Section 2.8 Mixture and Distance Problem Solving

# Objective 1: Solving Mixture Problems

Mixture problems involve two or more different quantities being combined to form a new mixture. It is often helpful to use a table to organize the information presented in the problem.

a. How much of an alloy that is $40\%$ copper should be mixed with $300$ ounces of an alloy that is $60\%$ copper in order to get an alloy that is $50\%$ copper?

Let $x$ represent the number of ounces of $40\%$ copper alloy.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Number of ounces | Copper percentage (as a decimal) | Amount of copper |
| $40\%$ copper |  |  |  |
| $60\%$ copper |  |  |  |
| $50\%$ copper  |  |  |  |

b. A coffee company is creating a new mixture of coffee beans. How many pounds of coffee that sells for $\$7$ per pound should be added to $20$ pounds of coffee that sells for $\$4$ per pound if the goal is to get a mixture that costs $\$5$ per pound?

# Objective 2: Solving Distance Problems

These problems involve the distance formula, $d=rt$. As with the mixture problems, a table is often helpful in organizing the information.

a. Two trucks leave a warehouse at the same time, traveling in opposite directions. The rate of the faster truck exceeds that of the slower truck by $9$ miles per hour. After $7$ hours, they are $518$ miles apart. What are the rates of the trucks?

Let $x$ represent the rate of the slower truck.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Rate | Time | Distances |
| Faster truck |  |  |  |
| Slower truck  |  |  |  |

b. A freight train leaves a station and travels north at $40$ mph. Two hours later, another train leaves on a parallel track and travels north at $80$ mph. How long will it take the second train to overtake the freight train? How far from the station will they meet?