HW5 Solutions

(1) $x - 2 = 9$
$+2 \quad +2$
$\boxed{x = 11}$

(2) $\frac{4x}{4} = \frac{24}{4}$ $\boxed{x = 6}$

(3) $3x - 6 = 10$
$+6 \quad +6$
$\frac{3x}{3} = \frac{16}{3}$ $\boxed{x = \frac{16}{3}}$

(4) $-x + 3 = -10$
$-3 \quad -3$
$\frac{-x}{-1} = \frac{-13}{-1}$ $\boxed{x = 13}$

(5) $5x + 1 = 3x - 8$
$-3x - 1 \quad -3x - 1$
$\frac{2x}{2} = \frac{-9}{2}$ $\boxed{x = \frac{-9}{2}}$

(6) $-2x + 4 = -4x + 2$
$+4x - 4 \quad +4x - 4$
$\frac{2x}{2} = \frac{-2}{2}$ $\boxed{x = -1}$

(7) $3(7x - 2) = -(x + 4)$
$21x - 6 = -x - 4$
$+x + 6 \quad +x + 6$
$\frac{22x}{22} = \frac{2}{22}$ $\boxed{x = \frac{2}{22} = \frac{1}{11}}$

(8) $-2(-3x - 2) - x = 4x + 3(2x - 9)$
$6x + 4 - x = 4x + 6x - 27$
$5x + 4 = 10x - 27$
$-5x + 27 \quad -5x + 27$
$\frac{31}{5} = \frac{5x}{5}$ $\boxed{x = \frac{31}{5}}$

(9) $0.5(x - 0.3) = 2x - 0.7$
$0.5x - .15 = 2x - 0.7$
$-0.5x + 0.7 \quad -0.5x + 0.7$
$\frac{0.55}{1.5} = \frac{1.5x}{1.5}$
$\boxed{x = \frac{0.55}{1.5} = \frac{55}{150} = \frac{11}{30}}$

(10) $x + 1.1(2x + 2.4) = 1.02 - 3x$
$x + 2.2x + 2.64 = 1.02 - 3x$
$3.2x + 2.64 = 1.02 - 3x$
$+3x - 2.64 \quad -2.64 + 3x$
$\frac{6.2x}{6.2} = \frac{-1.62}{6.2}$
$\boxed{x = \frac{-1.62}{6.2} = \frac{-162}{620} = \frac{-81}{310}}$

(11) $34x - 53 = 37x + 12$
$-32x + 53 \quad -32x + 53$
$\frac{2x}{2} = \frac{65}{2}$ $\boxed{x = \frac{65}{2}}$

(12) $-2x + 35 = 4x + 14$
$+2x - 14 \quad +2x - 14$
$\frac{21}{6} = \frac{6x}{6}$ $\boxed{x = \frac{21}{6}}$

(13) $x + y = z$
$-y \quad -y$
$\boxed{x = z - y}$

(14) $4x - 5y = 1$
$+5y \quad +5y$
$\frac{4x}{4} = \frac{1 + 5y}{4}$ $\boxed{x = \frac{1 + 5y}{4}}$

(15) $y(3x - y) = -6(x - 7)$
$3xy - y^2 = -6x + 42$
$+6x + y^2 \quad +6x \quad +y^2$
$3xy + 6x = 42 + y^2$
$\frac{x(3y + 6)}{3y + 6} = \frac{42 + y^2}{3y + 6}$ $\boxed{x = \frac{42 + y^2}{3y + 6}}$

(16) $\frac{axb}{ab} = \frac{4}{ab}$ $\boxed{x = \frac{4}{ab}}$

(17) $ax + b = cx + d$
$-cx - b \quad -cx - b$
$ax - cx = d - b$
$\frac{x(a - c)}{a - c} = \frac{d - b}{a - c}$ $\boxed{x = \frac{d - b}{a - c}}$

(18) $2bx = -34x + 2$
$+34x \quad +34x$
$2bx + 34x = 2$
$\frac{x(2b + 34)}{2b + 34} = \frac{2}{2b + 34}$ $\boxed{x = \frac{2}{2b + 34}}$

(19) let c = price of 1 chair
$3c = (2c + 50) - 20$
$3c = 2c + 50 - 20$
$3c = 2c + 30$
$-2c \quad -2c$
$c = 30$ $\boxed{\text{1 chair costs \$30}}$

(20) let m = the number of months after 1/1/13

Chase Earnings = $2700m$
Emily Earnings = $3000(m - 5)$ since she starts 5 months later

trying to find when they have earned equal amounts

Chase Earnings = Emily Earnings

$2700m = 3000(m - 5)$
$2700m = 3000m - 15000$
$-2700m \quad -2700m + 15000$
$\frac{15000}{300} = \frac{300m}{300}$ $m = \frac{150}{3} = 50$

They earn the same amount 50 months after 1/1/13, which is 45 months after Emily starts working.