

September 25

In the equation  $y = A\cos(Bx + C) + D$ ,  
Why does "B" change the length of one  
cycle?

Don't forget to keep ranking your days!!

September 26

Students will verbally explain how to  
graph sine and cosine functions  
(using the words:  
range, right triangles, periodic...)

5. For functions of the form  $f(x) = a \sin(bx + c) + d$  or  $g(x) = a \cos(bx + c) + d$ , with  $a \neq 0$  and

$b > 0$ ,

a. the amplitude is  $\frac{a}{2\pi}$ .

b. the period is  $\frac{2\pi}{b}$ .

c. the horizontal shift is  $-\frac{c}{b}$ .

d. the vertical shift is  $d$ .

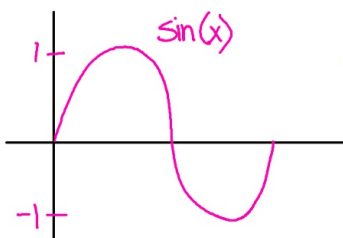
Sketch the graph of  $y = 3\sin(2x + 8) + 5$

Amplitude = 3 → Range  $-3 \leq y \leq 3$

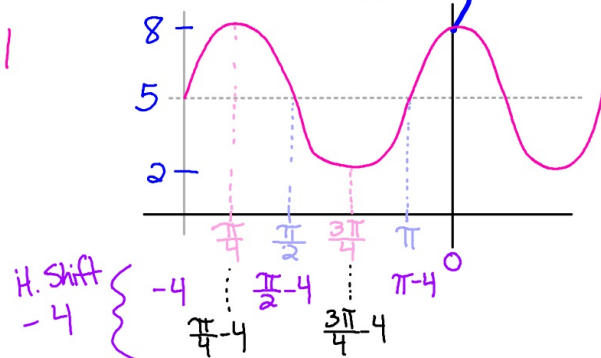
Period =  $\frac{2\pi}{2} = \pi$

Horizontal Shift =  $-\frac{8}{2} = -4$

Vertical Shift = 5 →  $-3 + 5 \leq y \leq 3 + 5$   
 $2 \leq y \leq 8$



Range:  
 $-1 \leq y \leq 1$



Sketch the graph of  $y = 3\sin(2x) + 5$

Amplitude = 3  $\longrightarrow$  Range:

Period =  $\frac{2\pi}{2} = \pi$

Horizontal Shift =  $\frac{-c}{b} = \frac{0}{2} = 0$

Vertical Shift = 5  $\longrightarrow$   $-3 \leq y \leq 3$   
 $-3+5 \leq y \leq 3+5$   
 $2 \leq y \leq 8$

