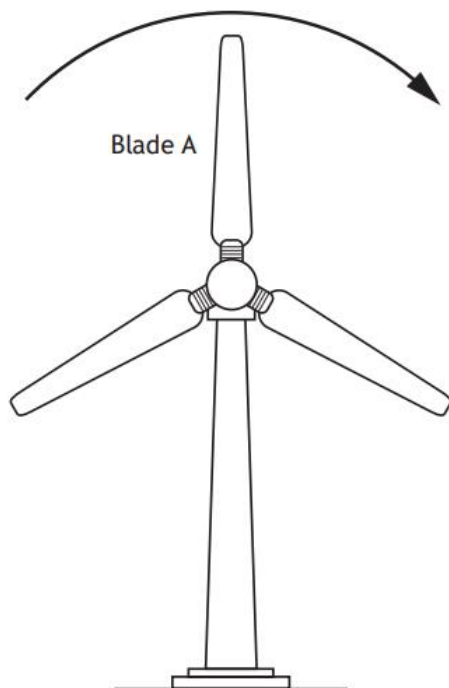


**National 5 Maths**  
**SQA 2017 Paper 2**  
**Question 15**

A wind turbine has three blades as shown below.



The height,  $h$  metres, of the tip of blade A above the ground in each rotation is given by

$$h = 40 + 23 \cos x^\circ, \quad 0 \leq x < 360$$

where  $x$  is the angle blade A has turned clockwise from its vertical position.

- (a) Calculate the height of the tip of blade A after it has turned through an angle of  $60^\circ$ . 1
- (b) Find the minimum height of the tip of blade A above the ground. 1
- (c) Calculate the values of  $x$  for which the tip of blade A is 61 metres above the ground. 4

Answers:

- (a) 51.5 m  
(b) 17 m  
(c)  $24.1^\circ$  and  $335.9^\circ$