

Homework 5  
Math 130 - Due Feb. 22, 2011

**Written Problems from P&B:**

Section 3.6 (p.85) # 1, 2, 3, 4

**To be done as a 15-minute quiz. Please show all your work, you will be graded on the presentation of your solutions as well as the mathematics involved.**

1. Suppose that a student has the following work on his paper for long division:

$$\begin{array}{r} 2 \quad 1 \quad 0 \quad 1 \quad R220 \\ 4 \ ) \quad \underline{8 \quad 6 \quad 2 \quad 4} \\ \phantom{4 \ ) \quad 8 \quad 6 \quad 2 \quad 4} \phantom{0} \quad \underline{-4} \\ \phantom{4 \ ) \quad 8 \quad 6 \quad 2 \quad 4} \phantom{0} \quad 2 \quad 0 \\ \phantom{4 \ ) \quad 8 \quad 6 \quad 2 \quad 4} \phantom{0} \quad \phantom{2} \quad \underline{-0} \\ \phantom{4 \ ) \quad 8 \quad 6 \quad 2 \quad 4} \phantom{0} \quad 6 \quad 2 \\ \phantom{4 \ ) \quad 8 \quad 6 \quad 2 \quad 4} \phantom{0} \quad \phantom{6} \quad \underline{-4} \\ \phantom{4 \ ) \quad 8 \quad 6 \quad 2 \quad 4} \phantom{0} \quad 8 \quad 2 \\ \phantom{4 \ ) \quad 8 \quad 6 \quad 2 \quad 4} \phantom{0} \quad \phantom{8} \quad \underline{-8} \\ \phantom{4 \ ) \quad 8 \quad 6 \quad 2 \quad 4} \phantom{0} \quad \phantom{8} \quad 0 \end{array}$$

When asked why the remainder is so large, the student responds that with only 2 hundreds there is no way to divide them equally among 4 people, so they are left over.

- (a) Describe the steps of the algorithm that the student is using.
- (b) Does the student's algorithm work? Why or why not?
- (c) Come up with a problem on which the student's algorithm would obtain the correct answer.