Bellwork Monday, March 31, 2014

1. Suppose it takes you 7.2 hours to fly into a headwind about 1440 miles between two cities. The return trip takes only 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 220 mph

w = speed of the wind w = 20 mph

$\frac{1440}{7.2} = \frac{(p-w)7.2}{7.2}$

$\frac{1440}{6} = \frac{(p+w)6}{6}$

$200 = p - w$

$+ \quad 240 = p + w$

$440 = 2p$

$220 = p$

2. You run a painting business. To start the business you need to buy a truck and equipment which costs you $21,000. Each job costs you an average of $220 in materials. You pay your employees an average of $350 on each job. You charge an average of $900 per job. Find the break-even point.

Income = Expenses

$900j = 21{,}000 + 220j + 350j$

$900j = 21000 + 570j$

$330j = 21000$

$\frac{330j}{330} = \frac{21000}{330}$

$j = 64$ jobs