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

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

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

2b. Solving: $-18 < 3t \leq -12 \Rightarrow -6 < t \leq -4$, which is the interval $(-6, -4]$
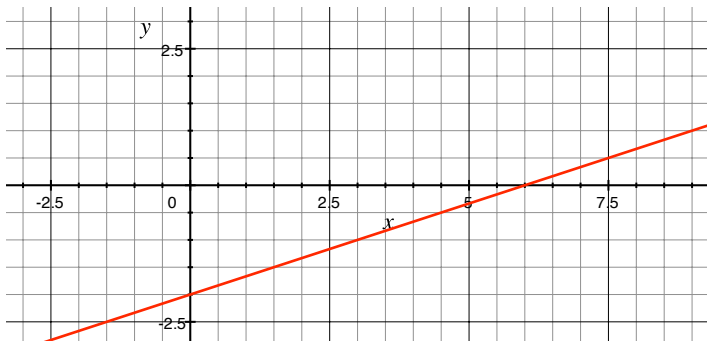
3. $L = \dfrac{P - 2W}{2}$

4. Letting x be the number: $17 - 6x$

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 $x < 8$ or $x > 14$, which has solution set $(-\infty, 8) \cup (14, \infty)$.

6a. The x-intercept is $(6, 0)$ and the y-intercept is $(0, -2)$.

6b.

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

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

9. 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.

10. Let x be the number of dollars invested at 3%, so $12,000 - x$ is the amount invested at 5%. Then, tallying interest amounts from each investment, we get $0.03x + 0.05(12,000 - x) = 440$. Solving this equation yields $x = 8,000$. So $8,000 was invested at 3%, and $4,000 at 5%.

11. Equate the number of liters of pure alcohol, letting x be the number of liters of 14% solution to be added: $0.14x + 0.50(20) = 0.30(x + 20)$. Solving yields $0.16x = 4$ and finally $x = 25$. Thus 25 liters of 14% solution must be added.