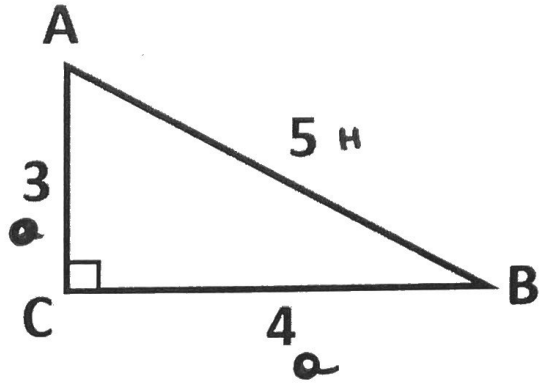
6.7 Notes Sine/Cosine Relationships Guided Name: _____

Date: _____ Period: _____

Sine & Cosine

1) Find sin ∠A. $\frac{4}{5}$
2) Find cos ∠A. $\frac{3}{5}$
3) Find sin ∠B. $\frac{3}{5}$
4) Find cos ∠B. $\frac{4}{5}$



Did you notice that....

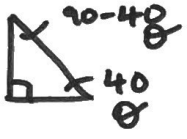
The **sine** of one acute angle is equal to the cosine of the other acute angle.

Things to know

- The acute angles of a **right triangle** are complementary (meaning they add to 90°).

- If an acute angle is labeled as θ ("theta") the other angle can be labeled as 90-θ.

  Explanation:



- The angle measure next to **sine** needs to be complementary to the angle measure next to cosine.

Write sine in terms of cosine.

1) sin 42° = cos 48° (equal 90°)
2) sin 80° = cos 10° (equal 90°)

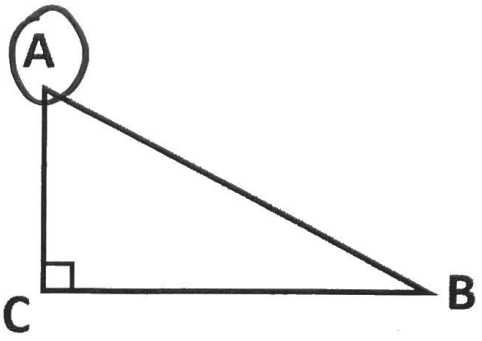
Write cosine in terms of sine.

1) cos 18° = sin 72° (equal 90°)
2) cos 65° = sin 25°

Write sin A in terms of cosine.

cos B

Sin A = cos B



Write cosine A in terms of sine.

Sin B

Cos A = Sin B

Find two angles that satisfy the equation.

add to equal 90°

1. $\sin(2x-4) = \cos(3x+9)$

$2x-4+3x+9 = 90$

$5x+8 = 90$

$-8 \quad -8$

$5x = 85$

$x = 17$

plug in to Both

$2(17)-4 = 30°$

$3(17)+9 = 60°$

2. $\sin(6x+2) = \cos(4x+8)$

$6x+2+4x+8 = 90$

$10x+10 = 90$

$-10 \quad -10$

$10x = 80$

$x = 8$

$6(8)+2 = 50$

$4(8)+8 = 40$

Sin 50 = Cos 40