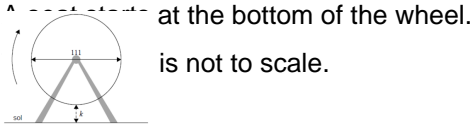


IB Functions Problem 020

At an amusement park, a Ferris wheel with a diameter of 111 metres rotates at a constant speed.

The bottom of the wheel is k metres above the ground.



The wheel completes one rotation in 16 minutes.

After t minutes, the height of the seat above the ground is given by $h(t) = 61.5 + a \cos \frac{\pi}{2}t$, for $0 \leq t \leq 32$.

- After 8 minutes, the seat is 117 m above the ground. Find k .
- Find the value of a .
- Find when the seat is 30 m above the ground for the third time.