

8", 13"

$$w(w+5) = 104$$

$$w^2 + 5w = 104$$

$$w^2 + 5w - 104 = 0$$

$$(w+8)(w-13) = 0$$

$$w = 8, -13$$

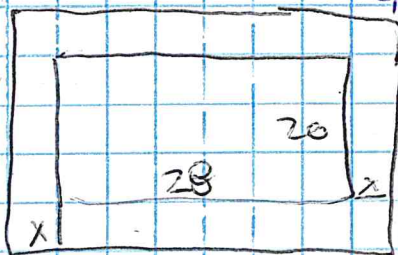
2.  $w = \frac{k}{d^2}$

$$200 = \frac{k}{4000^2}$$

$$w = \frac{3,200,000,000}{5000^2}$$

$$k = 3,200,000,000 \quad w = 128 \text{ lbs.}$$

3.



$$x = 4'$$

$$(20+2x)(28+2x) = 1008$$

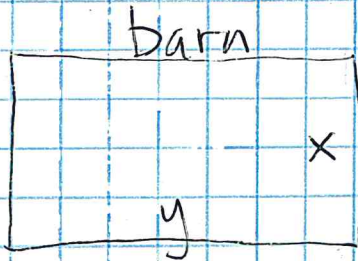
$$560 + 56x + 40x + 4x^2 = 1008$$

$$4x^2 + 96x + 560 = 1008$$

$$4x^2 + 96x - 448 = 0$$

$$x = -28, 4$$

4.



$$A = xy \leftarrow \text{Max}$$

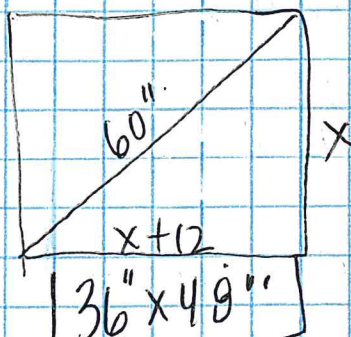
$$2x + y = 100$$

$$y = 100 - 2x$$

$$A = x(100 - 2x) \leftarrow \text{Max}$$

max of  $1250 \text{ ft}^2$  @ when  $x = 25$

5.



$$x^2 + (x+12)^2 = 60^2$$

$$x^2 + x^2 + 24x + 144 = 3600$$

$$2x^2 + 24x + 144 = 3600$$

$$2x^2 + 24x - 3456 = 0$$

$$x = -18, 36$$

$$x = -18, 36$$

$$6. y = -4.9x^2 + 39.2x$$

$$-4.9x^2 + 39.2x - 34.3 = 0$$

$$1 \text{ sec} \leq x \leq 7 \text{ sec}$$

$$x = 1, 7$$



$$\boxed{6 \text{ sec}}$$

$$7. l = \frac{k}{h}$$

$$3.5 = \frac{k}{360}$$

$$l = \frac{1260}{h}$$

$$l = \frac{1260}{72}$$

$$k = 1260$$

$$\boxed{l = 17.5 \text{ yrs}}$$

$$8. f = k \cdot s \quad f = 10 \text{ s}$$

$$50 = k \cdot 5$$

$$120 = 10(s)$$

$$k = 10$$

$$\boxed{s = 12''}$$

$$9. y = -4.9x^2 + 19.6x + 58.8 = 0$$

$$x = 6, \cancel{7}$$

$$\boxed{10 \text{ sec}}$$

$$10. t^2 = k d^3$$

$$t^2 = \frac{365^2}{d^3} \cdot d^3$$

$$(365)^2 = k (d^3)$$

$$t^2 = \frac{(365)^2}{d^3} (1.5d)^3$$

$$k = \frac{365^2}{d^3}$$

$$t^2 = \frac{(365)^2}{d^3} (3.375d^3)$$

$$\sqrt{t^2} = \sqrt{449634.375}$$

$$\boxed{t = 670.547 \text{ days}} \text{ or } 1.837 \text{ earth years.}$$