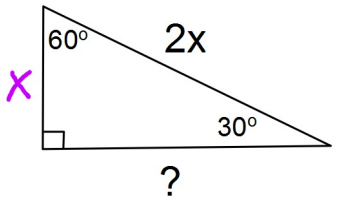
In a right triangle that has two other angles that are $30^\circ$ and $60^\circ$ the short leg is half as long as the hypotenuse. Find the exact length of the long leg.
(hint: label the hypotenuse as 2x)




$x^2 + ?^2 = (2x)^2$

$x^2 + ?^2 = 4x^2$

$\sqrt{?^2} = \sqrt{3x^2}$

$? = x \cdot \sqrt{3}$

Find the exact length of the hypotenuse in an isosceles right triangle.
(hint: label the two equal sides as x)

$x^2 + x^2 = ?^2$

$\sqrt{2x^2} = \sqrt{?^2}$

$? = x \cdot \sqrt{2}$