

- 3** A Ferris wheel at a fairground rotates in a vertical plane. The height above the ground of a seat on the wheel is h metres at time t seconds after the seat is at its lowest point.

The height is given by the equation $h = 15 - 14 \cos(kt)^\circ$, where k is a positive constant.

- (a) (i)** Write down the greatest height of a seat above the ground. [1]
- (ii)** Write down the least height of a seat above the ground. [1]
- (b)** Given that a seat first returns to its lowest point after 150 seconds, calculate the value of k . [2]
- (c)** Determine for how long a seat is 20 metres or more above the ground during one complete revolution. Give your answer correct to the nearest tenth of a second. [4]