Think It Through

March 14, 2023

1. Hannah and Liam are travelling separately from their home in Toronto to a conference 300 km away. Hannah leaves 30 minutes earlier than Liam, but Liam drives an average speed of 30 km/h faster than Hannah. If they arrive at the conference at the exact same time, what was the average speed at which each of them travelled?

2. A water tank can be filled by two pipes in 3 hours, or by a third pipe in 4 hours. If all three pipes are used simultaneously, how long will it take to fill the tank?

3. A train travels from City A to City B at an average speed of 60 miles per hour, while a second train travels from City B to City A at an average speed of 80 miles per hour. If the distance between the two cities is 240 miles, how long will it take for the trains to meet?

4. A group of workers can complete a job in 12 days, while another group can complete the same job in 15 days. If the two groups work together for the first 6 days, and then the second group leaves, how long will it take for the first group to complete the job?

5. A contractor can complete a project in 10 days, while a second contractor can complete the same project in 8 days. If the first contractor works on the project for the first 4 days, and then the second contractor takes over, how long will it take for the project to be completed?

6. A store sells two types of candy, one for $2.50 per pound and the other for $3.50 per pound. If a customer wants to buy 10 pounds of candy that costs an average of $3 per pound, how much of each type of candy should they buy?

7. A pump can fill a pool in 5 hours, while a second pump can fill the same pool in 6 hours. If both pumps are used simultaneously, but the first pump is turned off after 2 hours, how long will it take the second pump to fill the pool?

8. A car rental company charges a base rate of $30 per day plus $0.25 per mile. If a customer rents a car for 5 days and drives a total of 400 miles, how much will they be charged?

9. A chemical solution is made by mixing two solutions together. The first solution is 30% acid, while the second solution is 50% acid. If 10 liters of the final solution are needed with an acid concentration of 45%, how much of each solution should be used?

10. Two boats leave from the same dock and travel in opposite directions. The first boat travels at a speed of 20 miles per hour, while the second boat travels at a speed of 30 miles per hour. If the distance between the two boats after 1 hour is 50 miles, how far apart will they be after 2 hours?

11. A contractor charges a base rate of $500 plus $50 per hour of work. If the total cost of a project is $1,500, how many hours did the contractor work?