

## Solving Problems using Sinusoidal Functions

**Example 1** A group of students is tracking a friend, John, who is riding a Ferris wheel. They know that John reaches the maximum height of 11 m at 10 s and then reaches the minimum height of 1 m at 55 s.

- a) How long does it take to complete one revolution?
- b) Determine the equation that models this situation.
- c) Use the equation to determine his height at 78 s.

**Example 2** (Pg 40 #4) The number of students,  $s$ , visiting the Centre for Sciences is modelled using the function  $s = 200 \sin[30(t - 10)] + 500$ , where  $t$  is the number of months since the first of January. (It helps to sketch a graph.)

a) Find the maximum and minimum number of students visiting the Centre over the period of one year.

b) When is the number of students a maximum? When is it a minimum?

c) How many students visit the Centre on February 14?

d) In what month(s) is the number of students about 600?

e) Suggest a reason for the pattern of attendance represented by this function.