

HW #71

① $p^2 + 14p - 38 = 0$
 $\quad \quad \quad +38 \quad +38$

$a = 1 \text{ or } 1^2$ $\frac{b}{2a} = \frac{14}{2(1)} = 7$
 $\frac{b}{2a} = \frac{14}{2}$
 $c = 7^2 \text{ or } 49$

$p^2 + 14p + 49 = 38 + 49$

$\sqrt{(p+7)^2} = \sqrt{87}$

$p+7 = \pm \sqrt{87}$

$\quad -7 \quad -7$

$p = -7 \pm \sqrt{87}$ exact

$\rightarrow x \approx -7 + 9.33$

$\rightarrow x \approx -7 - 9.33$

$x \approx 2.33$
 $x \approx -16.33$

approx

② $v^2 + 6v - 59 = 0$
 $\quad \quad \quad +59 \quad +59$

$a = 1 \text{ or } 1^2$
 $\frac{b}{2a} = \frac{6}{2} = 3$
 $c = 3^2 \text{ or } 9$

$v^2 + 6v + 9 = 59 + 9$

$\sqrt{(v+3)^2} = \sqrt{68}$

$v+3 = \pm \sqrt{68}$

$\quad \quad \quad \sqrt{4 \cdot 17}$

$v+3 = \pm 2\sqrt{17}$

$\quad -3 \quad -3$

$v = -3 \pm 2\sqrt{17}$ exact

$\rightarrow x \approx -3 + 8.25$

$\rightarrow x \approx -3 - 8.25$

$x \approx 5.25$

$x \approx -11.25$

approx

③ $a^2 + 14a - 51 = 0$
 $\quad \quad \quad +51 \quad +51$

$a = 1 \text{ or } 1^2$

$b = 14$

$c = 7^2 \text{ or } 49$

$\frac{14}{2(1)} = \frac{14}{2} = 7$

$a^2 + 14a + 49 = 51 + 49$

$\sqrt{(a+7)^2} = \sqrt{100}$

$a+7 = \pm 10$

$a+7=10$ or $a+7=-10$
 $\quad -7 \quad -7$ $\quad -7 \quad -7$

$a = 3$

$a = -17$

$$\textcircled{4} \quad x^2 - 12x + 11 = 0$$

-11 -11

$$a = 1 \text{ or } 1^2 \quad \frac{-12}{2(1)} = -6$$

$$b = -12$$

$$c = (-6)^2 \text{ or } 36$$

$$x^2 - 12x + 36 = -11 + 36$$

$$\sqrt{(x-6)^2} = \sqrt{25}$$

$$x-6 = \pm 5$$



$$x-6 = 5 \quad \text{or} \quad x-6 = -5$$

$$+6 \quad +6$$

$$+6 \quad +6$$

$$\boxed{x=11}$$

$$\boxed{x=1}$$

$$\textcircled{5} \quad x^2 + 6x + 8 = 0$$

-8 -8

$$a = 1 \text{ or } 1^2$$

$$b = 6$$

$$\frac{6}{2(1)} = 3$$

$$c = 3^2 \text{ or } 9$$

$$x^2 + 6x + 9 = -8 + 9$$

$$\sqrt{(x+3)^2} = \sqrt{1}$$

$$x+3 = \pm 1$$



$$x+3 = 1 \quad \text{or} \quad x+3 = -1$$

$$-3 \quad -3$$

$$-3 \quad -3$$

$$\boxed{x=-2}$$

$$\boxed{x=-4}$$

$$\textcircled{6} \quad n^2 - 2n - 3 = 0$$

$$\quad \quad \quad +3 \quad +3$$

$$a = 1 \text{ or } 1^2 \quad \frac{-2}{2(1)} = -1$$

$$b = -2$$

$$c = (-1)^2 \text{ or } 1$$

$$\frac{n^2 - 2n + 1 = 3 + 1}{}$$

$$\sqrt{(n-1)^2} = \sqrt{4}$$

$$n-1 = \pm 2$$

$$n-1 = 2 \text{ or } n-1 = -2$$

$$\boxed{n=3} \quad \boxed{n=-1}$$

$$\textcircled{7} \quad r^2 - 4r - 91 = 7$$

$$\quad \quad \quad +91 \quad +91$$

$$a = 1 \text{ or } 1^2$$

$$\frac{-4}{2(1)} = -2$$

$$b = -4$$

$$c = (-2)^2 \text{ or } 4$$

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$$\frac{r^2 - 4r + 4 = 98 + 4}{}$$

$$\sqrt{(r-2)^2} = \sqrt{102}$$

$$r-2 = \pm \sqrt{102}$$

$$\boxed{r = 2 \pm \sqrt{102}} \text{ exact}$$

$$r \approx 2 + 10.10$$

$$\boxed{r \approx 12.10}$$

approx.

$$r \approx 2 - 10.10$$

$$\boxed{r \approx -8.10}$$

$$\textcircled{10} \quad x^2 - 10x + 26 = 8$$

$$\quad \quad \quad -26 \quad -26$$

$$a = 1 \text{ or } 1^2$$

$$\frac{-10}{2(1)} = -5$$

$$b = -10$$

$$c = (-5)^2 \text{ or } 25$$

$$\frac{x^2 - 10x + 25 = -18 + 25}{}$$

$$\sqrt{(x-5)^2} = \sqrt{7}$$

$$x-5 = \pm \sqrt{7}$$

$$\quad \quad \quad +5 \quad +5$$

$$\boxed{x = 5 \pm \sqrt{7}} \text{ exact}$$

$$\rightarrow x \approx 5 + 2.65$$

$$\boxed{x \approx 7.65}$$

approx.

$$x \approx 5 - 2.65$$

$$\boxed{x \approx 2.35}$$

$$\textcircled{15} \quad \begin{array}{ccc} 5k^2 & = & 60 - 20k \\ +20k & & +20k \end{array}$$

$$\frac{5k^2 + 20k}{5} = \frac{60}{5}$$

$$k^2 + 4k = 12$$

$$k^2 + 4k + 4 = 12 + 4$$

$$\sqrt{(k+2)^2} = \sqrt{16}$$

$$k+2 = \pm 4$$



$$k+2=4 \quad \text{or} \quad k+2=-4$$

$$\begin{array}{cc} \begin{array}{c} -2 \quad -2 \\ \hline k=2 \end{array} & \begin{array}{c} -2 \quad -2 \\ \hline k=-6 \end{array} \end{array}$$

$$\begin{array}{l} a=1 \text{ or } 1^2 \\ b=4 \\ c=(2)^2 \text{ or } 4 \end{array}$$

$$\frac{4}{2(1)} = 2$$

$$\textcircled{16} \quad \begin{array}{ccc} 6x^2 - 48 & = & -12x \\ +12x + 48 & & +48 + 12x \end{array}$$

$$\frac{6x^2 + 12x}{6} = \frac{48}{6}$$

$$x^2 + 2x + 1 = 8 + 1$$

$$\sqrt{(x+1)^2} = \sqrt{9}$$

$$x+1 = \pm 3$$



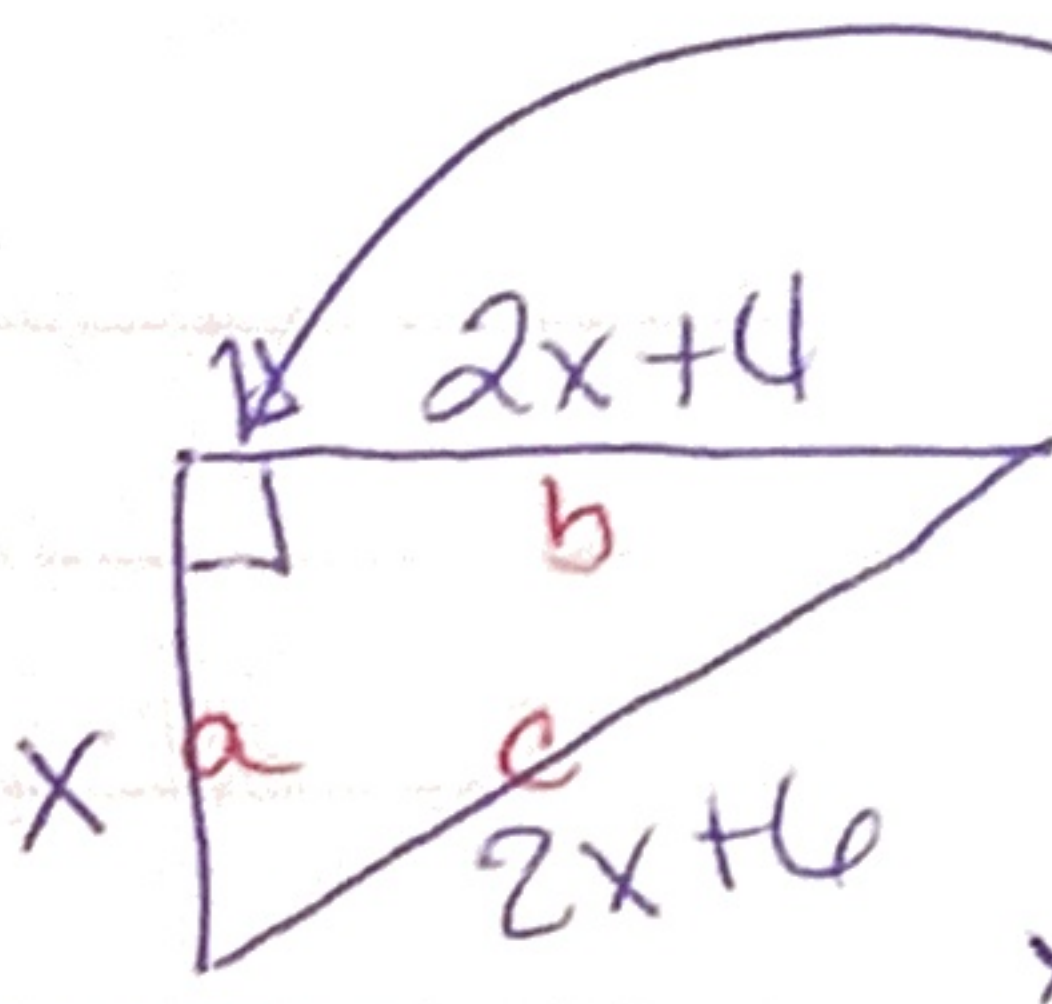
$$x+1=3 \quad x+1=-3$$

$$\begin{array}{cc} \begin{array}{c} -1 \quad -1 \\ \hline x=2 \end{array} & \begin{array}{c} -1 \quad -1 \\ \hline x=-4 \end{array} \end{array}$$

$$\begin{array}{l} a=1 \text{ or } 1^2 \\ b=2 \\ c=(1)^2 \text{ or } 1 \end{array}$$

$$\frac{2}{2(1)} = 1$$

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Pyth. Thm!
 $a^2 + b^2 = c^2$

$$x^2 + (2x+4)^2 = (2x+6)^2$$

$$x^2 + 4x^2 + 16x + 16 = 4x^2 + 24x + 36$$

$$\underline{-4x^2} \qquad \underline{-4x^2}$$

$$x^2 + 16x + 16 = 24x + 36$$

$$\underline{-24x} \quad \underline{-16} \quad \underline{-24x} \quad \underline{-16}$$

$$x^2 - 8x + 16 = 20 + 16$$

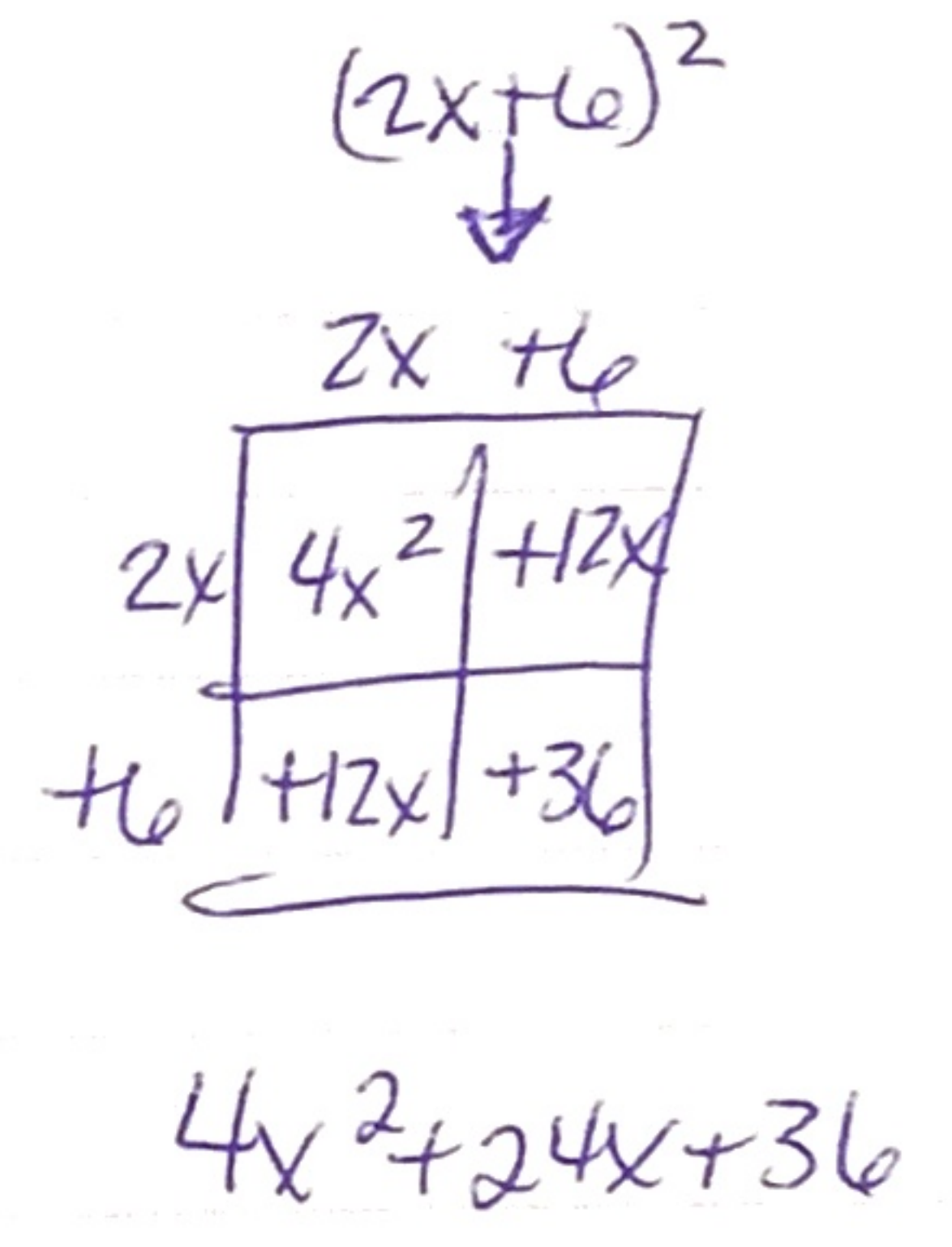
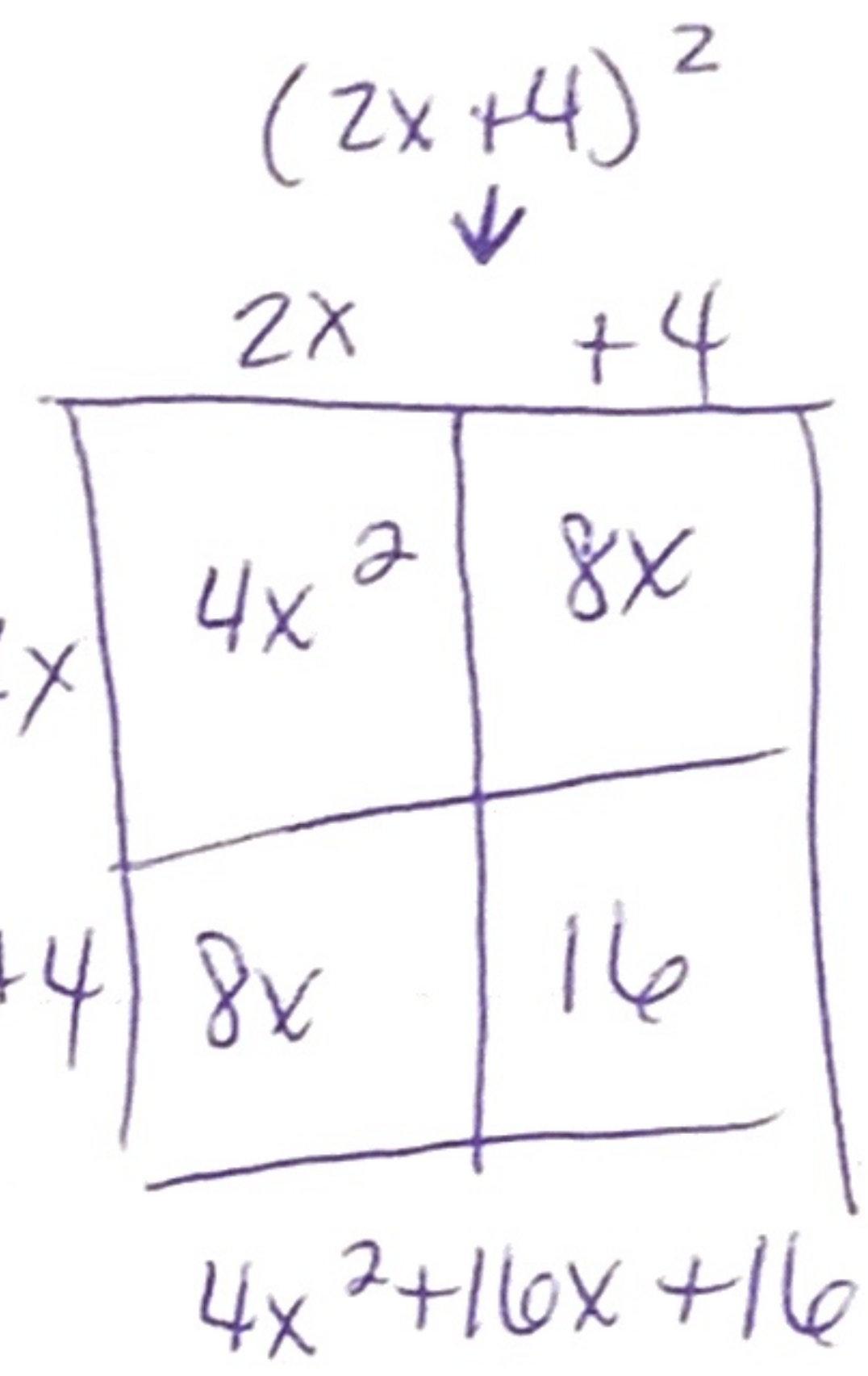
$$\sqrt{(x-4)^2} = \sqrt{36}$$

$$x-4 = \pm 6$$

$$x-4=6 \text{ or } x-4=-6$$

$$\boxed{x=10}$$

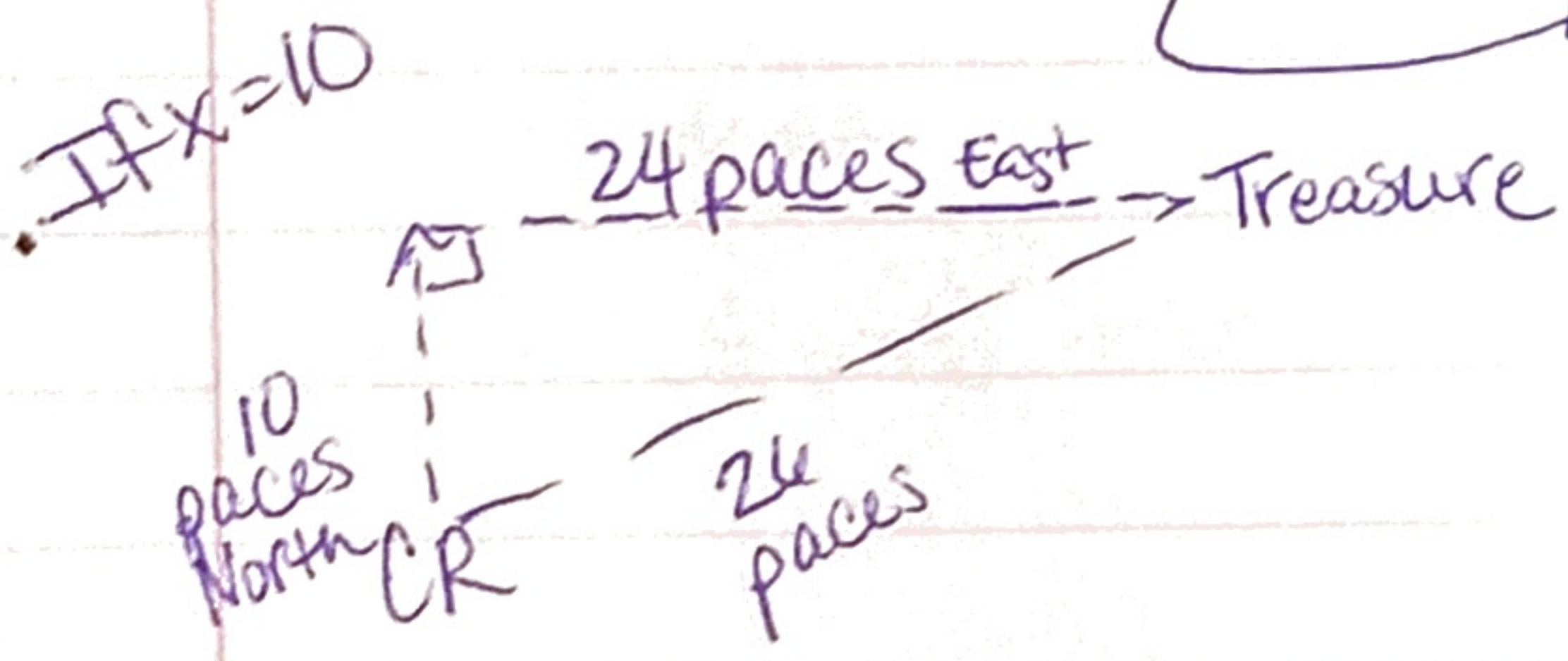
$$\boxed{x=-2}$$



$$a = 1 \text{ or } 1^2$$

$$b = -8 \quad \frac{-8}{2} = -4$$

$$c = (-4)^2 \text{ or } 16$$



would not make a right Δ so not possible in the situation

