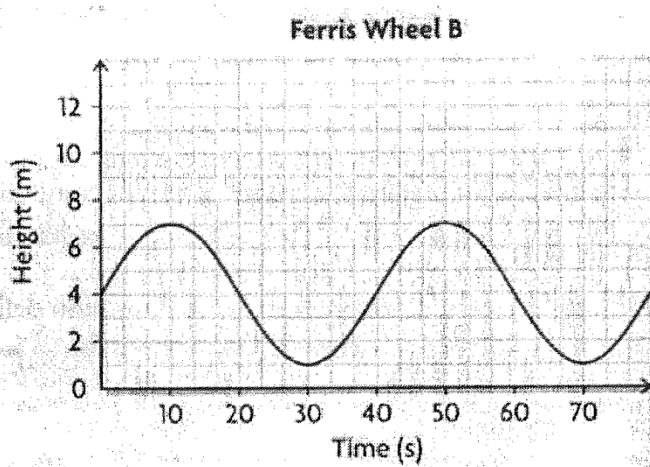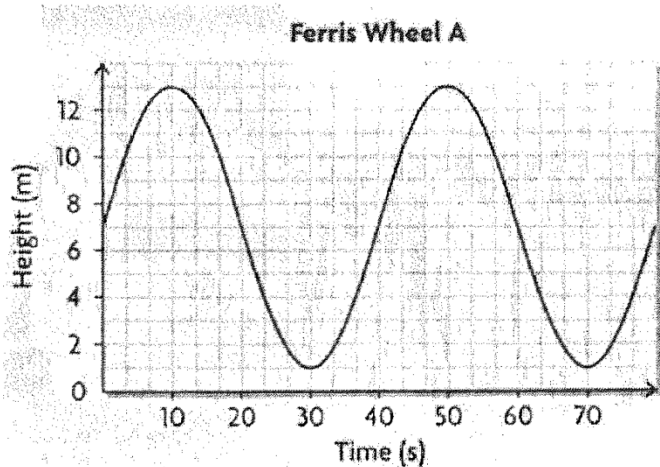**Application of Sinusoidal Functions**

At an amusement park, Mr. B had different students ride two Ferris wheels. Jack
rode on Ferris wheel A, and Julia rode on Ferris wheel B. Olivia collected data and
produced two graphs.

What is the period of each function, and what does it represent?
Graph A   **Graph B**

What is the equation of each axis of the curve, and what does it represent?
Graph A   **Graph B**

What is the amplitude of each function, and what does it represent?
Graph A   **Graph B**

State the equation that represents each function.
Graph A   **Graph B**

Who is travelling faster, Jack or Julia?
Comparing Speeds in Sinusoidal Functions

Recall!

$$V = \frac{\Delta d}{\Delta t} \qquad\qquad C = 2\pi r \qquad\qquad \Delta d = C$$

Graph A   **Graph B**

Reflecting

1. How does changing the radius of the wheel affect the sinusoidal graph?

2. How does changing the height of the axle of the wheel affect the sinusoidal graph?

Example 1: A carnival Ferris wheel with a radius of 7m makes one complete revolution every 16s. The bottom of the wheel is 1.5m above the ground.

a) Draw a graph to show how a person's height above the ground varies with time for three revolutions, starting when the person gets onto the Ferris wheel at its lowest point.
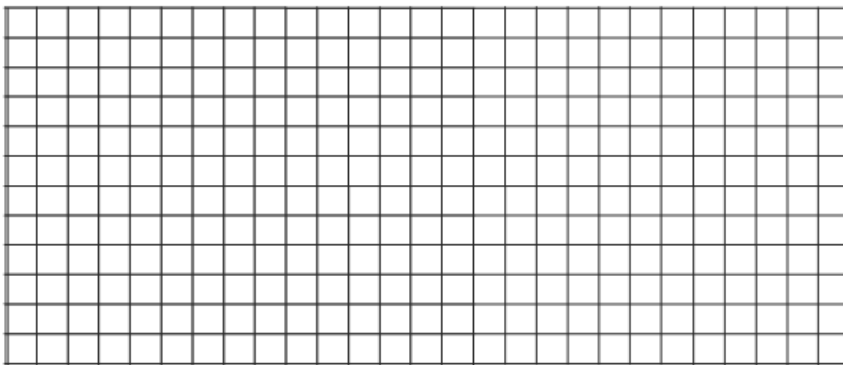
b) Find an equation for the graph.

Example 2: In summer, the sun sets later than it does in winter. The time of the sunset can be important information for some people including parents, environmentalists, and film makers.
The latest sunsets occur around June 21(the 172nd day of the year), and the earliest ones occur around December 21 (the 355th day of the year).

Sunset times at Parry Sound on these dates in 2001 are given in the table:

Date	Day of the year	Number of Hours of Sunlight (h)
June 21	172	20.18
December 21	355	16.88

Determine an equation for the time of the sunset at Parry Sound on the nth day of the year.
Show this information on a rough sketch.