

## PROBLEMS

**Problem 1** Your cottage is 150 miles away from your house. Driving there Friday night there is a lot of traffic, and you drive at 30 mph the whole way. Driving home Sunday afternoon there is much less traffic and you go 50 mph the whole way. What was your average speed for the whole trip?

**Problem 2** You and your friend are studying for a big math exam until late into the night, so you decide to make yourselves some studying juice. You each have a 16 oz cup. Your friend fills half of her cup with Red Bull and the other half with cranberry juice. You fill a quarter of your cup with Red Bull, and the rest of it with cranberry juice. Then you decide that your friend is definitely way too caffeinated already, so you suggest that you should mix and share your studying juices. In a larger cup, you pour the contents of both cups, mix well, and redistribute the liquid equally. What fraction of your cup is Red Bull now?

Follow up question: What if the situation was exactly the same but your cup could hold 32 oz (and you filled it both before and after mixing), and your friend's cup could still only hold 16 oz?

**Problem 3** Seth and Christelle want to write a math paper together. Christelle can write a math paper by herself in 5 hours, and Seth can write a math paper by himself in 10 hours. How long will it take them to write one math paper if they work together?

**Problem 4 Bonus prize problem!** In this problem, first decide if the rates can be added (like Q3), if they should be averaged (like Q2), or if something else is required (like Q1). Then, solve the problem.

During the semester, Christelle has had to grade two Exams. The first Exam wasn't so hard, so Christelle could grade 10 exams in an hour. The second Exam was more difficult, so Christelle could only grade 5 exams in an hour. If no one dropped the class between the two exams, what was Christelle's average speed grading for these two exams?

Follow up question: What if some people dropped the class between the two exams?