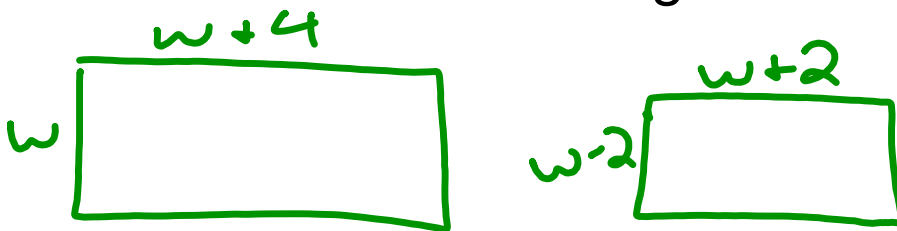


Warm up:

A rectangle is 4cm longer than it is wide. If the length and width are both decreased by 2cm, the area is decreased by 24 cm^2 . Find the dimensions of the original rectangle.

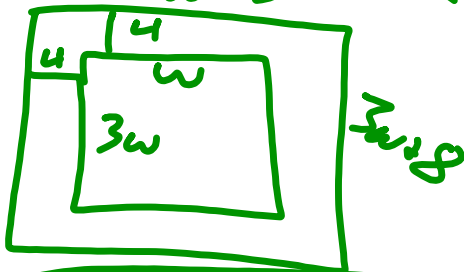


$$\begin{aligned}
 w(w+4) &= (w-2)(w+2) + 24 \\
 \cancel{w^2} + 4w &= \cancel{w^2} - 4 + 24 \\
 \hline
 \frac{4w}{4} &= \frac{20}{4} \quad w = 5
 \end{aligned}$$

$$5 \text{ cm} \times 9 \text{ cm}$$



A poster is three times as long as it is wide. It is framed by a mat such that there is a 4in border around the poster. Find the dimensions of the poster if the area of the mat is 488in^2 .



$$(3w+8)(w+8) - w(3w) = 488$$

$$3w^2 + 32w + 64 - 3w^2 = 488$$

$$ - 64 - 64$$

$$\frac{32w = 424}{32 \quad 32}$$

$$w = 13.25$$

$$13.25 \text{ in} \times 39.75 \text{ in}$$

$$6^{2x+1} \cdot 6^{3x-7}$$

$$6^{5x-6}$$

A plane averaged 1000km/h on the first half of a round trip, but heavy winds slowed its speed on the return trip to 600km/h. If the entire trip took 6h, find the total distance.

	r	t	d
there	1000	t	$1000t$
back	600	$6-t$	$3600-600t$

$$2250 \times 2 = 4500 \text{ km}$$

$$\begin{aligned} 1000t &= 3600 - 600t \\ +600t & \quad +600t \\ \hline 1600t &= 3600 \\ \frac{1600}{1600} & \quad \frac{1600}{1600} \\ \hline t &= 2.25 \end{aligned}$$

Find two consecutive integers whose sum is 104.

$$\begin{array}{r} \downarrow \\ \underline{x} + \underline{x+1} = 104 \\ 2x + 1 = 104 \\ \quad \quad \quad -1 \quad -1 \\ \hline 2x = 103 \\ \quad \quad \quad \underline{\quad} \\ \frac{2x}{2} = \frac{103}{2} \\ \hline x = 51.5 \\ \text{no solution} \end{array}$$

$$-(4t^2)^2 (3t)^3 = ?$$

$$-16t^4 \cdot 27t^3$$
$$-432t^7$$

$$(x - 5)(x^3 - 5x + 1) = ?$$

$$\frac{1}{2}uv^2(10u^2 - 4uv + 8v^2) = ?$$

$$(3x^2 - 4x - 2) - (-x^2 - 4x + 7) = ?$$

Two buses leave the school at the same time and travel in opposite directions. One bus is traveling at 40 mi/h, the other at 34mi/h. How long will it take for the buses to be 333mi apart?

$$(2x + 5)^2$$

$$(2x - 4)(3x + 6)$$

Jill earned 12 more points on her quiz than Jack. If they both get 8 bonus points, Jill will have three times as many points as Jack does. How many points does each have?

The side of a square is 2cm longer than the side of a second square. The area of the first square exceeds that of the second by 220cm^2 . Find the side of each square.

