3.1 One-Step Equations

Inverse Operations - two operations that "undo" each other

open door ?	____ (close door)	Wake up ?	____ (go to sleep)
tie shoe ?	____ (untie)	Subtract 10 ?	____ (+ 10)
add 2 ?	____ (-2)	Mult by 12 ?	____ (÷ 12)

So Inverse of
- add is subtract
- subtract is add

> Undo each other

- Multiply is divide
- divide is multiply

> undo each other

Solve

1) $x + 3 = 5$

$x + 1\,1\,1 = 1\,1\,1$

$\underset{VT}{x} + \underset{CT}{3} = \underset{CT}{5}$

$+3-3=0$ $\quad -3 \;\Delta\; -3$ $\quad 5-3=2$

undo +3 by -3

$x = 2$

Δ

* Keep it balanced!
* Do same to both sides
* Constant goes w/ constant

2) $\underset{VT}{x} - \underset{CT}{12} = \underset{CT}{3}$ ← undo -12 by +12

$-12+12=0$ $\quad +12 \;\Delta\; +12$ $\quad 3+12=15$

$x = 15$

Δ

3) $6x = 42$ ← undo *6 by ÷6

$\div 6 \quad \Delta \quad \div 6$ $\quad 42 \div 6 = 7$

$6 \div 6 = 1$

$1x = 7$ or $x = 7$

Δ $\quad \Delta$

4) $\frac{2}{3}x = 6$ To undo $*\frac{2}{3}$, $\div$ by $\frac{2}{3}$

$\div\frac{2}{3}$ Δ $\div\frac{2}{3}$ ... Mult by $\frac{3}{2}$ Multiply by reciprocal

$\frac{3}{2}\cdot\frac{2}{3}x = \frac{6}{1}\cdot\frac{3}{2}$

$\frac{6}{6}x = \frac{18}{2}$

$1x = 9$ or $x = 9$

5) $\frac{1}{5} = \frac{x}{4}$ undo $\div 4$ by $*4$

$*4$ Δ $*4$

$4\times\frac{5}{1} = \frac{x}{4}\cdot 4$

$4\div 4 = 1$ $20 = \frac{4x}{4}$ $4\div 4 = 1$

$20 = 1x$ or $20 = x$

p137: 1, 2, 3-13 o, 18-21, 23-26 ← write on board?

49, 53, 54