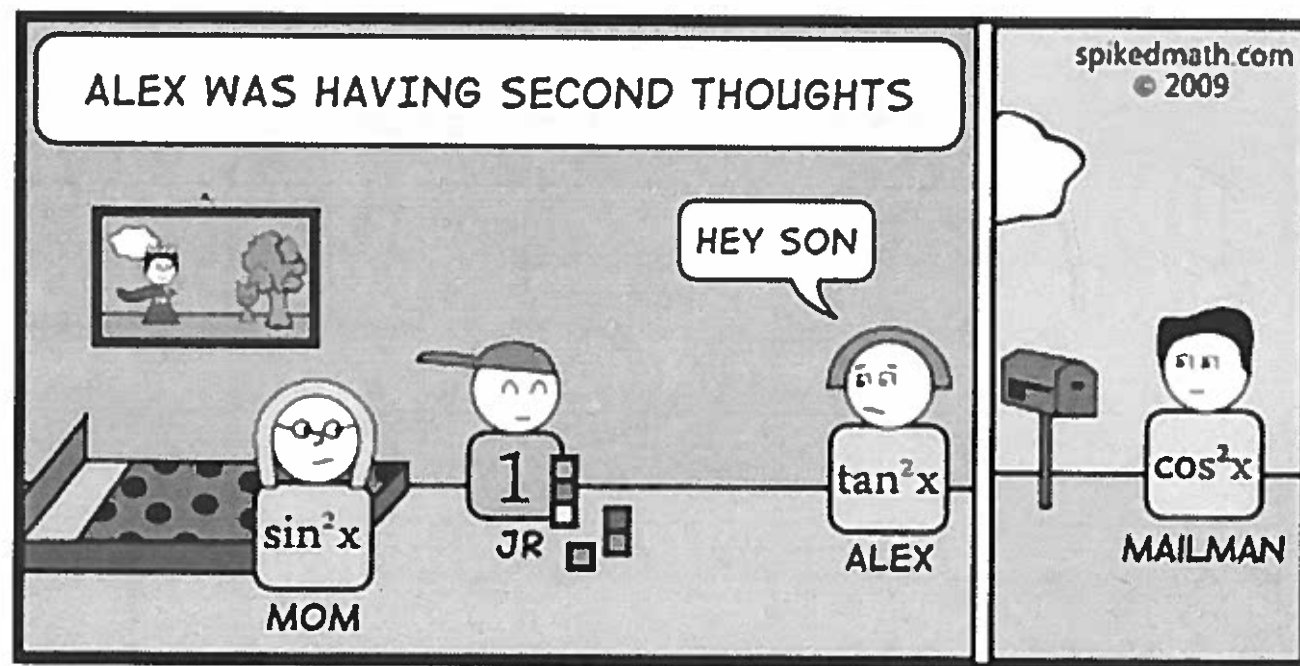


# Algebra 2

## Common Core

### Unit 9.7

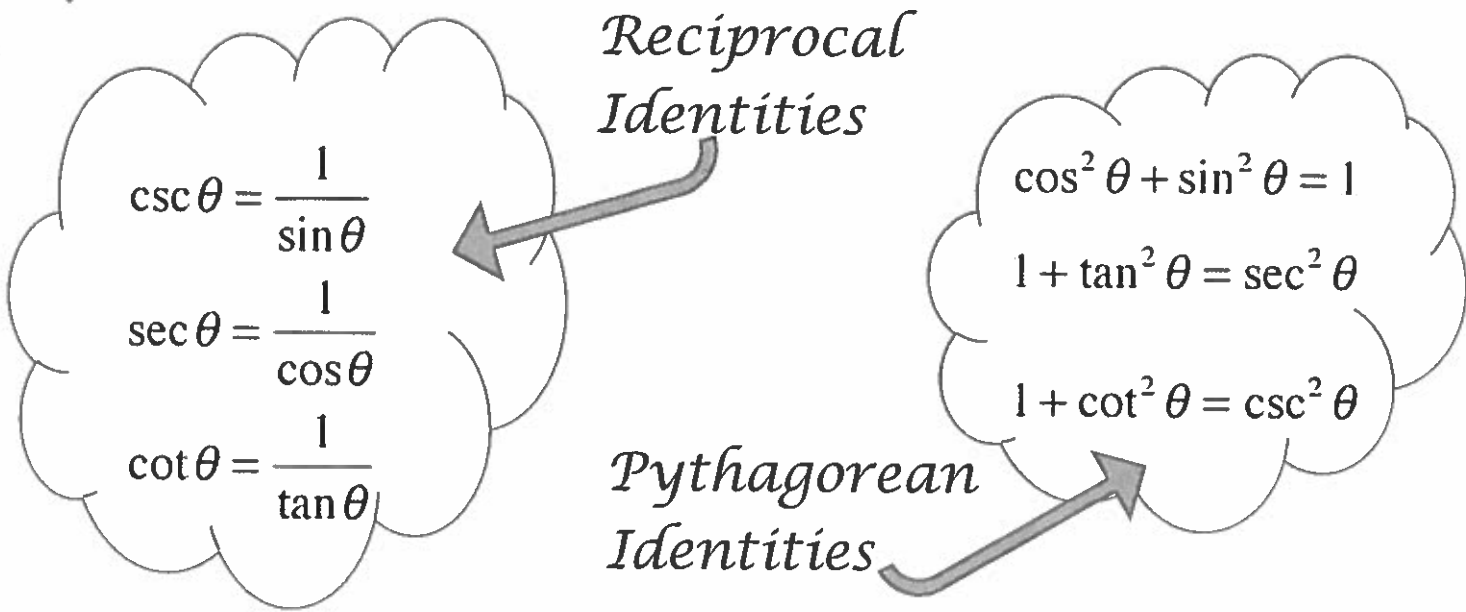
## Using Trigonometric Identities



NAME \_\_\_\_\_

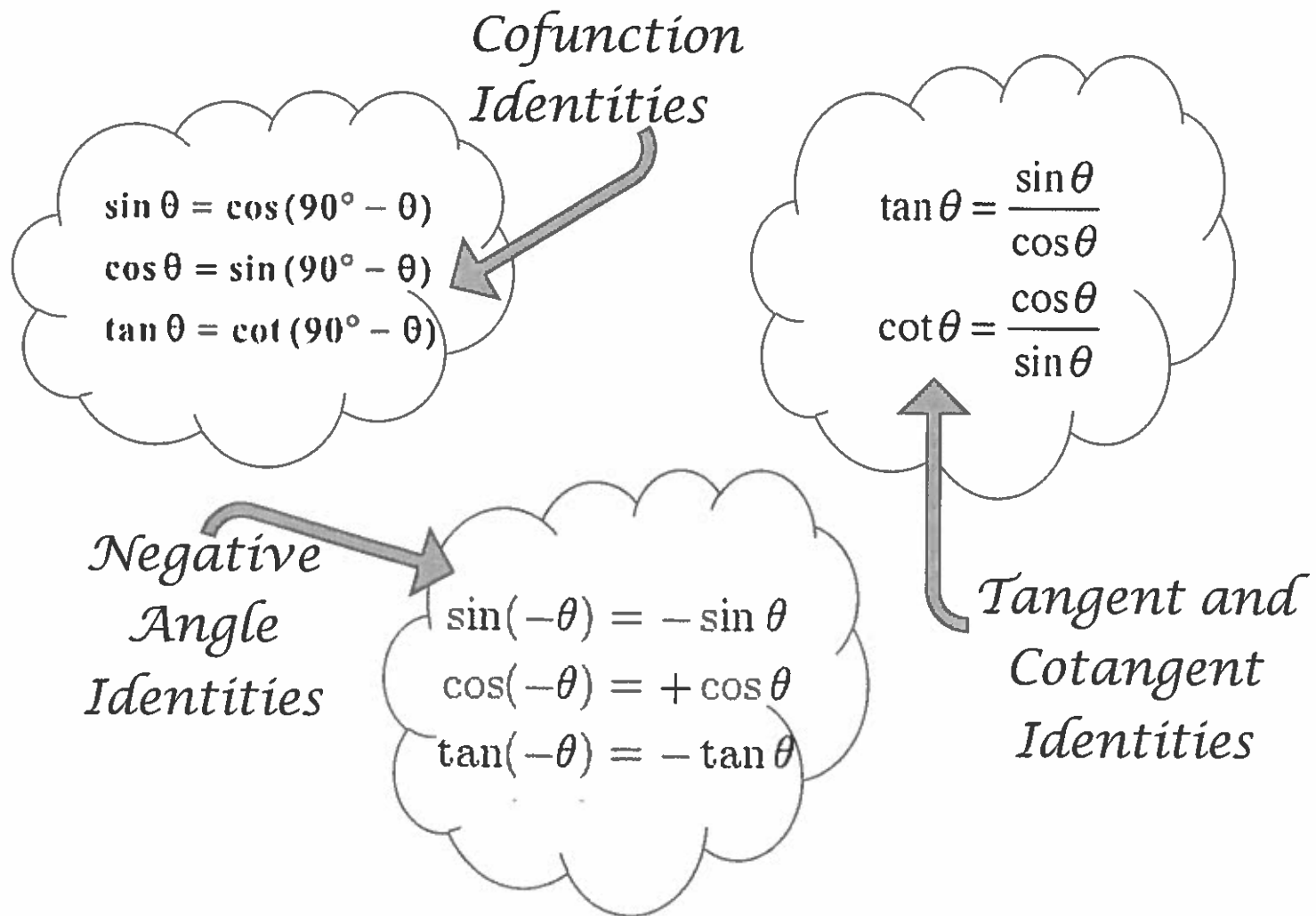
Teacher Ms. Thompson

Period \_\_\_\_\_



# Core Concept

Read and memorize!!!!



### Example 1:

$$\tan\theta + \cot\theta = \sec\theta \times \csc\theta$$

$$\frac{\sin\theta}{\cos\theta} + \frac{\cos\theta}{\sin\theta}$$

$$\frac{\sin^2\theta}{\sin\theta \times \cos\theta} + \frac{\cos^2\theta}{\sin\theta \times \cos\theta}$$

$$\frac{\sin^2\theta + \cos^2\theta}{\sin\theta \times \cos\theta}$$

$$\frac{1}{\sin\theta \times \cos\theta} = \sec\theta \times \csc\theta$$

Step 1: Choose a side to work with (in this case the left side)

Step 2: Using the tan and cot identities, change the left side in terms of sin and cos

Step 3: find a common denominator and multiply the numerator and denominator

Step 4: add the fractions

Step 5: Using the Pythagorean identities, we know  $\sin^2\theta + \cos^2\theta = 1$

Step 6: the reciprocal identities of sin and cos is sec and csc.

### Example 2:

$$\sin^2\theta (1 + \tan^2\theta) = \tan^2\theta$$

$$\sin^2\theta (\sec^2\theta)$$

$$\frac{\sin^2\theta}{1} \times \frac{1}{\cos^2\theta}$$

$$\frac{\sin^2\theta}{\cos^2\theta} = \tan^2\theta$$

Step 1: Choose the more complex side and simplify it (left side)

Step 2: Using the Pythagorean identity, we know  $1 + \tan^2\theta = \sec^2\theta$

Step 3: Change  $\sec^2\theta$  into terms of cos

Step 4: multiply the fractions

Step 5: using tangent identity, we know  $\tan\theta = \frac{\sin\theta}{\cos\theta}$