

Section 6.4 – Motion and Percentage Problems

Problem Set 3

1. It takes a boy 3.4 seconds to walk down a 35' down escalator. He turns around and runs up the escalator, i.e. going the wrong way, at twice the speed that he walked down and it takes 4.8 seconds to get back to the top. What's the speed of the boy and the speed of the escalator. (Your final answer is going to be in feet per second so don't be surprised if it looks a little strange.)
2. A chef needs a solution that's 2% sugar. How much of a 1% solution needs to be added to a 5% solution to give 1000 ml of a 2% solution?
3. A speed boat traveled 120 miles downstream in 3 hours. It took the same boat 4 hours going back upstream to reach a dock 5 miles past its starting point. What was the speed of the current?
4. A stock broker invests \$20,000 in two stocks. At the end of the year, one of the investments got a 2% return, the other got an 6% return. If the two stocks together earned \$750, how much was invested in each?
5. A nurse is preparing a salt solution. She needs the solution to be 12% salt. How much pure of a 5% solution should she add to a 25% solution to get 1.5 liters of the 12% solution?
6. It takes a plane 2 hours to travel the 1200 miles between two cities going with the wind. On the return trip, the wind speed was 25 mph less and the trip took only 2.3 hours. What were the speeds of the plane and the wind?
7. An investment banker puts \$6,500 of his clients money in two different investments. The first earns a 10% return; the second earns 5.5%. If the total return on the investment was \$575, how much was invested in each account?
8. A metallurgist needs to make an alloy that's 25% copper. How much pure copper does he need to add to an alloy that's 12% copper to get 5 pounds of a 25% alloy?