## **SIMPLE EQUATIONS IN MODULAR ARITHMETIC**

## **Examples**

Solve the following equations:

- 1.  $8 + x = 0 \pmod{9}$
- 2.  $2x = 3 \pmod{7}$
- 3.  $5x + 2 = 3 \pmod{11}$
- 4.  $4x + 8 = 2 \pmod{9}$

## **Solutions**

- 1.  $8 + x = 0 \pmod{9}$
- $\therefore$  8 +  $\chi$  = 0

$$x = -8 \pmod{9}$$

= -8+(9x1) ew from Notesale.co.uk

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-1 (mod 9)

$$\therefore x = 1 \pmod{9}$$

2.  $2x = 3 \pmod{7}$ 

$$2x = 3 + (7 \times 1) = 3 + 7$$

$$\therefore$$
 2 $x = 10$ 

$$x = \frac{10}{2}$$

$$x = 5 \pmod{7}$$

3.  $5x(+)2 = 3 \pmod{11}$