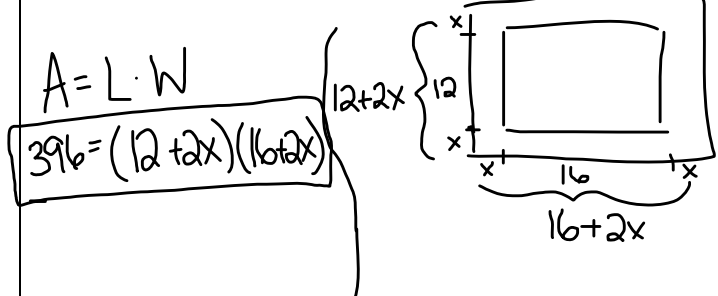


Part III – Show all work!

33. a.) $m(x) = (3x-1)(3-x) + 4x^2 + 19$
 $m(x) = 9x - 3x^2 - 3 + x + 4x^2 + 19$
 $m(x) = x^2 + 10x + 16$

b.) $m(x) = 0$
 $0 = x^2 + 10x + 16$
 $0 = (x+8)(x+2)$
 $\{-8, -2\}$

34. a.)



b.)

Area is length times width.
 To find the length of the garden with the walkway, add the length (12) to 2 times the added width of the walkway (2x) to get $12+2x$.
 Follow the same process to find the width is $16+2x$.
 Multiply the length and width together to equal the area (396).

c.)

$396 = (12+2x)(16+2x)$
 $396 = 192 + 24x + 32x + 4x^2$
 $396 = 4x^2 + 56x + 192$
 $- 396 \qquad \qquad \qquad - 396$

 $0 = 4x^2 + 56x - 204$
 $0 = 4(x^2 + 14x - 51)$
 $0 = 4(x+17)(x-3)$
 ~~$x = -17$~~ $x = 3$
 omit

3 meters

35. a.)

$$A(n) = A(0) + dn$$

$d = \$2.75$ (amount on card decreases by \$2.75 per movie)

$A(0) = \$175$ (initial amount on card)

$$A(n) = 175 - 2.75n$$

b.) $A(n) \geq 0$ (we want the smallest value of $A(n)$ that won't be negative).

$$175 - 2.75n \geq 0$$

$$175 \geq 2.75n$$

$$63.\overline{63} \geq n$$

largest whole value of $n = 63$

63 movie rentals

36. a.)

$d = \#$ of dogs
 $c = \#$ of cats

$$2.35c + 5.50d = 89.50$$

b.) $2.35(8) + 5.50(14) = 89.50$

$$18.80 + 77 = 89.50$$

$$95.80 \neq 89.50$$

Not possible - 8 cats and 14 dogs cost \$95.80 to be cared for, not \$89.50

c.)

$$2.35c + 5.50d = 89.50$$

$$\begin{array}{r} c + d = 22 \\ \hline \rightarrow c = 22 - d \end{array}$$

$$2.35(22 - d) + 5.50d = 89.50$$

$$51.70 - 2.35d + 5.50d = 89.50$$

$$51.70 + 3.15d = 89.50$$

$$3.15d = 37.8$$

$$d = 12$$

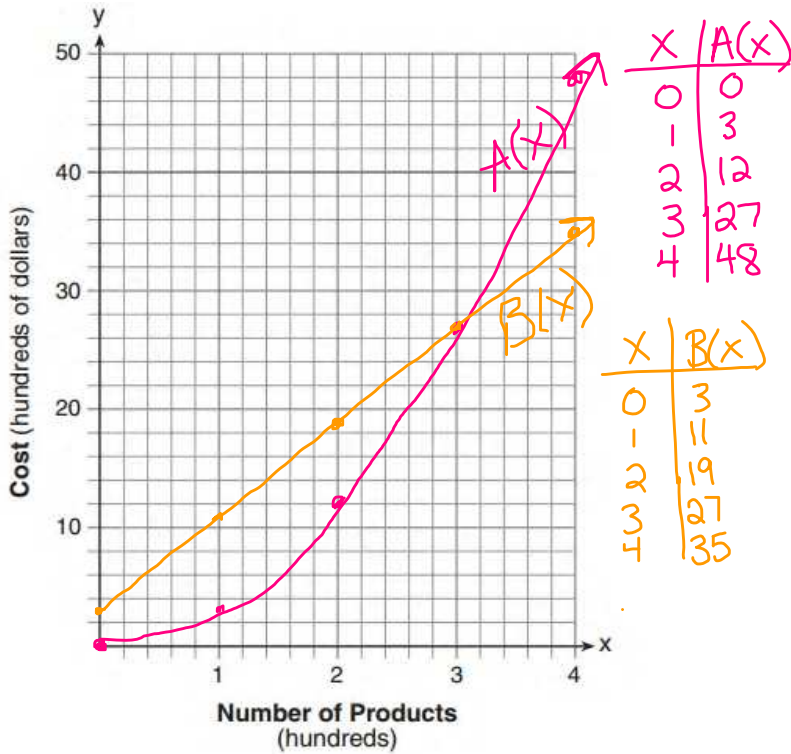
$$c + d = 22$$

$$c + 12 = 22$$

$$c = 10$$

10 cats

37. a.)



b.) $x=3$

This is where
the 2 graphs intersect

c.)

$$A(2) = 3(2)^2 = 3 \cdot 4 = 12$$

$$B(2) = 8(2) + 3 = 16 + 3 = 19$$

} Justification

Site A costs less