

Lesson 10: The Structure of Ratio Tables—Additive and Multiplicative

Classwork

Exploratory Challenge

Imagine that you are making a fruit salad. For every quart of blueberries you add, you would like to put in 3 quarts of strawberries. Create three ratio tables that show the amounts of blueberries and strawberries you would use if you needed to make fruit salad for greater numbers of people.

Table 1 should contain amounts where you have added fewer than 10 quarts of blueberries to the salad.

Table 2 should contain amounts of blueberries between and including 10 and 50 quarts.

Table 3 should contain amounts of blueberries greater than or equal to 100 quarts.

In Question

Quarts of Blueberries	Quarts of Strawberries
1	3
2	6
3	9
4	12
5	15

Quarts of Blueberries	Quarts of Strawberries
10	30
20	60
30	90
40	120
50	150

Quarts of Blueberries	Quarts of Strawberries
100	300
200	600
300	900
400	1,200
500	1,500

- a. Describe any patterns you see in the tables. Be specific in your descriptions.

- The value in the 2nd column is always three times as much as the corresponding values in the 1st column.
- In the 2nd table — the first column increased by 10; the entries in the 2nd column increased by 30.

- b. How are the amounts of blueberries and strawberries related to each other?

The amount of strawberries is always 3 times the amount of blueberries.

- c. How are the values in the Blueberries column related to each other? (Answers Vary)

- Addition repeating
- Look for patterns.

- d. How are the values in the Strawberries column related to each other? (Answers Vary)

Same As Part C.

- e. If we know we want to add 7 quarts of blueberries to the fruit salad in Table 1, how can we use the table to help us determine how many strawberries to add?

We could extend our table until we get 7 in the blueberry column.

- f. If we know we used 70 quarts of blueberries to make our salad, how can we use a ratio table to find out how many quarts of strawberries were used?

We could start with the ratio 1:3. Then multiply by 10 to get 10 and 30. These would be first values in the table. Then count by 10's in blueberry column & 30's in Strawberry column.

Exercise 1

The following tables were made incorrectly. Find the mistakes that were made, create the correct ratio table, and state the ratio that was used to make the correct ratio table.

a.

Hours	Pay in Dollars
3	24
5	40
7	52
9	72

Hours	Pay in Dollars
3	24
5	40
7	56
9	72

1 hour pays \$8.

Ratio 1:8

Answers may vary...

b.

Blue	Yellow
1	5
4	8
7	13
10	16

Blue	Yellow

Ratio _____

SKIP.
Add 3

Lesson Summary

Ratio tables are constructed in a special way.

Each pair of values in the table will be equivalent to the same ratio.

red	white
3	12
6	24
21	84

$$6 : 24$$

$$1 : 4$$

$$21 : 84$$

$$1 : 4$$

Repeated addition or multiplication can be used to create a ratio table.

The values in the first column can be multiplied by a constant value to get the values in the second column.

red	white
3 $\times 4$	12
6 $\times 4$	24
12 $\times 4$	48
21 $\times 4$	84

By just adding a certain number to the first entry of a ratio in the first column and adding the same number to the second entry in the second column, the new ratio formed is generally not equivalent to the original ratio. Instead, the numbers added to the entries must be related to the ratio used to make the table. However, if the entries in one column are multiplied by a certain number, multiplying the entries in the other column by the same number creates equivalent ratios.

red	white
3	12
6	24
12	48
21	84

$\times 7$ $\left\{ \right.$ $\left. \right\} \times 7$