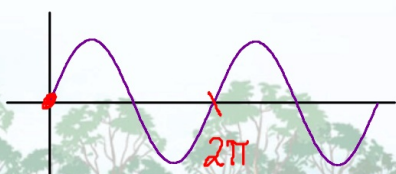


October 8

SWBAT:

Graph and transform the
sine and cosine functions

Sine Function



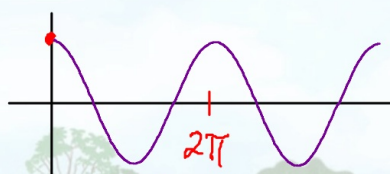
Domain: all real numbers

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

Zeros: $0, \pi, 2\pi, \dots, n\pi$

Length of one period: 2π

Cosine Function



Domain: all real numbers

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

Zeros: $\frac{\pi}{2}, \frac{3\pi}{2}, \frac{5\pi}{2}, \dots, \frac{(2n+1)\pi}{2}$

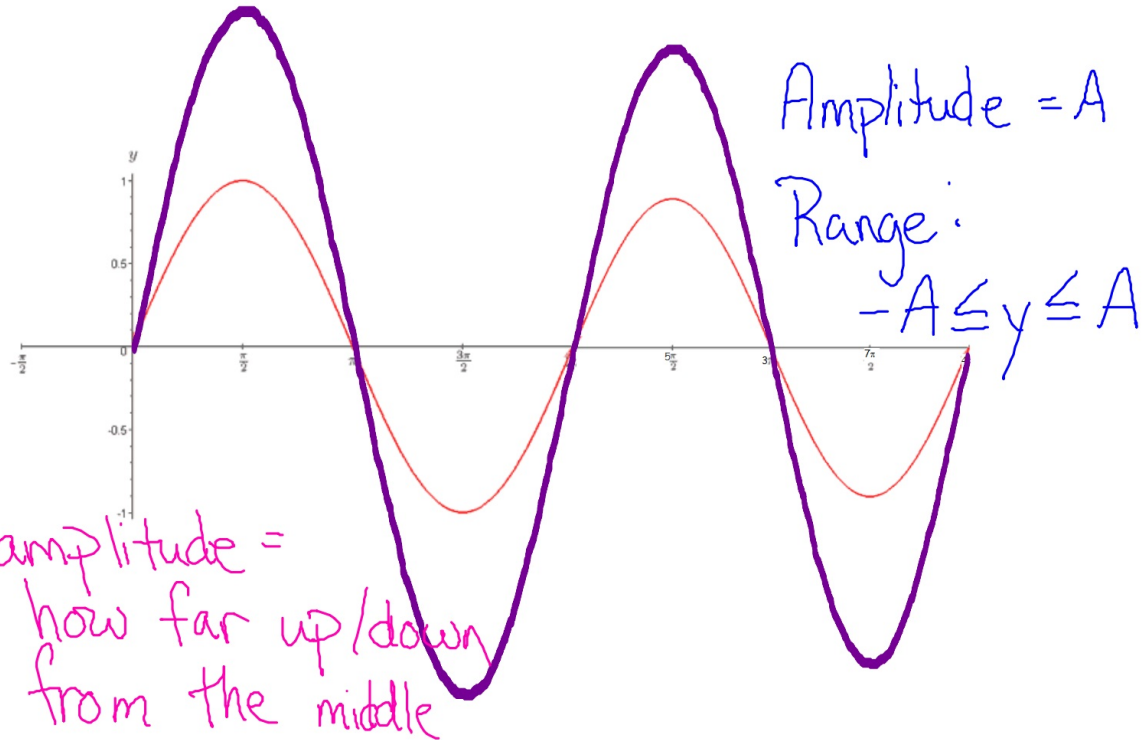
Length of one period: 2π

$$-1 \leq x \leq 1$$

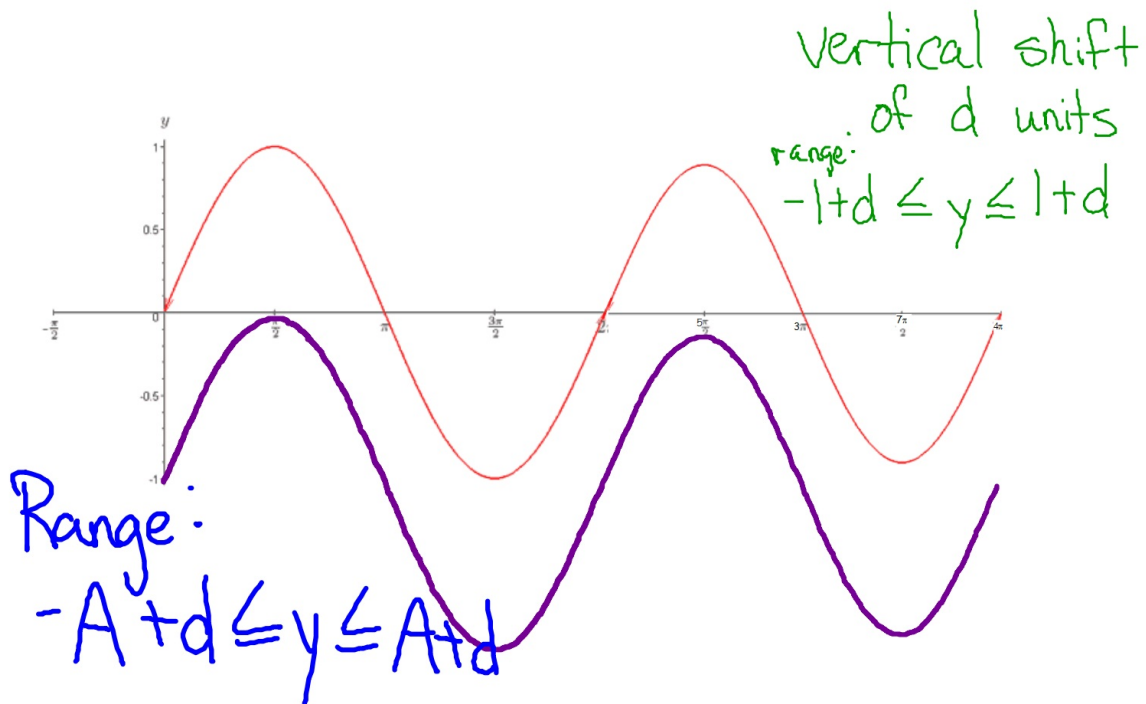
4 all real numbers $-1 \leq x \leq 1$

all real numbers

if $y = A\sin(x)$, how is your graph affected? (Be as specific as possible)



if $y = \sin(x) + D$, how is your graph affected? (Be as specific as possible)



b. When $b = 1$, what is the length of one cycle of $\sin(x)$? _____

2π

c. When $b = 2$, what is the length of one cycle of $\sin(x)$? _____

π

d. When $b = 0.5$, what is the length of one cycle of $\sin(x)$? _____

4π

e. How can you find the length of one cycle if you know b ?

$$b \cdot (\text{length of 1 cycle}) = 2\pi$$

$$\text{length of 1 cycle} = \frac{2\pi}{b}$$

b. If $b = 1$ and $c = 1$, what is the horizontal shift of the graph? _____

left 1

c. If $b = 1$ and $c = 2$, what is the horizontal shift of the graph? _____

d. If $b = 2$ and $c = 2$, what is the horizontal shift of the graph? _____

e. If $b = 2$ and $c = 2$, what is the horizontal shift of the graph? _____

f. If $b = 0.5$ and $c = 1$, what is the horizontal shift of the graph? _____

g. If $b = 0.5$ and $c = 2$, what is the horizontal shift of the graph? _____

h. Complete the following statement:

For $a \neq 0$ and $b > 0$, the graph of $f(x) = a \sin(bx + c) + d$ has a horizontal shift of _____.