

HW: Worksheet/1-9 odd

Warm up:

Solve.

$$1) x^2 - 4x - 21 = 0$$

$$(x - 7)(x + 3) = 0$$

$$x = 7, -3$$

$$2) 3x^2 - 5x + 2 = 0$$

$$(3x - 2)(x - 1) = 0$$

$$x = \frac{2}{3}, 1$$

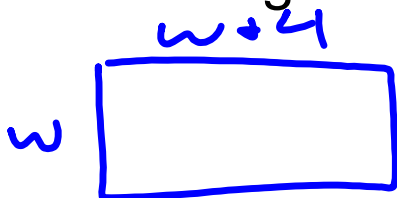
$$\frac{5 \pm \sqrt{25 - 4(3)(2)}}{2(3)}$$

$$\frac{5 \pm \sqrt{25 - 24}}{6}$$

$$\frac{5 \pm \sqrt{1}}{6}$$

$$\frac{5 \pm 1}{6}$$

The parks commission wants a new rectangular sign with an area of 25m^2 for the visitor center. The length of the sign is to be 4m longer than the width. To the nearest tenth of a meter, what will be the length and width of the sign?



$$\begin{aligned} w(w+4) &= 25 \\ w^2 + 4w &= 25 \\ \underline{-25 \quad -25} & \\ w^2 + 4w - 25 &= 0 \end{aligned}$$

$$\frac{-4 \pm \sqrt{16 - 4(1)(-25)}}{2}$$

$$\frac{-4 \pm \sqrt{16 + 100}}{2} = \frac{-4 \pm \sqrt{116}}{2} = \frac{-4 \pm 2\sqrt{29}}{2}$$

$$-2 \pm \sqrt{29}$$

$$-2 + \sqrt{29} \approx 3.4\text{m}$$

~~$$-2 - \sqrt{29} \approx -7.4\text{m}$$~~

$$3.4\text{m} \times 7.4\text{m}$$

The sum of a number and its square is 156.
Find the number.

$$\begin{array}{r} x^2 + x = 156 \\ -156 \quad -156 \\ \hline \end{array}$$

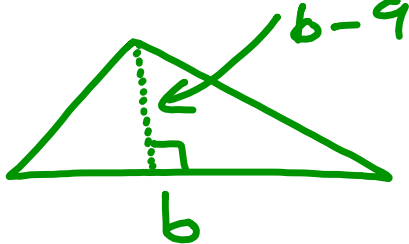
$$x^2 + x - 156 = 0$$

$$(x - 12)(x + 13) = 0$$

$$x = 12, -13$$

12 or -13

The altitude of a triangle is 9cm less than the base. The area is 143cm^2 . What are the altitude and the base?



$$\frac{1}{2}bh$$

$$\frac{1}{2}b(b-9) = 143$$

$$\frac{1}{2}b^2 - \frac{9}{2}b = 143$$

$$-143 \quad -143$$

$$\frac{9 \pm \sqrt{81 - 4(1)(-286)}}{2} \quad \left(\frac{1}{2}b^2 - \frac{9}{2}b - 143 \right) = (0) \cdot 2$$

$$\frac{9 \pm \sqrt{81 + 1144}}{2}$$

$$b^2 - 9b - 286 = 0$$

base = 22cm altitude = 13cm

$$\frac{9 \pm \sqrt{1225}}{2} = \frac{9 \pm 35}{2} = 22, \quad \cancel{13}$$

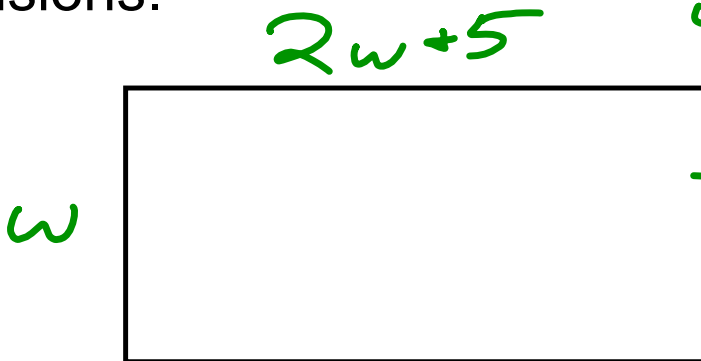
HW Solutions

1) The length of a rectangular table is 5in more than twice its width. Its area is 1950in^2 . Find the dimensions.

2) If ~~the~~ ^{each} side of a square is increased by 3cm, it's area is 121cm^2 . Find the length of a side of the original square.

3) Chris can run 1 km/h faster than Anastasia. Chris leaves school and runs into the sunset. Anastasia leaves school and runs south. After 2h, they are 30km apart. How fast can Chris run?

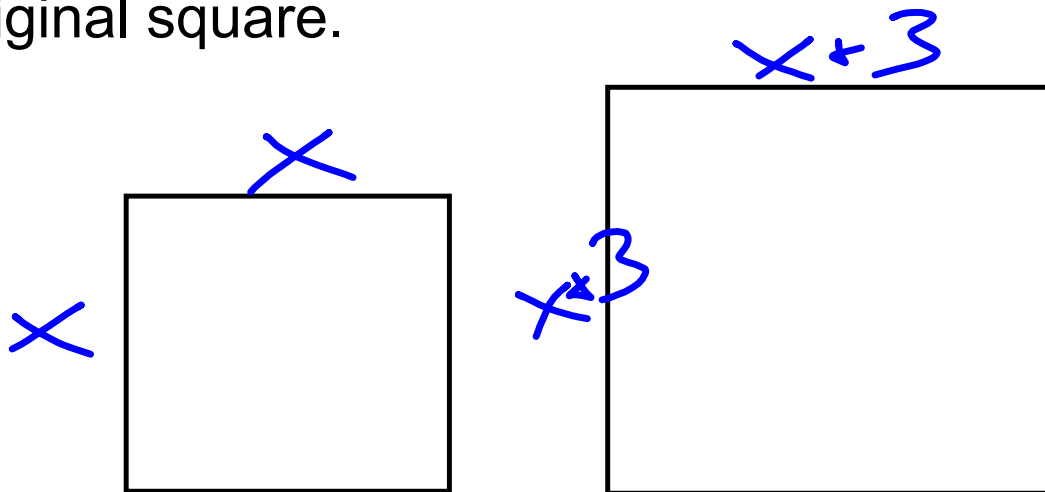
1) The length of a rectangular table is 5in more than twice its width. Its area is 1950in^2 . Find the dimensions.



30 in x 65 in

$$\begin{aligned}
 w(2w+5) &= 1950 \\
 2w^2 + 5w &= 1950 \\
 -1950 & \quad -1950 \\
 \hline
 2w^2 + 5w - 1950 &= 0 \\
 -5 \pm \sqrt{25 - 4(2)(-1950)} & \\
 \hline
 & \quad 4 \\
 -5 \pm \sqrt{25 + 15600} & \\
 \hline
 & \quad 4 \\
 -5 \pm \sqrt{15625} & \\
 \hline
 & \quad 4 \\
 -5 \pm 125 & \\
 \hline
 & \quad 4 \\
 30, -\cancel{130} & = -\cancel{130}
 \end{aligned}$$

2) If the side of a square is increased by 3cm, it's area is 121m^2 . Find the length of a side of the original square.



$$\sqrt{(x+3)^2} = \sqrt{121}$$

$$x+3 = \pm 11$$

$$x = -3 \pm 11 = 8, -14$$

8cm

3) Chris can run 1 km/h faster than Anastasia. Chris leaves school and runs into the sunset. Anastasia leaves school and runs south. After 2h, they are 30km apart. How fast can Chris run?

