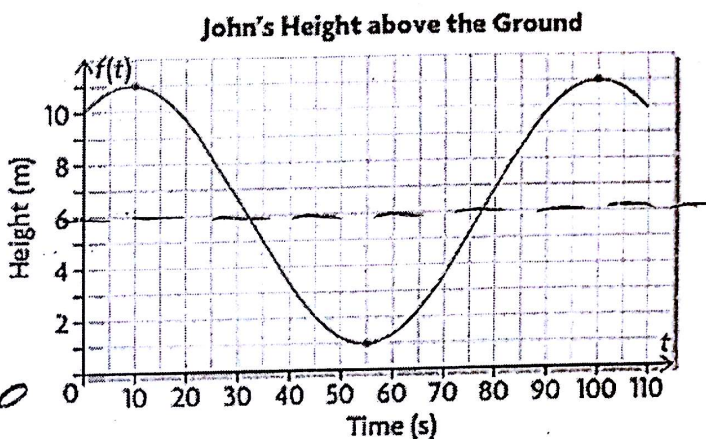


Learning Target 3: I can use a table and graph to write an equation for an application problem.

**Write the equation for the following graph.**

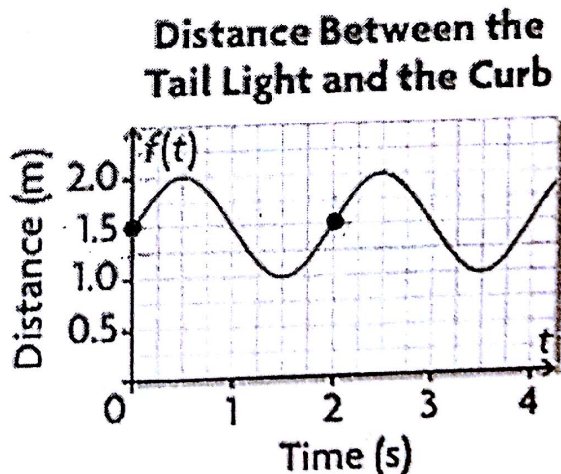
1.) John is riding a Ferris wheel. The graph shows John's height above the ground in terms of time.

Amplitude: 5       $\frac{11-1}{2}$   
 Period: 90       $10-100$        $90 = \frac{2\pi}{B}$   
 Horizontal Shift: → 10       $B = \frac{2\pi}{90}$   
 Vertical Shift: ↑ 6       $B = \frac{\pi}{45}$   
 Equation:  $y = 5\cos\left(\frac{\pi}{45}(x-10)\right) + 6$



2.) Ms. Boynton is helping her friend move and is pulling a trailer with a load of furniture. Ms. Boynton encounters a squirrel in the road and has to swerve to avoid hitting it. As a result, the furniture on the trailer shifted, causing the rear end of the trailer to swing left and right. The graph shows the distance between the tail light and the curb in terms of time.

Amplitude: .5       $2 = \frac{2\pi}{B}$   
 Period: 2       $B = \frac{2\pi}{2}$   
 Horizontal Shift: none  
 Vertical Shift: ↑ 1.5  
 Equation:  $y = .5\sin(\pi x) + 1.5$



\* answers may vary

- 3.) The average monthly Fahrenheit temperatures for a city are shown in the table below. Write an equation to model the data. (Month 1 = January, Month 2 = February, etc.)

Month	1	2	3	4	5	6	7	8	9	10	11	12
Temperature (°F)	39	42	47	52	55	56	55	51	47	42	39	38

Amplitude: 9 →  $\frac{56-38}{2}$

Period: 12 → takes 12 months to repeat cycle

Horizontal Shift: → 3

Vertical Shift: ↑ 47 →  $\frac{56+38}{2}$

Equation:  $y = 9 \sin \frac{\pi}{6}(x-3) + 47$

↓  
max

↓  
min

$$12 = \frac{2\pi}{B}$$

$$B = \frac{2\pi}{12} = \frac{\pi}{6}$$

- 4.) The average monthly Fahrenheit temperatures for a city are shown in the table below. Write an equation to model the data. (Month 1 = January, Month 2 = February, etc.)

Month	1	2	3	4	5	6	7	8	9	10	11	12
Temperature (°F)	41	43	48	56	64	69	71	69	63	56	48	43

Amplitude: 15 <sup>min</sup> →  $\frac{71-41}{2}$

Period: 12

Horizontal Shift: → 4

Vertical Shift: ↑ 56 →  $\frac{71+41}{2}$

Equation:  $y = 15 \sin \frac{\pi}{6}(x-4) + 56$

↓  
max

↓

answers may vary