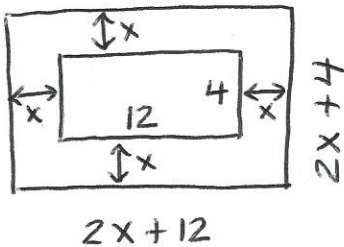


## ALGEBRA RH

## HW

1. A rectangular poster that is 12 inches by 4 inches is surrounded by a frame of uniform width. If the area of the photo and the frame is 180 square inches, find the width of the frame.



$$(2x+12)(2x+4) = 180$$

$$4x^2 + 24x + 8x + 48 = 180$$

$$4x^2 + 32x - 132 = 0$$

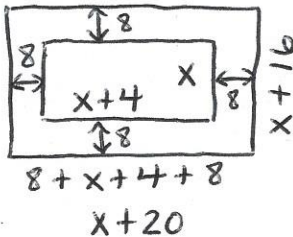
$$x^2 + 8x - 33 = 0$$

$$\text{reject } (x+11)(x-3) = 0$$

$$x = -11 \quad | \quad x = 3$$

$x = \text{width}$   
of frame  
= 3 inches

2. Mike wants to have a walkway installed around his rectangular pool. The pool is 4 feet longer than it is wide. The width of the walkway measures 8 feet. Together, the pool and the walkway cover an area of 572 square feet. Find the dimensions of the pool.



$$(x+16)(x+20) = 572$$

$$x^2 + 20x + 16x + 320 = 572$$

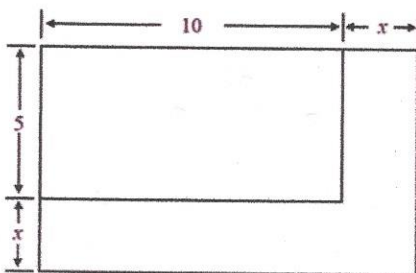
$$x^2 + 36x - 252 = 0$$

$$\text{reject } (x+42)(x-6) = 0$$

$$x = -42 \quad | \quad x = 6$$

width of pool  
=  $x = 6$  feet  
length of pool  
=  $x+4 = 6+4$   
= 10 feet

3. A rectangular patio that originally measured 5 feet by 10 feet was extended on one side each by  $x$  feet. The area of the new, larger, L-shaped extension is 126 square feet. Find the value of  $x$ .



Area of large rectangle - Area of small rectangle

= Area of L-shaped extension

$$(x+5)(x+10) - 50 = 126$$

$$x^2 + 15x + 50 - 50 = 126$$

$$x^2 + 15x - 126 = 0$$

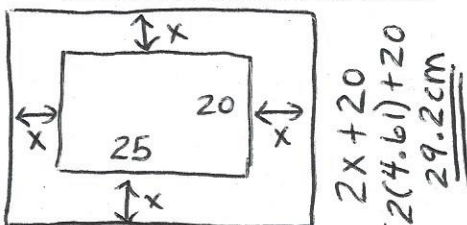
$$(x+21)(x-6) = 0$$

$$\text{reject } x+21=0 \quad | \quad x-6=0$$

$$x = -21 \quad | \quad x = 6$$

6 feet

4. A uniform border on a framed photograph has the same area as the photograph. What are the outside dimensions of the border if the dimensions of the photograph are 25 cm by 20 cm? Round answers to the nearest tenth.



$$(2x+25)(2x+20) = 1000$$

$$4x^2 + 90x + 500 = 1000$$

$$4x^2 + 90x - 500 = 0$$

$$a = 4 \quad b = 90 \quad c = -500$$

$$x = \frac{-90 \pm \sqrt{(90)^2 - 4(4)(-500)}}{2(4)}$$

$$x = \frac{-90 \pm \sqrt{16100}}{8}$$

$$x = \frac{-90 + \sqrt{16100}}{8}$$

$$= 4.6107 \dots$$

$$= 4.6 \text{ cm}$$

$$x = \frac{-90 - \sqrt{16100}}{8}$$

$$= -27.1107 \dots$$

$$= -27.1$$

reject

$$2(4.61) + 25$$

$$A \text{ photo} = 500 \text{ cm}$$

$$A \text{ border} = 500 \text{ cm}$$