Suppose you didn't know how to solve a system of equations using Substitution, how would you solve this system of equations using Elimination?

$y = 4x + 21$ $\quad 3x + 8y = -7$

Rewrite into $Ax + By = C$

$y = 4x + 21$

$-4x \quad -4x$

$-4x + y = 21$ → $-4x + y = 21$

Solution $(-5, 1)$

Now solve using elimination

$4(3x + 8y = -7)$

$3(-4x + y = 21)$ → $y = 1$

$12x + 32y = -28$

$+ \quad -12x + 3y = 63$

$35y = 35$

Now find x:

$1 = 4x + 21$

$-21 \quad -21$

$-20 = 4x$

$\frac{-20}{4} = \frac{4x}{4}$

$x = -5$

It would be easier to use Substitution but you can force Elimination to work if needed. That is why it's nice to know both methods.

The price of a Hot Dog is twenty three cents less than twice the cost of a bag of Chips. Two Hot Dogs and three bags of Chips cost $9.97.

Write and solve a system of equations to find the cost for a Hot Dog and the cost for a bag of Chips.

$h = 2c - .23$

$2h + 3c = 9.97$

$2(2c - .23) + 3c = 9.97$

$4c - .46 + 3c = 9.97$

$7c - .46 = 9.97$

$+.46 \quad +.46$

$\frac{7c}{7} = \frac{10.43}{7}$

$c = \$1.49$

Find h:

$h = 2(1.49) - .23$

$h = \$2.75$

hot dogs are $2.75 each

chips are $1.49 each