Boston University
Summer I 2010

Number Theory
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Homework No.3

student:
due 05/24/2010

Problem A: Solve the congruences:

P	C	N
-/6	-/2	-/2

$23x \equiv 13 \pmod{27}$ $\quad x^2 + 3x \equiv 5 \pmod{7}$ $\quad 4y \equiv 6 \pmod{10}$

Problem B: Solve the system of linear congruences:

P	C	N
-/6	-/2	-/2

$$5x \equiv 4 \pmod{12}$$
$$2x \equiv 2 \pmod{25}$$
$$4x \equiv 3 \pmod{7}$$

Problem C: Solve the system of linear congruences:

P	C	N
-/6	-/2	-/2

$$x \equiv 5 \pmod 8$$
$$x \equiv 9 \pmod{20}$$
$$x \equiv 359 \pmod{375}$$

Problem D: My friend Vincent ate seven crêpes with ham and cheese for breakfast, and I had two crêpes with strawberries and honey. If instead we have had four crêpes each (of one's favorite type as above, of course), we would had to pay 11$ more. What are the three lowest possible combinations of prices for the two types of crêpes?
(A crêpe costs an integer number of dollars.)

P	C	N
-/6	-/2	-/2