Linear Equations, Part I Key

1a. $t - 9.2 = -6.8$
$ +9.2 \quad +9.2$
$t = 2.4$

b. $2x = x - 5$
$ -x \quad -x$
$x = -5$

c. $2x + x - b = 2x + 5$
$3x - b = 2x + 5$
$-2x -2x$
$x - b = 5$
$ +6 \quad +6$
$x = 11$

d. $10 = 8(3y - 4) - 23y + 20$
$10 = 24y - 32 - 23y + 20$
$10 = y - 12$
$+12 + 12$
$22 = y$

2a. $\dfrac{-7x}{-7} = \dfrac{-49}{-7} \quad\Rightarrow\quad x = 7$

b. $\frac{1}{8}v = \frac{1}{4} \quad\Rightarrow\quad \frac{8}{1}\cdot\frac{1}{8}v = \frac{1}{4}\cdot\frac{8}{1} \quad\Rightarrow\quad v = \frac{8}{4} \quad\Rightarrow\quad v = 2$

c. $\frac{d}{15} = 2 \quad\Rightarrow\quad \frac{15}{1}\cdot\frac{d}{15} = 2\cdot 15 \quad\Rightarrow\quad d = 30$

3.a. $3x - 1 = 26$
$ +1 \quad +1$
$\dfrac{3x}{3} = \dfrac{27}{3} \quad\Rightarrow\quad x = 9$

b. $-2x + \frac{1}{2} = \frac{7}{2}$
$ -\frac{1}{2} \quad -\frac{1}{2}$
$-2x = \frac{7}{2} - \frac{1}{2} = \frac{6}{2} = 3$

$\dfrac{-2x}{-2} = \dfrac{3}{-2}$
$x = \frac{-3}{2}$

c. $12x + 30 + 8x - 6 = 10$
$20x + 24 = 10$
$ -24 \quad -24$
$20x = -14$

$\dfrac{20x}{20} = \dfrac{-14}{20}$
$x = \frac{-7}{10}$

3d. $t - 6t = -13 + t - 3t$

$-5t = -13 - 2t$

$ +2t +2t$

$\overline{ -3t = -13}$ ↗

$\dfrac{-3t}{-3} = \dfrac{-13}{3}$

$t = \dfrac{-13}{3}$

e. $20 = -3(2x+1) + 7x$

$20 = -6x - 3 + 7x$

$20 = x - 3$

$+3 + 3$

$\overline{23 = x}$

4. $20 - p$ \qquad Since $p + (20 - p) = 20$

5. $180 - x$

6. Consecutive integers

	1st x	2nd $x+1$	3rd $x+2$	4th $x+3$

Sum: $x + (x+1) + (x+2) + (x+3) = 4x + 6$

Consecutive odd integers

	1st x	2nd $x+2$	3rd $x+4$	4th $x+6$

(odd #'s are space 2 apart
3, 5, 7, 9, etc.)

Sum: $x + (x+2) + (x+4) + (x+6) = 4x + 12$

7. $3(a + 4.6) = 5a + 2.5$ \qquad $a = 6.3$?

$3(6.3 + 4.6) =? \ 5(6.3) + 2.5$

$3(10.9) =? \ 31.5 + 2.5$

$32.7 =? \ 34$

no $a = 6.3$ is not a solution to the equation