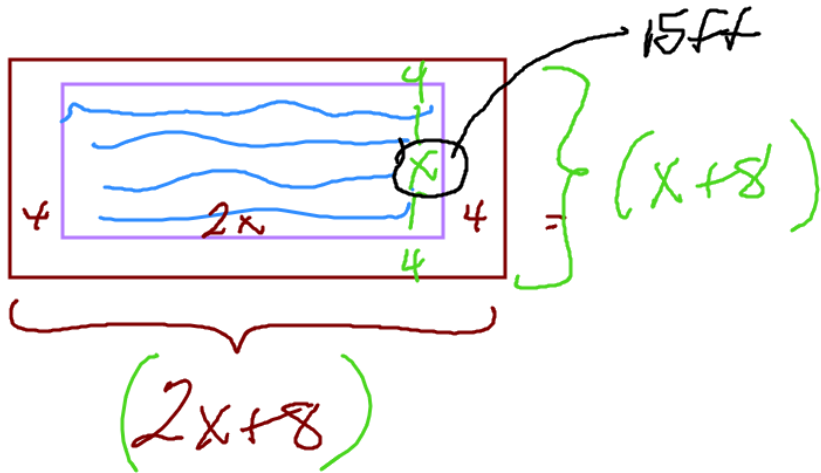


# APPLICATIONS OF QUADRATIC FUNCTIONS (8.4, pg 336)



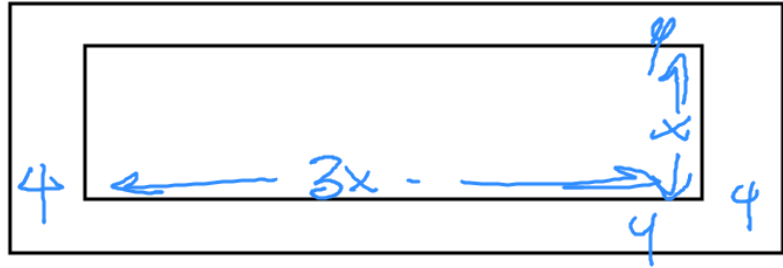
$$A = l \cdot w$$
$$= (2x+8)(x+8)$$

FOLL

$$= 2x^2 + 16x + 8x + 64$$

$$A = \underbrace{2x^2}_{16} + \underbrace{24x}_{15} + 64$$

Try 1 - pg 336



$$A = (3x + 8)(x + 8)$$

$$= 3x^2 + 24x + 8x + 64$$

$$A = 3x^2 + 32x + 64$$

height + time

$$h(t) = -16t^2 + v_0 t + h_0$$

initial velocity      initial height

$16 \text{ ft/sec}$        $= 30 \text{ ft}$

$$h(t) = -16t^2 + 16t + 30$$

$$t = -\frac{b}{2a} = \frac{-16}{2(-16)} = \frac{1}{2}$$

$$h\left(\frac{1}{2}\right) = -16\left(\frac{1}{2}\right)^2 + 16\left(\frac{1}{2}\right) + 30$$

$$= -16 \cdot \frac{1}{4} + 8 + 30 = -4 + 38 = 34$$



Answer = 4 ft

Try p 337

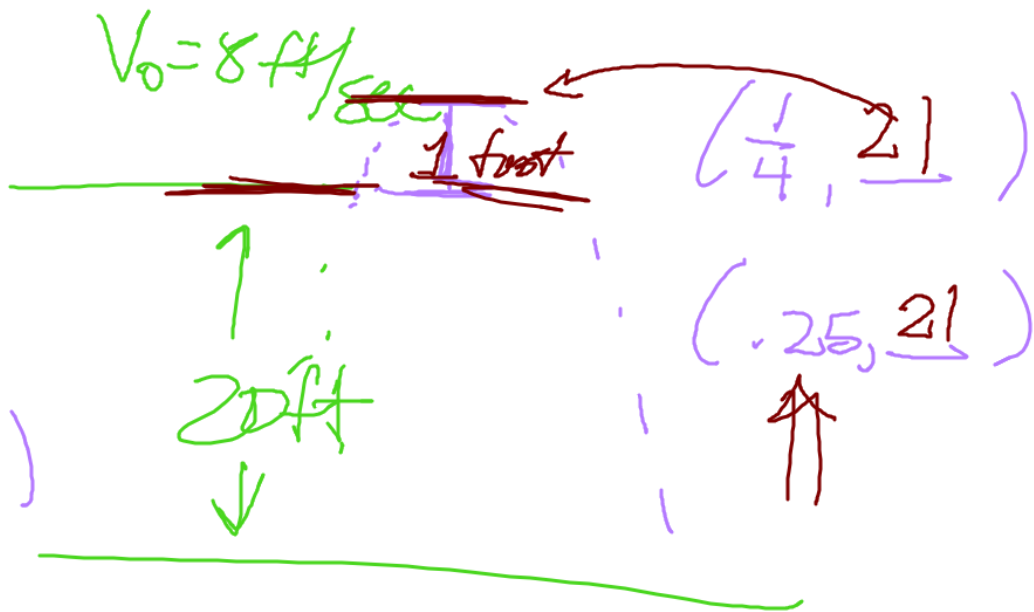
$$h(t) = -16t^2 + 8t + 20$$

$$t = \frac{-b}{2a} = \frac{-8}{2(-16)} = \frac{-8}{-32} = \left(\frac{1}{4}\right)$$

$$h\left(\frac{1}{4}\right) = -16\left(\frac{1}{4}\right)^2 + 8\left(\frac{1}{4}\right) + 20$$

$$= -1\left(\frac{1}{16}\right) + 2 + 20$$

$$-1 + 2 + 20 = 21$$



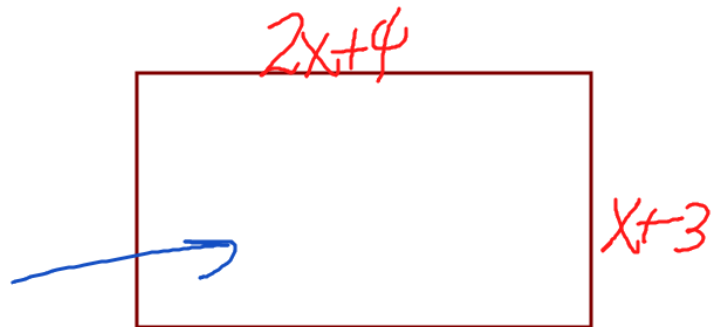
#5 p 340  $v_0 = 32 \text{ ft/sec}$   $h_0 = 20 \text{ ft}$

$$h(t) = -16t^2 + 32t + 20$$

$$t = \frac{-32}{2(-16)} = \frac{32}{32} = \boxed{1} \text{ sec.}$$



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$$\begin{aligned} A &= 2(2.5) + 10(2.5) + 12 \\ &= 12.5 - 25 + 12 \\ &= 24.5 - 25 = -0.5 \end{aligned}$$

a)  $A = l \cdot w = (2x+4)(x+3) = 2x^2 + 6x + 4x + 12$

b)  $A = 2x^2 + 10x + 12$

c)  $x=8$   $A = 2(8^2) + 10(8) + 12$   
 $= 128 + 80 + 12$   
 $= 148 + 80 = 228$

$$x = \frac{-b}{2a} = \frac{-10}{2(2)} = \frac{-10}{4} = -2.5$$

