 | 45 | $5 \times 9 = 45$ |
| 2 | 18 | $2 \times 9 = 18$ |
| 27 | 243 | |

$243 \div 9 = 27$

## Using Ratio Tables

The ratio table is used for the first time in 3rd grade to build an understanding about multiplication and the relationships between numbers. Students use ratio tables to model situations with a pattern, keeping track of related multiplication combinations and using combinations they have already solved or that they already know to find unknown products.
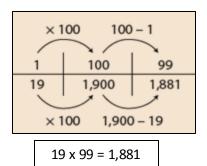
Later, the ratio table becomes a tool for students to use when problem solving, computing multiplication, division, and fraction problems, as well as make conversions. Ratio tables can also be used to model finding common denominators to add and subtract fractions, multiply and divide decimals, and develop an understanding of where to place the decimal point when multiplying or dividing by powers of 10. This model will continue to be used in both middle and high school mathematics.
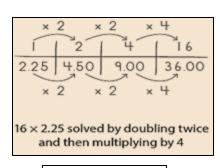
## Activities to do with Ten Frames

- Take me shopping: Bring a notepad while shopping and record the unit cost per ounce of an item you purchased. Make up a scenario where you need to buy two ounces, four ounces, ten ounces, etc. and use a ratio table to figure out how much it will cost you.
- Cooking for a party: Take a recipe with only a few ingredients that serves a certain amount of people. Use a ratio table, making a column for each ingredient, to figure out how to serve much larger numbers of people.



Rabbit Food
$1.50/lb.

| Number of pounds | Cost |
|------------------|------|
| 1 | $1.50 |
| 2 | $3.00 |
| 4 | $6 |

×2 ($1.50 + $1.50)
×2 ($3 + $3)

- A box of goodies: Find a box that contain many items neatly and evenly packaged, like a carton of eggs, a box of crayons, a box of fruit snacks, etc. Use a ratio table to figure out how many items you would have if you had 100 boxes, 1000 boxes, and then other more challenging numbers, like 782 boxes. Show your work along the ratio table.
- Multiplication and Division problems: Create some multiplication and division problems similar to the problems shown below. Use ration tables to solve them.



× 100      100 – 1

| 1 | 100 | 99 |
|---|-----|-----|
| 19 | 1,900 | 1,881 |

× 100    1,900 – 19

19 x 99 = 1,881



× 2     × 2     × 4

| 1 | 2 | 4 | 16 |
|---|---|---|----|
| 2.25 | 4.50 | 9.00 | 36.00 |

× 2     × 2     × 4

16 × 2.25 solved by doubling twice and then multiplying by 4

16 x 2.25 = 36.00



Strategy for solving 243 ÷ 9

20 + 5 + 2

| Number of Groups | 1 | 10 | 20 | 5 | 2 | 27 |
|------------------|---|----|----|---|---|-----|
| Total | 9 | 90 | 180 | 45 | 18 | 243 |

180 + 45 + 18



Another strategy for solving 243 ÷ 9

| Groups | Total | |
|--------|-------|--------|
| 1 | 9 | $1 \times 9 = 9$ |
| 10 | 90 | $10 \times 9 = 90$ |
| 20 | 180 | $20 \times 9 = 180$ |
| 5 | 45 | $5 \times 9 = 45$ |
| 2 | 18 | $2 \times 9 = 18$ |
| 27 | 243 | |

$243 \div 9 = 27$