

1) The Square of a number minus twice the number is 48. Find this number.

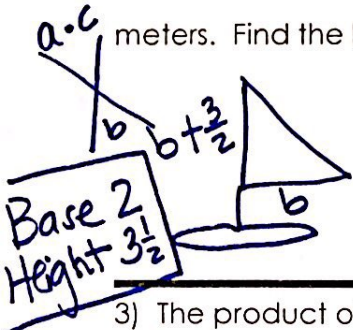
$$\begin{array}{r} -48 \\ \times -8 \\ \hline 6 \\ \times -2 \\ \hline -12 \end{array}$$

$$\begin{aligned} x^2 - 2x &= 48 \\ x^2 - 2x - 48 &= 0 \\ (x+6)(x-8) &= 0 \end{aligned}$$

$$x = -6, 8$$

-6 OR 8 is the number

2) The height of a triangular sail is $1\frac{1}{2}$ meters more than the base. The area of the sail is $3\frac{1}{2}$ square meters. Find the base and height of the sail.



$$\begin{aligned} A &= \frac{bh}{2} \\ 2\left(\frac{7}{2}\right) &= \frac{(b(b+\frac{3}{2}))}{2} \\ 7 &= b(b+\frac{3}{2}) \end{aligned}$$

$$\begin{array}{r} -28 \\ \times -4 \\ \hline 1 \\ \times 3 \end{array}$$

$$\begin{aligned} 2(-7) &= (b^2) + (\frac{3}{2}b) \\ 14 &= 2b^2 + 3b \\ 0 &= 2b^2 + 3b - 14 \\ 0 &= (2b^2 - 4b) + (7b - 14) \\ 0 &= 2b(b-2) + 7(b-2) \end{aligned}$$

$$\begin{aligned} 0 &= (b-2)(2b+7) \\ b &= 2, -\frac{7}{2} \end{aligned}$$

3) The product of two consecutive integers is 182. Find these two integers. (Hint: If x represents an integer, how could you represent the next consecutive integer—what would you count by??)

$$\begin{aligned} 1^{st} &= x \\ 2^{nd} &= x+1 \end{aligned}$$

$$\begin{array}{r} -182 \\ \times -13 \\ \hline 14 \\ \times 1 \end{array}$$

$$\begin{aligned} x(x+1) &= 182 \\ x^2 + x &= 182 \\ x^2 + x - 182 &= 0 \\ (x+14)(x-13) &= 0 \end{aligned}$$

$$x = -14, 13$$

-14 & -13
OR
13 & 14

4) The product of two consecutive odd integers is 255. Find these two integers.

$$\begin{aligned} 1^{st} &= x \\ 2^{nd} &= x+2 \end{aligned}$$

$$x(x+2) = 255$$

5) The length of a rectangle is 4m greater than its width. The area of this rectangle is 96 m². Find the length and the width.

6) The measure of the area of a square is 5 feet more than its perimeter. Find the length of a side.

$$\begin{aligned} A &= s^2 \\ P &= 4s \\ A &= 5 + P \\ A &= 5 + 4s \end{aligned}$$

$$\begin{array}{r} -5 \\ \times 1 \\ \hline -5 \\ \times -4 \end{array}$$

$$\begin{aligned} 5 + 4s &= s^2 \\ 0 &= s^2 - 4s - 5 \\ 0 &= (s-5)(s+1) \\ s &= 5, -1 \end{aligned}$$

5 ft
length of
side