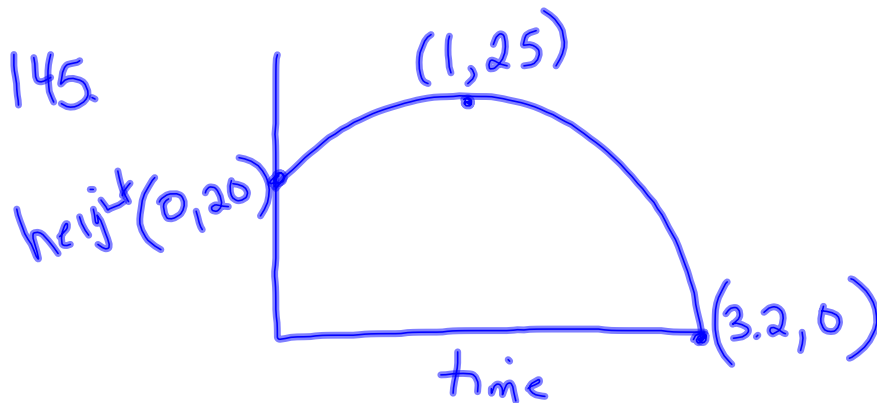


# Quadratic Story Problem Sheet



a) 20 m

b)  $\frac{-b}{2a} = \frac{-10}{2(-5)} = 1 \text{ sec}$

c)  $-5(1)^2 + 10(1) + 20$   
 $= 25 \text{ m}$

d)  $-5t^2 + 10t + 20 = 0$   
 Solve by quadratic formula

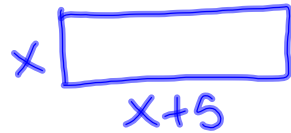
ans: 3.2 seconds

e)  $-5t^2 + 10t + 20 = 22$  ← height of 22m  
 $-5t^2 + 10t - 2 = 0$

Solve by quadratic formula

$t = 0.23 \text{ sec} + 1.77 \text{ sec}$

151.



Area =  $300\text{m}^2$

$$x(x+5) = 300$$

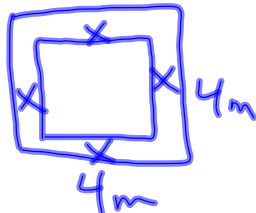
$$x^2 + 5x = 300$$

$$x^2 + 5x - 300 = 0$$

Solve by factoring or quadratic formula.

ans: 20 m & 15 m

152.



Half the area

$$(4 - 2x)(4 - 2x) = 8$$

$$16 - 8x - 8x + 4x^2 = 8$$

$$4x^2 - 16x + 8 = 0$$

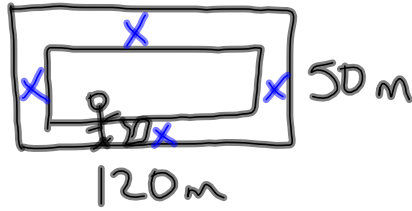
or  $x^2 - 4x + 2 = 0$

$$x = \frac{4 \pm \sqrt{(-4)^2 - 4(1)(2)}}{2(1)}$$

$$= \frac{4 \pm \sqrt{8}}{2}$$

$\rightarrow \frac{4 + 2.8}{2} = \frac{6.8}{2} = \frac{3.4}{1} = 3.4$  (too large)  
 $\rightarrow \frac{4 - 2.8}{2} = \frac{1.2}{2} = 0.6$

153.



Half the Area

$$(new\ length)(new\ width) = new\ Area$$

$$(120 - 2x)(50 - 2x) = 3000$$

Ans: 10m

154.



Area = 42.9m<sup>2</sup>

$$(x + 7)(x + 3.95) = 42.9$$

Ans: 1.25m

157.  $xy = 32$

$$x - y = 14 \Rightarrow x = 14 + y$$

$$(14 + y)y = 32$$

Solve by quad. formula.

Answers to #'s left to do...

146. a) 5m

b) 0.82 sec

c) 8.27m

d) 2.12 sec

e)  $0 \leq t \leq 2.12$

$$0 \leq h(t) \leq 8.27$$

155. 2.4m

156. 16 + 6 cm

157.  $-16t - 2$  or  $2 + 16$

158.  $-8t - 9$  or  $8 + 9$

159.  $20t + 22$  or  $-20t - 22$