

Name: _____

Puzzled by Mathematics?

As you've discovered, the labs in this course offer insight of real-world application in mathematics. This lab showcases an application of rational equations. Your instructor will request student groups for this experiment.

Purpose:

- 1) To better understand rational equations.
- 2) To recognize a real-life application of rational equations.

Directions:

Groups of two (preferred) or three students are required for this activity. Though you must work together to gather the data, each student is responsible for his/her own work.

Equipment:

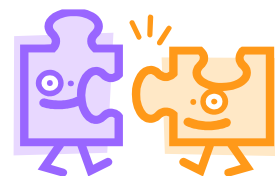
- 1) 24-piece puzzle (one for each student)
- 2) timer
- 3) pen or pencil

Experiment Setup:

- 1) Remove puzzle pieces. Place all pieces picture-side down on the table. Record the time it takes you to complete the puzzle (right side up) on your own.
- 2) Your partner conducted this same experiment. Now, share results with each other.
- 3) Next, you will complete a puzzle while working together with your group member(s). and record the time it takes to complete this shared task. Before you begin, swap puzzles with a neighboring group or ask your instructor for a new puzzle. Once completed and recorded, enter the values in the table below.

	Person 1 (Me)	Person 2 (Partner)	Working Together
Time to Complete (in Seconds)			

You have now completed the experiment component of the lab.



Respond to each question using complete sentences, where applicable.

1) Describe the results from each of the three trials of the experiment.

2) Which recorded time was the fastest? Did you expect this to occur? Explain.

- 3) If A is the time it took for you to complete the puzzle alone and B is the time it took your partner to complete the puzzle alone, then $\frac{1}{A} + \frac{1}{B} = \frac{1}{t}$ where t is the time it takes to complete the puzzle while working together. (Note: All units of time should be the same, preferably in seconds for our experiment.) Substitute the appropriate values for A and B , then solve for t .

- 4) Is the value of t calculated in the previous question close to the actual value of completing the puzzle together? Explain.

- 5) What might cause the calculated value and actual value to differ? Discuss at least three potential factors.
- 6) The equation listed in question three is a general “work-together” equation that can be applied to many real-world scenarios. Describe two other real-world applications that can be modeled using this type of equation. Be specific.