Lesson 4- Tables of Equivalent Ratios

Student Outcomes

* Students understand that a ratio is often used to describe the relationship between the amount of one quantity and the amount of another quantity as in the cases of mixtures or constant rates.
* Students understand that a *ratio table* is a table of equivalent ratios. Students use ratio tables to solve problems.
* Students identify both the additive and multiplicative structure of a ratio table and use the structure to make additional entries in the table.
* Students use ratio tables to solve problems.

Lesson 4- Tables of Equivalent Ratios Notes Name:

To make Paper Mache, the art teacher mixes water and flour. For every two cups of water, she needs to mix in three cups of flour to make the paste.

Find equivalent ratios for the ratio relationship 2 cups of water to 3 cups of flour. Represent the equivalent ratios in the table below:

|  |  |
| --- | --- |
| Cups of Water | Cups of Flour |
|   |  |
|  |  |
|  |  |
|  |  |
|  |  |

Javier has a new job designing websites. He is paid at a rate of $700 for every 3 pages of web content that he builds. Create a ratio table to show the total amount of money Javier has earned in ratio to the number of pages he has built.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Total Pages Built |  |  |  |  |  |  |  |  |
| Total Money Earned |  |  |  |  |  |  |  |  |

Javier is saving up to purchase a used car that costs $4,300. How many web pages will Javier need to build before he can pay for the car?

Spraying plants with “cornmeal juice” is a natural way to prevent fungal growth on the plants. It is made by soaking cornmeal in water, using two cups of cornmeal for every nine gallons of water. Complete the ratio table to answer the questions that follow.

|  |  |
| --- | --- |
| Cups of Cornmeal | Gallons of Water |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

* 1. How many cups of cornmeal should be added to 45 gallons of water?
	2. Paul has only 8 cups of cornmeal. How many gallons of water should he add if he wants to make as much cornmeal juice as he can?
	3. What can you say about the values of the ratios in the table?

James is setting up a fish tank. He is buying a breed of goldfish that typically grows to be 12 inches long. It is recommended that there be 1 gallon of water for every inch of fish length in the tank. What is the recommended ratio of gallons of water per fully-grown goldfish in the tank?

Complete the ratio table to help answer the following questions:

|  |  |
| --- | --- |
| Number of Fish | Gallons of Water |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

* 1. What size tank (in gallons) is needed for James to have 5 full-grown goldfish?
	2. How many fully-grown goldfish can go in a 40-gallon tank?
	3. What can you say about the values of the ratios in the table?

Lesson 4- Tables of Equivalent Ratios Name(s):\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Classwork/ Partner Practice \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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 3 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 10 and 50 quarts.

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

|  |
| --- |
| **Table 1** |
| Quarts of Blueberries | Quarts of Strawberries |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

|  |
| --- |
| **Table 2** |
| Quarts of Blueberries | Quarts of Strawberries |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

|  |
| --- |
| **Table 3** |
| Quarts of Blueberries | Quarts of Strawberries |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

* 1. Describe any patterns you see in the tables. Be specific in your descriptions.
	2. How are the amounts of blueberries and strawberries related to each other?
	3. How are the values in the blueberries column related to each other?
	4. How are the values in the strawberries column related to each other?
	5. 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?
	6. 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?

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

* 1.

|  |  |
| --- | --- |
| **Hours** | **Pay in dollars** |
|  |  |
|  |  |
|  |  |
|  |  |

|  |  |
| --- | --- |
|  **Hours**  | **Pay in dollars** |
| 3 | 24 |
| 5 | 40 |
| 7 | 52 |
| 9 | 72 |

Ratio \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* 1.

|  |  |
| --- | --- |
| **Blue** | **Yellow** |
|  |  |
|  |  |
|  |  |
|  |  |

|  |  |
| --- | --- |
|  **Blue**  | **Yellow** |
| 1 | 5 |
| 4 | 8 |
| 7 | 13 |
| 10 | 16 |

Ratio \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Lesson 4- Tables of Equivalent Ratios Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Exit Ticket/ HW

Assume each of the following represents a table of equivalent ratios. Fill in the missing values. Then choose one of the tables and create a real-world context for the ratios shown in the table.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  | 22 |  |  | 14 |  |  | 34 |
| 12 |  |  | 15 | 21 |  |  | 51 |
| 16 | 44 |  |  |  |  | 12 |  |
|  | 55 |  | 25 | 35 |  | 15 | 85 |
| 24 | 66 |  | 30 |  |  | 18 | 102 |

A father and his young toddler are walking along the sidewalk. For every 3 steps the father takes, the son takes 5 steps just to keep up. What is the ratio of the number of steps the father takes to the number of steps the son takes? Add labels to the columns of the table and place the ratio into the first row of data. Add equivalent ratios to build a ratio table.

|  |  |
| --- | --- |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

What can you say about the values of the ratios in the table?

Show more than one way you could use the structure of the table to find the unknown value. Fill in the unknown values.

