## Assignment: Add and Subtract Rational Expressions

Choose any four (4) of the following five problems to solve. Show all work leading to your answer.

1. Randy drives his car to work each day. Suppose the expression $\frac{6}{x}+\frac{6}{3 x}$ represents the total time it takes Randy to drive to work in a day, where $x$ represents the average speed of the car in miles per hour, during the first part of the drive.
a. Use addition to simplify the expression $\frac{6}{x}+\frac{6}{3 x}$. Show all the steps necessary to write the expression with a common denominator and to simplify the expression.
b. If the speed of the car was 24 mph during the first part of the drive, find the total amount of time it took Randy to drive to work that day.
2. Suppose the expression $\frac{325}{x}-\frac{325}{x+15}$ represents the difference between the times, measured in hours, it took two moving trucks to drive 325 miles from one town to another, where $x$ represents the average speed of the slower truck during the drive.
c. Use subtraction to simplify the expression $\frac{325}{x}-\frac{325}{x+15}$. Show all the steps necessary to write the expression with a common denominator and to simplify the expression.
d. If the slower truck drove at an average speed of 50 mph , find the difference between the driving times.
3. Two cement mixing trucks are scheduled to pour cement for the foundation of a new apartment building. Suppose the expression $\frac{100}{x}+\frac{100}{x+1}$ represents the total time expected for both trucks to complete the job, where $x$ represents the rate in gallons per minute, at which the slower truck can pour concrete.
a. Use addition to simplify the expression $\frac{100}{x}+\frac{100}{x+1}$. Show all the steps necessary to write the expression with a common denominator and to simplify the expression.
b. If the slower truck can pour concrete at a rate of 24 gallons per minute, find the total amount of time it would take both cement mixing trucks to complete the job.
4. A cyclist had the wind at his back for part of his 25 -mile ride, and then the wind died down for the remainder of the ride. Suppose the expression $\frac{15}{x+8}+\frac{10}{x}$ represents the total time it took the cyclist to complete his ride, where $x$ represents the cyclist's average riding speed.
a. Use addition to simplify the expression $\frac{15}{x+8}+\frac{10}{x}$. Show all the steps necessary to write the expression with a common denominator and to simplify the expression.
b. If the cyclist's rides at an average speed of 10 miles per hour, find the total time it took to complete the ride.
5. A school of salmon swims 100 feet against the current in a river and then swims the same distance through a stretch of still water. Suppose the expression $\frac{100}{x-5}-\frac{100}{x}$ represents the difference between the times it takes the salmon to swim against the current versus in the still water, where $x$ represents the average speed of the salmon in still water.

## Assignment

a. Use subtraction to simplify the expression $\frac{100}{x-5}-\frac{100}{x}$. Show all the steps necessary to write the expression with a common denominator and to simplify the expression.
b. Find the difference between the times if the average speed of the salmon is 20 feet per minute.

