Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

UNIT 4 LESSON 6

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| AIM: | SWBAT solve ratio problems |

**THINK ABOUT IT!**

To make Paper Mache, the art teacher mixes water and flour. For every two cups of water, she mixes in five cups of flour to make the paste. Complete the table below.

|  |  |
| --- | --- |
| **Cups of Water** | **Cups of Flour** |
| 2 |  |
| 4 |  |
|  |  |
| 8 |  |
|  | 25 |
| 20 |  |
|  | 75 |

What do you think is true about each pair of numbers in the table you created?

**Test the Conjecture**

*Test the Conjecture #1)*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 seven cups of water.

1. Complete the table below for 2 cups of cornmeal, 4 cups of cornmeal, 6 cups of cornmeal, and 8 cups of cornmeal.

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

1. How many cups of water should be added to 48 cups of cornmeal?
2. How many cups of water are need to make a 288 cup mix of ‘cornmeal juice’?

Conjecture

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**PARTNER PRACTICE**

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| *Bachelor Level* |

1. The local radio station schedules 1 minute of news for every 10 minutes of music. Complete the ratio table. Then use the table for a-c.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Minutes of music | 10 | 20 | 30 | 40 |  | 60 |
| Minutes of news | 1 | 2 | 3 |  |  |  |

1. What is the ratio of minutes of music to minutes of news?
2. How many minutes of news would the disc jockey have to play for every 60 minutes of music?
3. How many minutes of music would the disc jockey have to play for every 8 minutes of news?
4. What is true about all of the ratios in the table for problem 2? How do you know?

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| *Master Level* |

1. The table below shows different possibilities for the number of games a team would need to win to maintain a certain percentage of wins.

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Part A) Which ratio of the number of games won to the number of games played could also be included in this table? Select all that apply.

1. 12 : 20
2. 18 : 20
3. 30 : 20
4. 18 : 30
5. 50 : 30

Explain how you determined your answer:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Part B) How many games were lost if 120 games were played?

**INDEPENDENT PRACTICE**

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| *Bachelor Level* |

1. The table below shows the number of tea bags needed to make different amounts of iced tea.



 What is the total number of quarts of iced tea that can be made with 24 tea bags?

1. 6
2. 8
3. 10
4. 12
5. The ratio table below shows how much money a grocery store receives for selling different amounts of asparagus.



What are the total sales for 12 pounds of asparagus?

1. A biologist counted the number of two types of salmon at a dam. He used the table below to record the number of salmon on different days.



* 1. On day 5, the biologist counted 16 Chinook. If the ratio of Chinook and Steelhead remained the same as on the previous four days, how many Steelhead should the biologist expect to count on day 5?
	2. On day 6, the ratio remained the same again. How many total salmon were counted on day 6?

|  |
| --- |
| *Master Level* |

1. On a camping trip, there are 2 girls for every 3 boys.
	1. Create a table that shows the number of boys when there are 4 girls, 6 girls, 8 girls, and 10 girls.
	2. If there are 33 boys, how many girls are there?
	3. If there are 30 children on a camping trip, how many boys are there? How many girls are there?
2. Mr. Walker rode 4 miles on his bicycle in 20 minutes. At this rate, how long will it take him to ride 24 miles? Use a table to show your thinking.
	1. 8 min
	2. 28 min
	3. 1 hour
	4. 2 hours

What is the ratio of miles to minutes if Mr. Walker rides 24 miles? Is the ratio equivalent to the ratio of 4:20? How do you know?

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1. At the gym, for every two minutes Mr. Alfred spends lifting weights, Mr. Pettaway spends five minutes lifting. Yesterday, Mr. Alfred lifted weights for ten minutes. How many total minutes did the two of them spend lifting weights? Use a table to represent your thinking.
2. Fleck’s car drives 12 miles every 20 minutes. She says that she can drive 60 miles in 120 minutes. Is she correct? Use a table to justify your answer and explain.

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1. Analyze the following ratio tables and determine whether or not they were created correctly. Explain how you know. If one was created incorrectly, fix the mistake.

|  |  |
| --- | --- |
| Blue Paint | Yellow Paint |
| 3 | 24 |
| 6 | 48 |
| 9 | 72 |
| 15 | 120 |

|  |  |
| --- | --- |
| Hours | Pay ($) |
| 1 | 5 |
| 2 | 10 |
| 3 | 15 |
| 7 | 30 |
| 8 | 35 |

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. Show two ways you could use the structure of the table to find the unknown values.



1. Create a real world context for the ratios shown in the table below



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1. The area of an airplane’s wings is related to the airplane’s lifting force, which holds the airplane in the air. The table below lists several wing areas and the corresponding lifting forces.

****

The ratio of lifting force to area is equivalent for all pairs in the table.

1. What is the area of the wings when the lifting force if 5,625 pounds?
2. What is the lifting force when the area of the wings is 1,000 square feet?
3. Can you write a part to total ratio for this context? Why?

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| *PhD Level* |

1. The table below lists four masses and their corresponding approximate weights on Earth.

The ratio of weight to mass is constant. Which statement describes the ratio of weight to mass and the value of x in the table?

1. The ratio is $\frac{98}{10}$; x = 90
2. The ratio is $\frac{98}{10}$; x = 100
3. The ratio is $\frac{10}{98}$; x = 90
4. The ratio is $\frac{10}{98}$; x = 110
5. The ratio table shows the relationship between the amounts of ginger ale and fruit juice needed to make punch. Fill in the missing values to complete the table.



**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**EXIT TICKET**

|  |  |  |  |
| --- | --- | --- | --- |
| Self-assessment | I mastered the learning objective today. | I am almost there.  | Need more practice and feedback. |
| Teacher feedback | You mastered the learning objective today. | You are almost there.  | You need more practice and feedback. |

1. 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.
	1. What is the ratio of the number of steps the father takes to the number of steps the son takes?
	2. Create a table that shows the number of steps the son takes after the father takes 3 steps, 6 steps, 9 steps, 12, steps, 15 steps, and 18 steps.
	3. What can you say about the values of the ratios in the table? Why?

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* 1. When the father has taken 24 steps, how many steps as the son taken?

*Turn to the next page!*

* 1. When the son has taken 75 steps, how many steps has the father taken?
	2. When the father and son have taken a total of 24 steps, how many steps did the father take? What about the toddler?