

SCHOOL:

Eastern Area Mathematical Challenge 2010

Round 3 Modular Arithmetic (20 marks)

1. Convert the following numbers:

$16 = \boxed{} \pmod{3}$

$21 = \boxed{} \pmod{4}$

$32 = \boxed{} \pmod{7}$

$176 = \boxed{} \pmod{13}$

2. Find the possible values of x :

$41 = 3 \pmod{x}$

3. Find the possible values of x :

$25 = 1 \pmod{x}$

4. Complete the addition table (mod 5) and the multiplication table (mod 6)

+ mod 5	0	1	2	3	4
0					
1					
2					
3					
4					

x mod 6	1	2	3	4	5
1					
2					
3					
4					
5					

5. Given that $3n + 4 = 2 \pmod{5}$, find the possible values of n .

6. Given that $x = 3 \pmod{5}$ and $x = 2 \pmod{7}$, find the possible values of x .