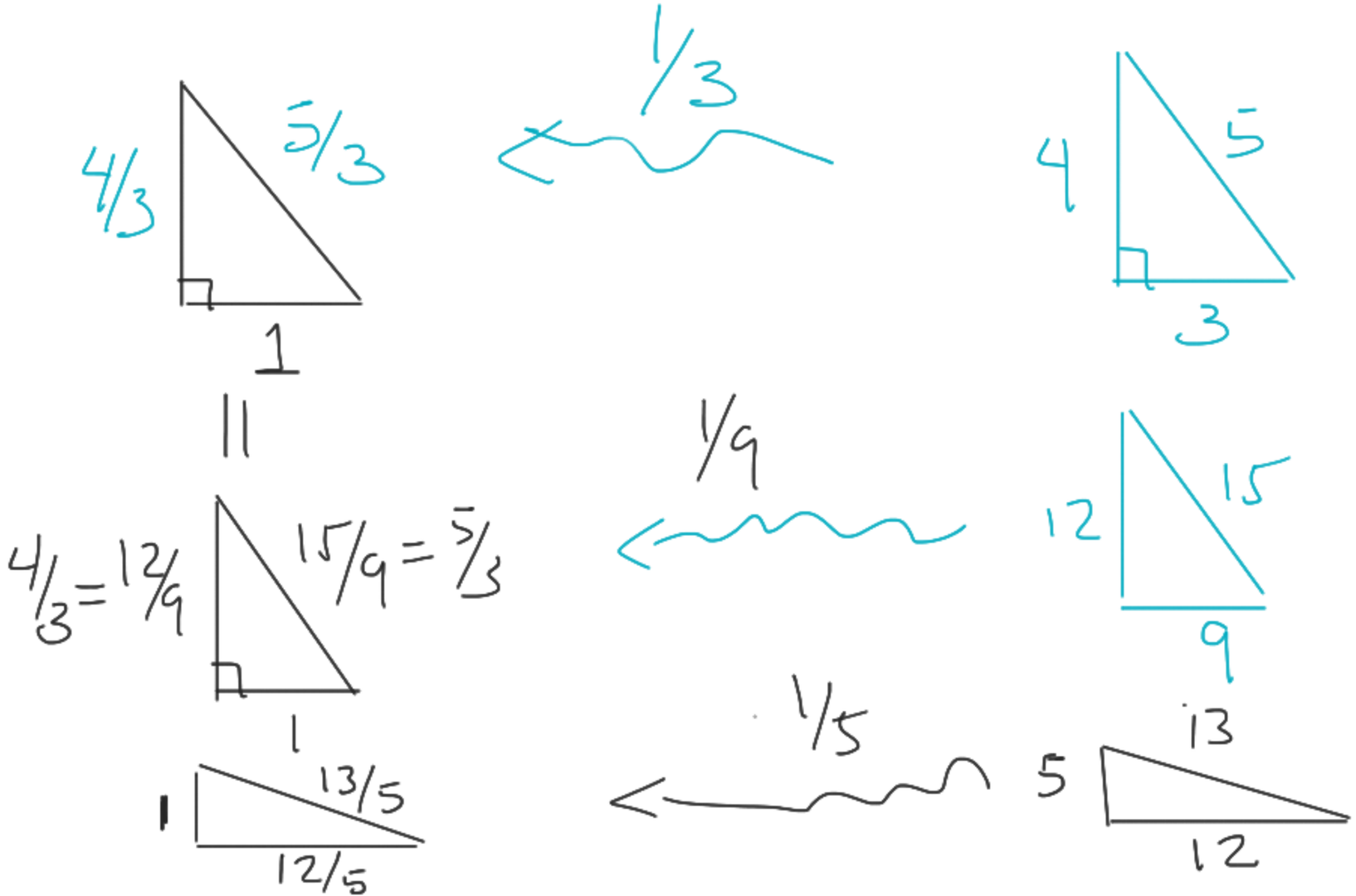
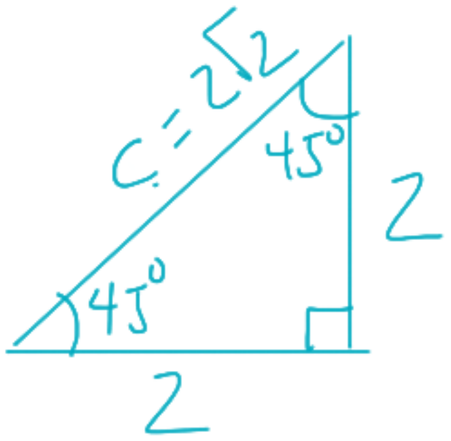
7. Using the technique from Exercise 6, start with a 3-4-5 triangle and find a right triangle with rational sides whose shorter leg is 1. Then find a right triangle whose longer leg is 1.



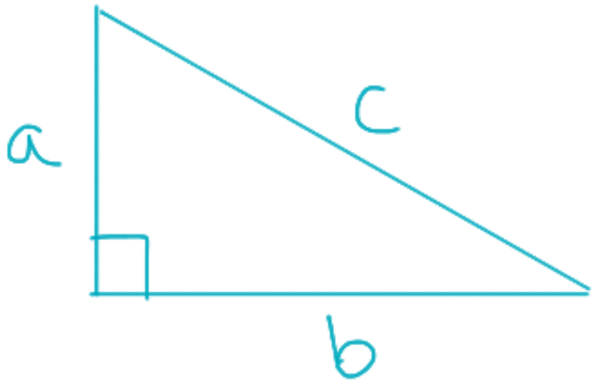


$$2^2 + 2^2 = c^2$$

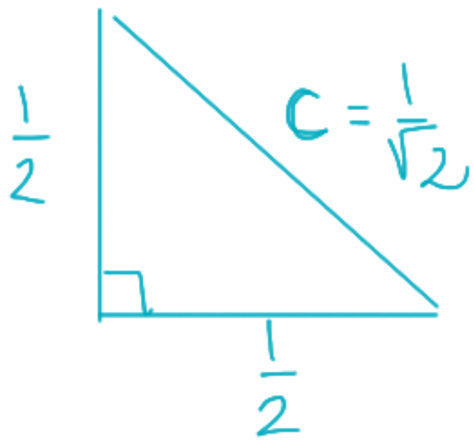
$$8 = c^2$$

$$c = \sqrt{8} = 2\sqrt{2}$$

$$8 = 2^3 = 4 \cdot 2 = \sqrt{4 \cdot 2} = \sqrt{4}\sqrt{2} = 2\sqrt{2}$$



entonces $a^2 + b^2 = c^2$

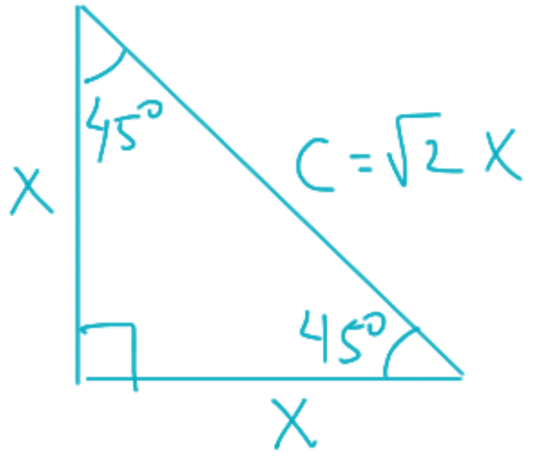


$$\left(\frac{1}{2}\right)^2 + \left(\frac{1}{2}\right)^2 = c^2$$

$$\frac{1}{4} + \frac{1}{4} = c^2$$

$$\frac{2}{4} = \frac{1}{2}$$

$$c^2 = 1/2 \implies c = \sqrt{\frac{1}{2}} = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$



$$x^2 + x^2 = c^2$$

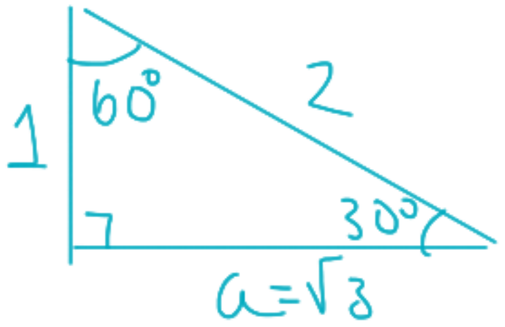
$$2x^2 = c^2$$

porque $x > 0$

$$c = \sqrt{2x^2} = \sqrt{2}\sqrt{x^2} = \sqrt{2}\,x$$

$$x = -3 \rightarrow x^2 = 9 \rightarrow \sqrt{x^2} = \sqrt{9} = 3 \neq x$$

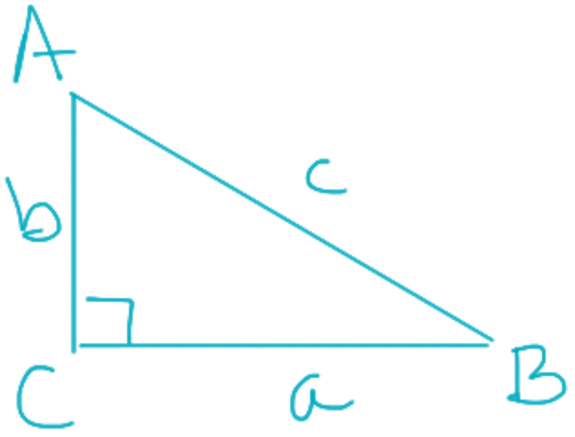
¿Cuánto mide a?



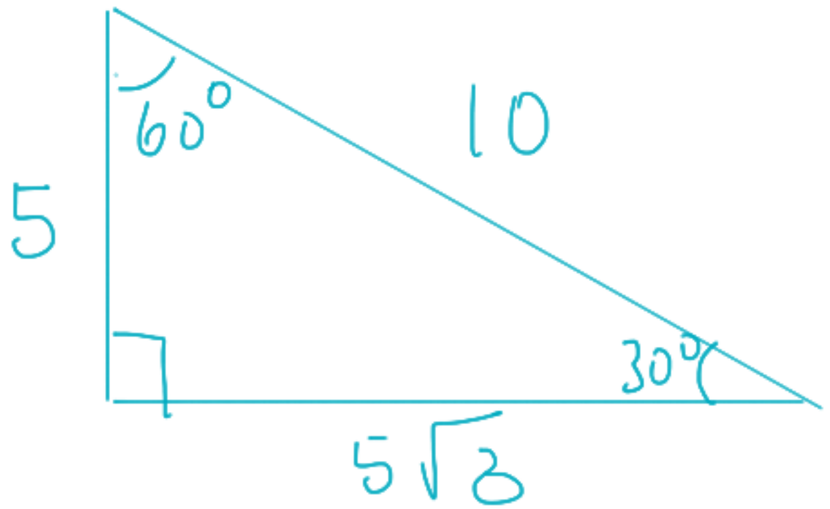
$a^2 + 1 = 4$

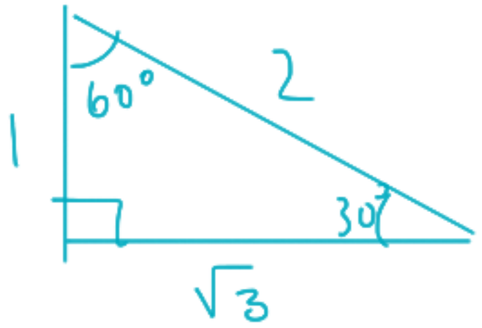
$a^2 = 3$

$a = \sqrt{3}$

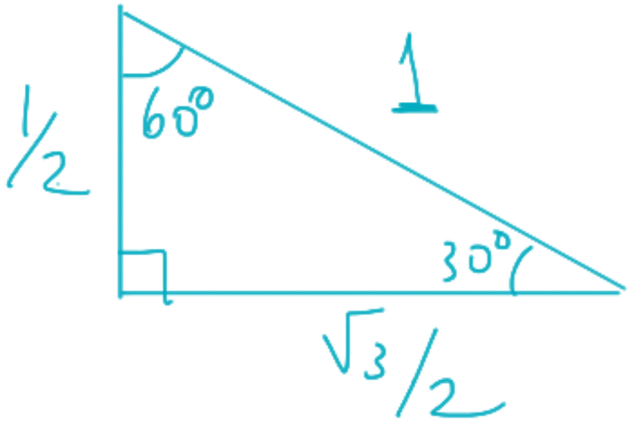


$a^2 + b^2 = c^2$

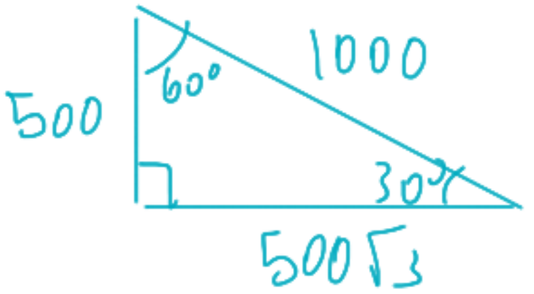

60°
10
5
30°
5√3



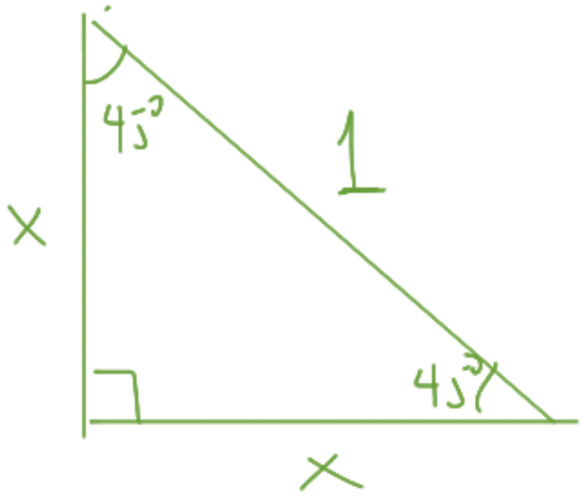
÷2



x 500



1. Find the length of each leg of an isosceles right triangle whose hypotenuse has length 1. Challenge: Find the length, correct to nine decimal places without using your calculator (but using information contained in the text above!).



$x = ?$ $\frac{1}{\sqrt{2}}$ ✓

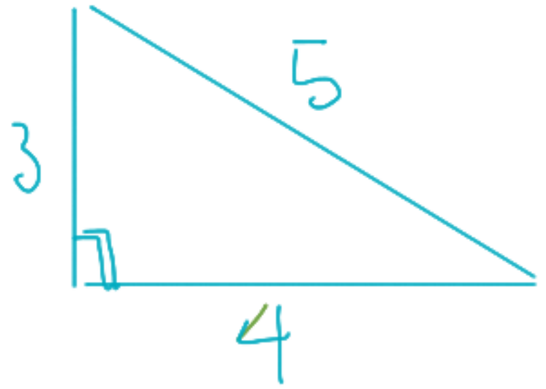
$x^2 + x^2 = 1$

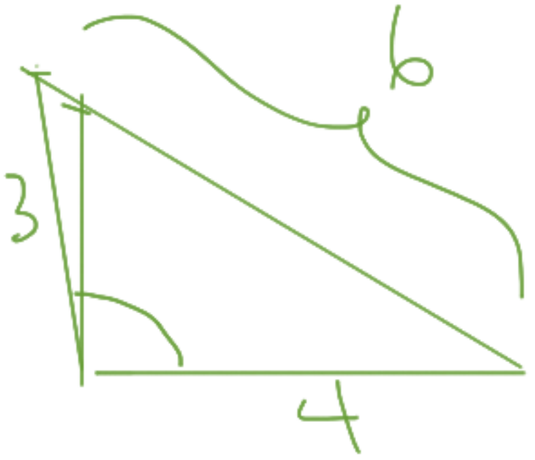
$2x^2 = 1$

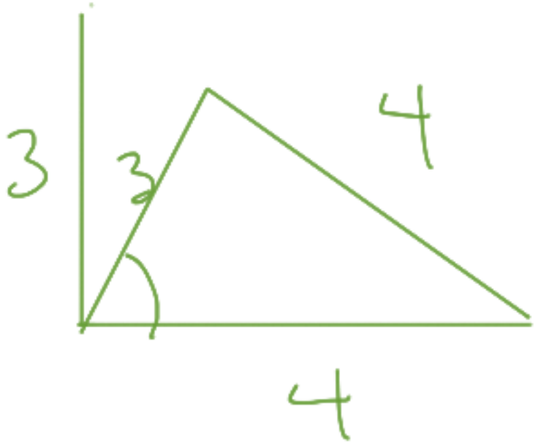
$x^2 = \frac{1}{2}$

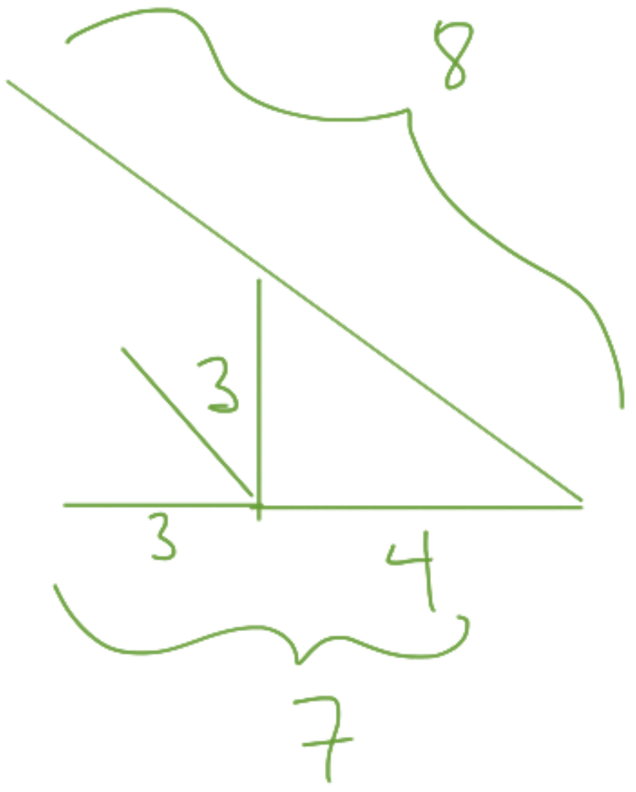
$x = \sqrt{\frac{1}{2}} = \frac{1}{\sqrt{2}}$

$$3^2 + 4^2 = 5^2$$









no hay $\triangle$ con lados

(3, 4, 8)

Recuerda la desigualdad del triángulo:

El lado más grande mide menos que la suma de los otros dos