Algebra 2   Rational Equations Word Problems (Motion and Working Together)

1) A ski resort can manufacture enough machine-made snow in 12 hours to open its steepest run, whereas it would take naturally falling snow 36 hours to provide enough snow. If the resort makes snow at the same time that it is snowing naturally, how long will it take until the run can open?

2) Three machines are filling water bottles. The machines can fill the daily quota of water bottles in 10 hours, 12 hours, and 15 hours, respectively. How long would it take to fill the daily quota of water bottles with all three machines working?

3) A goat can eat all the grass in a farmer's field in 12 days, whereas a cow can finish it in 15 days and a horse in 20 days. How long will it be before all the grass is eaten if all three animals graze in the field?

4) Three computers can print out a task in 20 minutes, 30 minutes, and 60 minutes, respectively. How long would it take to complete the task with all three computers working?

5) A passenger train travels 240 miles in the same amount of time it takes a freight train to travel 168 miles. The rate of the passenger train is 18 mph greater than the rate of the freight train. Find the rate of each train.

6) The rate of a bicyclist is 7 mph faster than the rate of a long-distance runner. The bicyclist travels 30 miles in the same amount of time it takes the runner to travel 16 mph. Find the rate of the runner.

7) A cabin cruiser travels 20 miles in the same amount of time it takes a power boat to travel 45 miles. The rate of the cabin cruiser is 10 mph less than the rate of the power boat. Find the rate of the cabin cruiser.

8) A Porsche 911 Turbo has a top speed that is 20 mph faster than a Dodge Viper's top speed. At top speed, the Porsche can travel 630 miles in the same amount of time it takes the Viper to travel 560 miles. What is the top speed of each car?

9) A canoe can travel 8 mph in still water. Rowing with the current of a river, the canoe can travel 15 miles in the same amount of time it takes to travel 9 miles against the current. Find the rate of the current.

10) A tour boat used for river excursions can travel 7 mph in calm water. The amount of time it takes to travel 20 miles with the current is the same as the amount of time it takes to travel 8 miles against the current. Find the rate of the current.

Answers to Rational Equations Word Problems
1) It will take 9 hours. 2)   3) It will take 5 days.   4) It will take 10 minutes.
5)   6) The rate of the runner is 8 mph.   7)
8) The Porsche's top speed is 180 mph and the top speed of the Dodge Viper is 160 mph.
9) The rate of the current is 2 mph.   10) The rate of the current is 3 mph.