

The length of a rectangular field is 2 yards more than its width. Find the width if the area of the field is 120 yd<sup>2</sup>

So, if  $x$  is the width of the field, then its length must be  $x + 2$ . We know that the area is 120, and area is length multiplied by width. So, our equation for area becomes:

$$x(x+2)=120$$

We can rearrange this equation to make it look like a quadratic equation. Do this, and you end up with:

$$x^2+2x-120=0$$

We now apply the quadratic formula, which is:  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ . In our example,  $a = 1$ ,  $b = 2$  and  $c = -120$ . Put those into the equation and solve:

$$x = \frac{-2 \pm \sqrt{2^2 - 4 \times 1 \times (-120)}}{2 \times 1}$$

$$x = \frac{-2 \pm \sqrt{4 + 480}}{2}$$

$$x = \frac{-2 \pm \sqrt{484}}{2}$$

$$x = \frac{-2 \pm 22}{2}$$

$$x = \frac{-24}{2}, \frac{20}{2}$$

$$x = -12, 10.$$

We already knew that -12 was an answer, hence the answer you seek is 10 yards.