1a. $t - 4 = 6t - 4 \implies 5t = 0 \implies t = 0$

1b. $5x - 12 = 2x - 6 \implies 3x = 6 \implies x = 2$

2a. Solving gives $4x \leq -32 \implies x \leq -8$, which is the interval $(-\infty, -8]$

2b. Solving: $-18 < 3t \leq -12 \implies -6 < t \leq -4$, which is the interval $(-6, -4]$

3. $L = \dfrac{P - 2W}{2}$

4. Letting x be the number: $13 - 8x$

5a. We get $x \leq 6$ and $x \geq 2$, which can be written $2 \leq x \leq 6$ and is the interval $[2, 6]$.
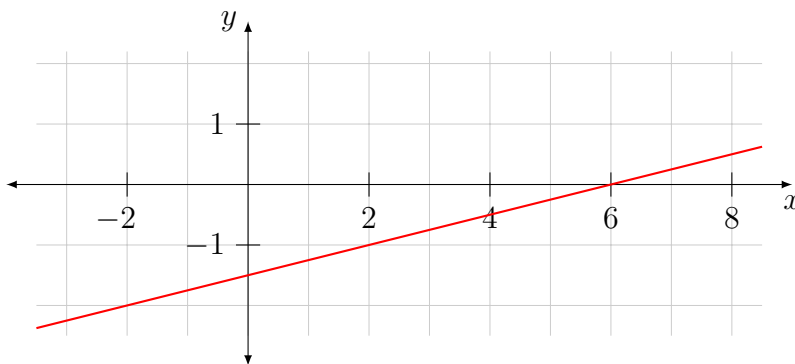
5b. We get $x < 11$ or $x > 14$, which has solution set $(-\infty, 11) \cup (14, \infty)$.

6. $|3x - 1| = 8$ implies that $3x - 1 = 8$ or $3x - 1 = -8$, which leads to $x = 3$ or $x = -\frac{7}{3}$. Solution set: $\left\{3, -\frac{7}{3}\right\}$.

7. $|2x + 7| < 9 \implies -9 < 2x + 7 < 9 \implies -16 < 2x < 2 \implies -8 < x < 1$. Solution set: $(-8, 1)$.

8a. x-intercept is $(6, 0)$, y-intercept is $\left(0, -\frac{3}{2}\right)$

8b. See graph below.

9. By the Midpoint Formula: $\left(\dfrac{-\frac{1}{2} + \frac{3}{2}}{2}, \dfrac{\frac{1}{3} + \frac{5}{3}}{2}\right) = \left(\frac{1}{2}, 1\right)$

10. $m = \dfrac{2 - (-3)}{5 - 9} = -\dfrac{5}{4}$

11. If x is the length of the middle side, then: $x + (x - 75) + (x + 375) = 3075 \Rightarrow 3x = 2775 \Rightarrow x = 925$. So middle side is 925 miles, short side is 850 miles, and long side is 1300 miles.

12. Let x be the number of dollars invested at 3%, so $12,000 - x$ is the amount invested at 7%. Then, tallying interest amounts from each investment, we get $0.03x + 0.07(12,000 - x) = 490$. Solving this equation yields $x = 8,750$. So \$8,750 was invested at 3%, and \$3,250 at 7%.

13. Equate the number of liters of pure alcohol, letting x be the number of liters of 18% solution to be added: $0.18x + 0.50(20) = 0.30(x + 20)$. Solving yields $0.12x = 4$ and finally $x = 33\frac{1}{3}$. Thus $33\frac{1}{3}$ liters of 18% solution must be added.

14. Slope is $m = \dfrac{10 - 5}{-8 - (-2)} = -\dfrac{5}{6}$, so using the point-slope formula we get $y - 5 = -\frac{5}{6}(x + 2)$. Slope-intercept form: $y = -\frac{5}{6}x + \frac{10}{3}$. Standard form: $5x + 6y = 20$.