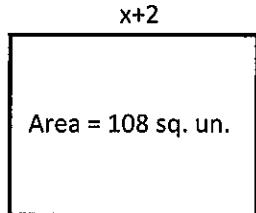


## Homework 34.1

Solve each figure for the variable given.

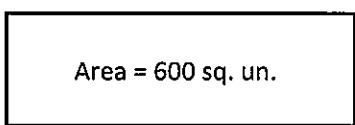
1)



$$(x+2)(x+6) = 108$$

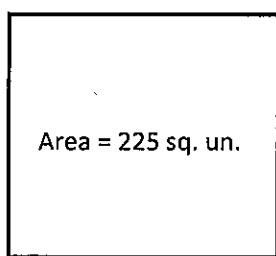
$$\begin{array}{r} x^2 + 8x + 12 = 108 \\ -108 \quad -108 \\ \hline x^2 + 8x - 96 = 0 \end{array}$$

3)



$$\begin{array}{l} (x+20)(x-5) = 600 \\ x^2 + 20x - 5x - 100 = 600 \\ -600 \quad -600 \\ \hline x^2 + 15x - 700 = 0 \end{array}$$

5)



$$(x-5)(x-5) = 225$$

$$\begin{array}{r} x^2 - 10x + 25 = 225 \\ -225 \quad -225 \\ \hline x^2 - 10x - 200 = 0 \end{array}$$

$$\begin{array}{l} a = 1 \\ b = -10 \\ c = -200 \end{array}$$

$$x = \frac{10 \pm \sqrt{900}}{2} = \frac{10 \pm 30}{2} = \frac{40}{2} = 20$$

$$a = 1$$

$$b = 8$$

$$c = -96$$

$$x = \frac{-8 \pm \sqrt{(8)^2 - 4(1)(-96)}}{2(1)} = \frac{-8 \pm \sqrt{448}}{2} = \frac{-8 \pm 8\sqrt{7}}{2}$$

$$= -4 + 4\sqrt{7}$$

$$= -4 + 4\sqrt{7} \text{ or } -4 - 4\sqrt{7}$$

$$= 6.6$$

$$x = \frac{-15 \pm \sqrt{(15)^2 - 4(1)(-700)}}{2(1)} = \frac{-15 \pm \sqrt{3025}}{2} = \frac{-15 \pm 55}{2} = \frac{40}{2} = 20$$

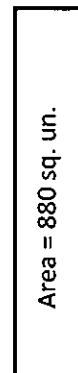
$$x = \frac{-15 - 55}{2} = \frac{-70}{2} = -35$$

$$x-5$$

$$x-20$$

$$x = \frac{-20 + 25}{2} = \frac{5}{2} = 2.5$$

2)



$$(x+20)(x+2) = 880$$

$$\begin{array}{r} x^2 + 20x + 2x + 40 = 880 \\ -880 \quad -880 \\ \hline x^2 + 22x = 0 \end{array}$$

$$x^2 + 22x - 840 = 0$$

$$x = \frac{-22 \pm \sqrt{(22)^2 - 4(1)(-840)}}{2(1)} = \frac{-22 \pm \sqrt{3844}}{2} = \frac{-22 \pm 62}{2}$$

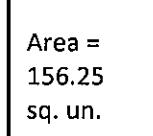
$$x = \frac{-22 + 62}{2} = \frac{40}{2} = 20$$

$$x = \frac{-22 - 62}{2} = \frac{-84}{2} = -42$$

$$(x+10)(x+10) = 156.25$$

$$\begin{array}{r} x^2 + 20x + 100 = 156.25 \\ -156.25 \quad -156.25 \\ \hline x^2 + 20x = 0 \end{array}$$

$$x+10$$



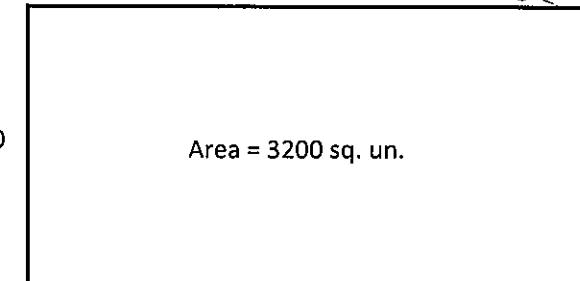
$$x+10$$

$$x^2 + 20x - 56.25 = 0$$

$$\begin{array}{l} a = 1 \\ b = 20 \\ c = -56.25 \end{array} \quad x = \frac{-20 \pm \sqrt{400 + 225}}{2} = \frac{-20 \pm \sqrt{625}}{2} = \frac{-20 \pm 25}{2} = \frac{5}{2} = 2.5$$

$$x-20$$

$$x-60$$



$$(x-60)(x-20) = 3200$$

$$\begin{array}{r} x^2 - 80x + 1200 = 3200 \\ -3200 \quad -3200 \\ \hline x^2 - 80x = 0 \end{array}$$

$$x^2 - 80x - 2000 = 0$$

$$x = \frac{80 \pm \sqrt{6400 + 8000}}{2} = \frac{80 \pm \sqrt{14400}}{2} = \frac{80 \pm 120}{2}$$

$$x = \frac{80 + 120}{2} = \frac{200}{2} = 100$$

**Factor each completely.**

7.  $n^2 - 5n - 50$

$$(n+5)(n-10)$$

$$\begin{array}{r} -50 \\ \hline 1 & 50 \\ 2 & 25 \\ \hline 15 & -10 \end{array}$$

8.  $a^2 - 5a + 6$

$$(a-2)(a-3)$$

$$\begin{array}{r} 6 \\ \hline 1 & 6 \\ -2 & -3 \end{array}$$

9.  $p^2 - 4p - 12$

$$(p+2)(p-6)$$

$$\begin{array}{r} -12 \\ \hline 1 & 12 \\ +2 & -6 \\ \hline 3 & 4 \end{array}$$

10.  $a^2 + 4a - 45$

$$(a-5)(a+9)$$

$$\begin{array}{r} -45 \\ \hline 1 & 45 \\ 3 & 15 \\ \hline -5 & +9 \end{array}$$

**Answers to Homework 34.1**

1. 6.583

2. 20

3. 20

4. 2.5

5. 20

6. 100

7.  $(n + 5)(n - 10)$

8.  $(a - 2)(a - 3)$

9.  $(p + 2)(p - 6)$

10.  $(a - 5)(a + 9)$