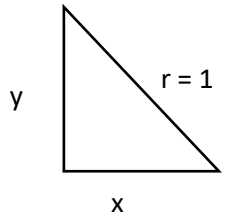
Pythagorean Investigation

1. Given the triangle below, fill in the missing pieces.

Remember $cos^2\theta = x^2$ and $sin^2\theta = y^2$



If: $x^2 + \_\_\_\_\_ = r^2$

And: $x^2 + y^2 = \_\_\_\_\_$

Then: $cos^2\theta + sin^2\theta = \_\_\_\_\_$

2. If you divide everything in the equation: $cos^2\theta + sin^2\theta = 1$, by $cos^2\theta$, what would be the result?

$\frac{cos^2\theta}{cos^2\theta} + \frac{sin^2\theta}{cos^2\theta} = \frac{1}{cos^2\theta}$ ⟶ _____

3. If you divide everything in the equation: $cos^2\theta + sin^2\theta = 1$, by $sin^2\theta$, what would be the result?

$\frac{cos^2\theta}{sin^2\theta} + \frac{sin^2\theta}{sin^2\theta} = \frac{1}{sin^2\theta}$ ⟶ _____

In conclusion:

_____ $+ sin^2\theta = 1$ 1 + _____ = $sec^2\theta$ $1 + cot^2\theta = csc^2\theta$