Suppose it takes you 6.4 hours to fly about 2800 miles from Miami to Seattle. You are flying into a headwind. The return trip takes only 5.6 hours because you are flying with a tailwind. Write and solve a system of equations to find the speed of the wind and the speed of the plane if there were no wind.

p = speed of the plane  w = speed of the wind

MIA → SEA

SEA → MIA

$\frac{2800}{6.4} = \frac{(p-w)6.4}{6.4}$  $437.5 = p - w$

$\frac{2800}{5.6} = \frac{(p+w)5.6}{5.6}$  $500 = p + w$

$937.5 = 2p$

$468.75 = p$  $w = 31.25$ mph

Speed of the plane = 468.75 mph
Speed of the wind = 32.25 mph

On a canoe trip I paddled upstream (against the current) for 6 hours and traveled 15 miles. Later I paddled downstream (with the current) for 4 hours and traveled 34 miles.

Write and solve a system of equations to find the speed of the current and the speed that I can paddle if there were no current.

upstream  $\frac{15}{6} = \frac{6(b-c)}{6}$  $2.5 = b - c$

downstream  $\frac{34}{4} = \frac{4(b+c)}{4}$  $8.5 = b + c$

$11 = 2b$

$5.5 = b$  $c = 3$

Speed of the canoe = 5.5 mph
Speed of the current = 3 mph

At the begining of the game you go to concession stand and buy 2 Cokes and 3 Hot Dogs for $17.75. The game goes into overtime and you get hungry so you return to the concession stand and buy 1 Coke and 2 Hot Dogs for $10.75. Write and solve a system of equations to find the price of a Coke and a Hot Dog.

A cake is taken out of the oven at 325° F. At the same time an ice cube tray (32° F)is taken out of the freezer. The cake cools down 13° F per minute. The ice warms up 2° F per minute. Write and solve a system of equations to find the number of minutes until they are at the same temperature. Round to the nearest hundredth.

$325 - 13m = T$

$32 + 2m = T$

$325 - 13m = 32 + 2m$

$m = 19.53$