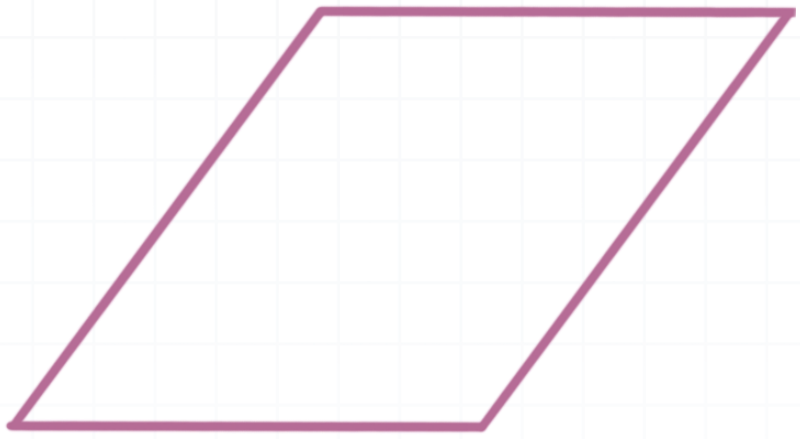
Area of a parallelogram

In this lesson we'll look at how to find the area of a parallelogram. A parallelogram is a quadrilateral with two pairs of opposite parallel sides.

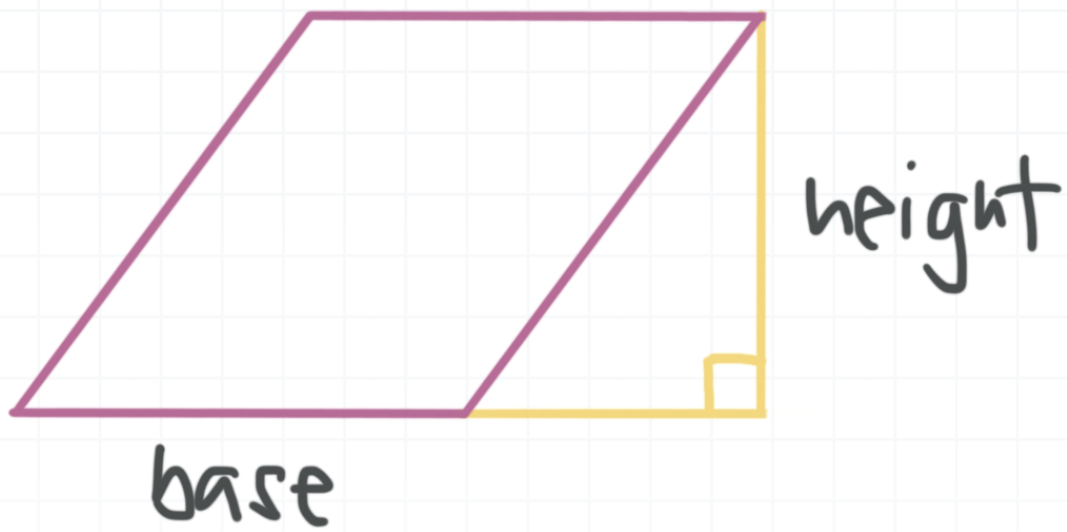


Area of a parallelogram

The area of a parallelogram is found by multiplying the base by the height, so

$$A = bh$$

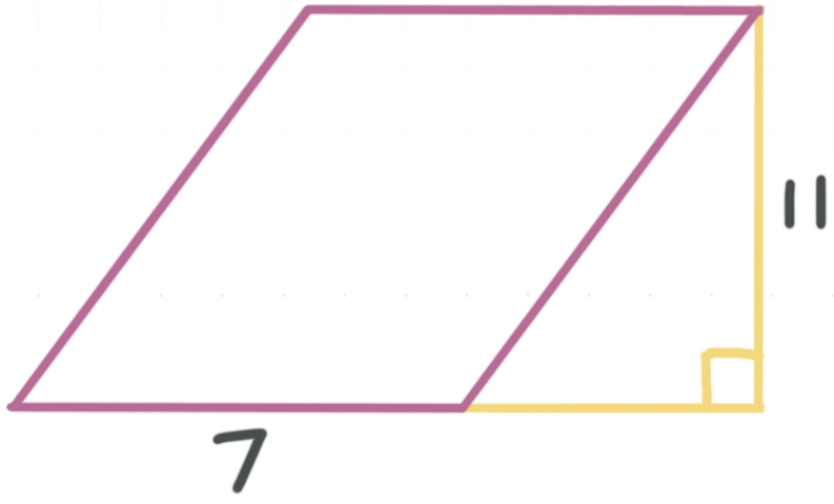
The height of a parallelogram needs to be drawn in and is perpendicular to its base.



The area of a parallelogram is always given in units of length^2 ("length squared"). Let's start by working through an example.

Example

What is the area of the parallelogram?



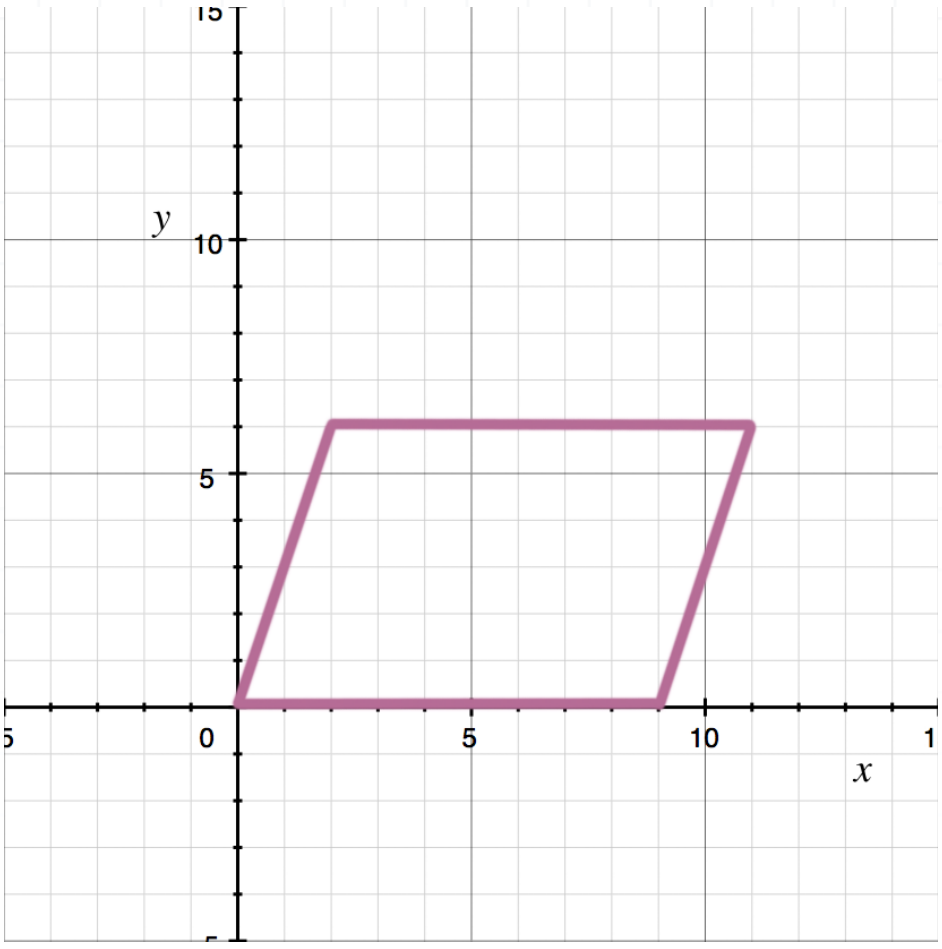
In this parallelogram, the base has a length of 7, and a height of 11, so the area is

$$A = 7 \cdot 11 = 77$$

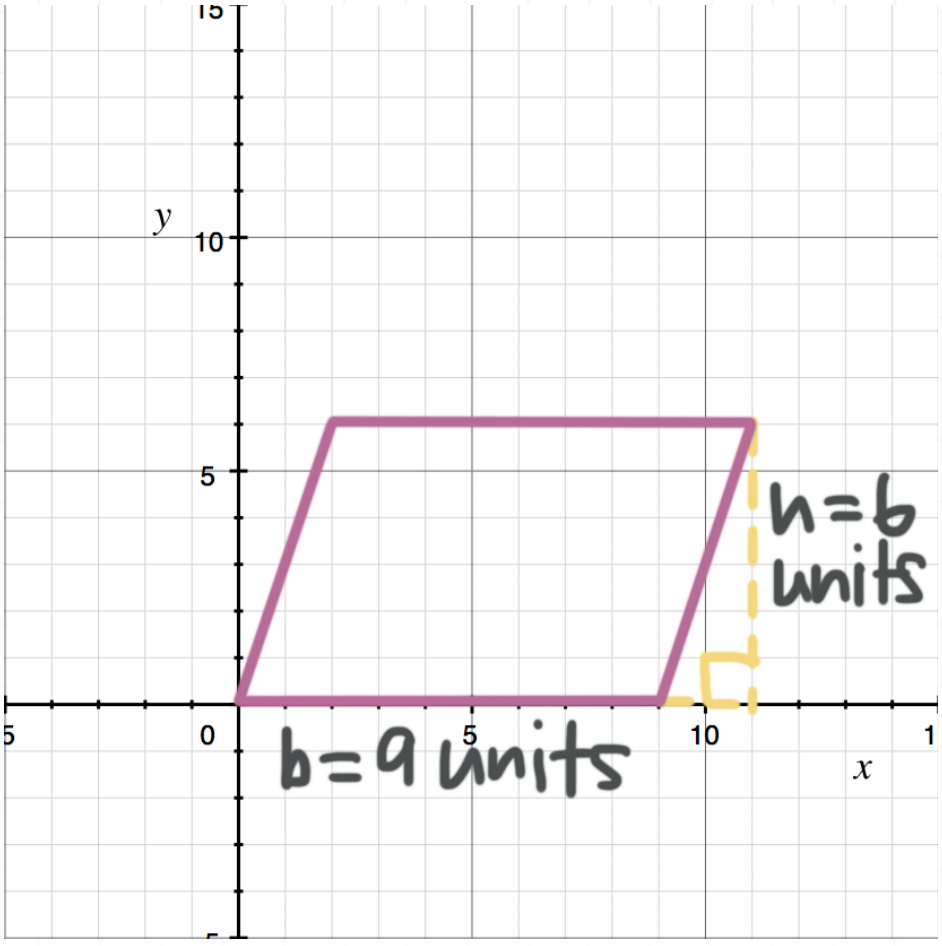
Let's do another example.

Example

What is the area of the parallelogram?



Use the grid (the system of horizontal and vertical lines) in the figure to find the dimensions of the parallelogram.



Now we can use the area formula.

$$A = bh$$

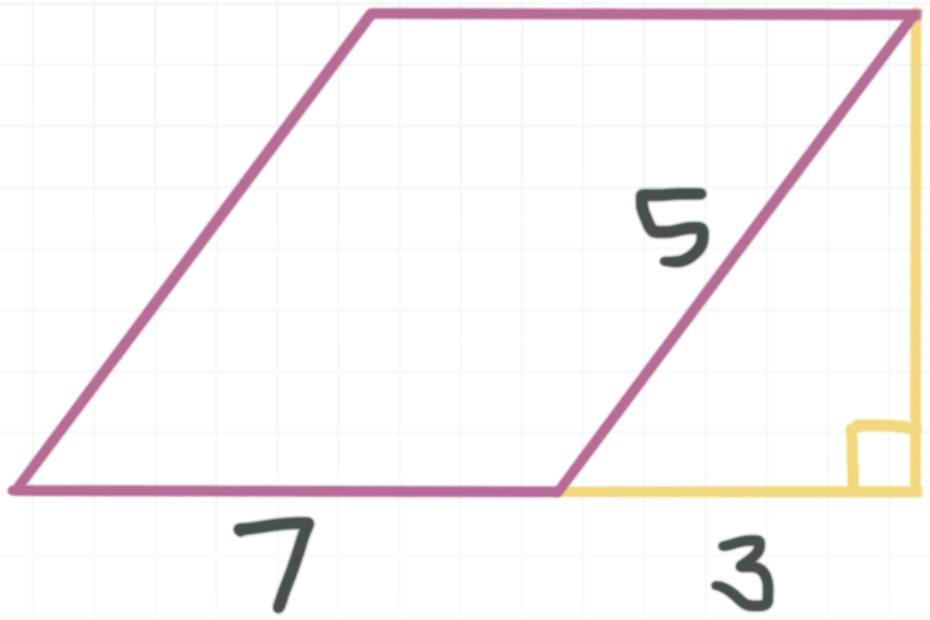
$$A = 9 \cdot 6$$

$$A = 54$$

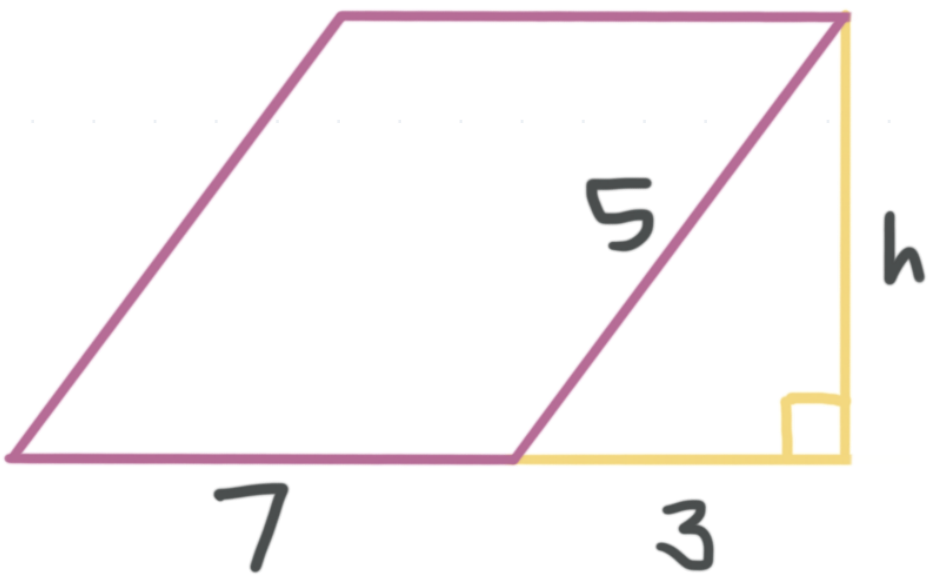
Let's do one with a few more steps.

Example

What is the area of the parallelogram?



The area of a parallelogram is $A = bh$. We know the base of the parallelogram is 7, but we need to find the height. We can see that the yellow lines and the slanted side of the parallelogram form a right triangle, so we can use the Pythagorean theorem to solve for the height. Let's call the height h.



Then we can plug everything we have into the Pythagorean theorem to find h.

$$3^2 + h^2 = 5^2$$

$$9 + h^2 = 25$$

$$h^2 = 16$$

$$h = \pm\sqrt{16}$$

$$h = \pm 4$$

Height can't take on a negative value, so $h = 4$. Now we can say that the area of the parallelogram is

$$A = 7 \cdot 4 = 28$$
