Pre-Algebra
HW 7: Solving Equations: SOLUTIONS

Solve:

1. $-2(x+4) = x - 1$

   $-2x - 4 = x - 1$
   $-2x - x = -1 + 4$
   $-3x = 3$
   $x = -1$

2. $\frac{1}{3}(6x - 15) = 10$

   $(6x - 15) = \frac{10}{\frac{1}{3}}$
   $(6x - 15) = 10 * \frac{3}{1}$
   $(6x - 15) = 30$
   $6x = 30 + 15$
   $6x = 45$
   $x = \frac{45}{6}$
   $x = \frac{15}{2}$
   $x = 7.5$

3. $-(2x - 4) = 4x + 8$

   $-2x + 4 = 4x + 8$
   $-2x - 4x + 4 = +8$
   $-2x - 4x = +8 - 4$
   $-6x = +4$
   $x = -\frac{4}{6}$
   $x \approx -0.667$

4. $-3x + 6 < 24$

   $-3x < 24 - 6$
   $-3x < 18$
   $-x < \frac{18}{3}$
   $-x < 6$

$x > -6$

Translate into an equation and solve:

1. Ann brought three grapefruits to the party. Bobby brought three more than twice the number Ann brought. How many grapefruits were there all together?

   $Ann = 3$
   $Bobby = 3 + (2 * Ann)$
   So the total number is
   $N = Bobby + Ann = (3 + (2 * Ann)) + Ann = (3 + (2 * 3)) + 3 = (3 + 6) + 3 = 12$

2. Room temperature is 70 degrees Fahrenheit. Water must be kept at least 3 degrees less than half of room temperature in order to stay frozen. Solve for the freezing temperature of ice.

   $Room = 70$
   $Water \leq \frac{Room}{2} - 3$
   $Water \leq 35 - 3$
   $Water \leq 32$
   The freezing point of water is 32 degrees Farhenheit

3. A garden has a perimeter of 64m. If the width of the garden is one half of the length, solve for the length and width of the garden.

   $Perimeter = 64$
   $width = \frac{length}{2}$
   $Perimeter = length + length + width + width$
   $Perimeter = length + length + \frac{length}{2} + \frac{length}{2}$
   $Perimeter = length * (1 + 1 + \frac{1}{2} + \frac{1}{2})$
   $Perimeter = length * 3$
   $length * 3 = Perimeter$
   $length = \frac{Perimeter}{3} = \frac{64}{3}$
   $width = \frac{length}{2} = \frac{\frac{64}{3}}{2} = \frac{64}{3*2} = \frac{64}{6} = \frac{32}{3}$

   $length = \frac{64}{3} \approx 21.333$
   $width = \frac{32}{3} \approx 10.667$