Swaffham Wind Turbine

Watch the video then answer these questions. There are questions from Entry Level to Level 2, so see how far you can get!

Entry Level Questions

How many blades has the wind turbine?____

The turbine is 67m tall. Can you write that in words?

_____metres

The turbine produces enough electricity for 1121 homes. Can you write that in words?

_____ thousand _____hundred and _____ _____homes.

The turbine saves three thousand one hundred and sixty one tonnes of carbon dioxide being produced. Write this as a number.
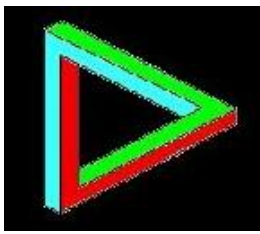
_____tonnes.

The savings are 3161 tonnes of Carbon Dioxide, 37 tonnes of Sulphur Dioxide and 11 tonnes of Nitrogen Oxides. How many tonnes is this altogether?

_____ tonnes.

What is the order of rotational symmetry of the wind turbine blades?

Swaffham Wind Turbine Level 1 Questions

You will need a calculator.

If the blades are turning round 20 times every minute, how many turns will they make in one hour?

_____

The video says that the turbine produces electricity for 3000 people and 1121 homes. How many people on average live in a house? Write your answer to 1 decimal place.

_____people.

Now round your answer to the nearest person. _____

3000 people is about a third of the population of Swaffham. Roughly how many people live in Swaffham?

_____

The staircase has 300 steps. The turbine is 67 metres tall. How many centimetres tall is each step? (Give your answer to the nearest centimetre)

_____cm

In its lifetime the turbine has produced 44,506,583 kilo watt hours of electricity. Can you write this number in words?

_____ _____million _____ _____and

_____thousand _____hundred and_____three kwh.

The turbine was opened in October 1999 and I filmed it in July 2013. How many months is this altogether? (include October 99 and July 13)

_____ months.

On average, how much electricity does the turbine produce each month? Give your answer to the nearest kwh.   _____kwh
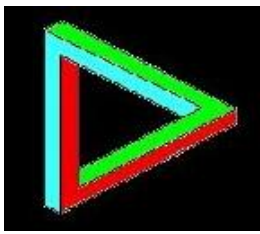
Swaffham Wind Turbine Level 2 Questions

The diameter of the blades is 66m and each blade has a length of 31m.
What is the diameter of the hub at the centre of the blades?

_____ m

If a fly sits on the end of one of the blades how far will it travel in one whole turn? (Remember the circumference of a circle C= π x diameter) Use π = 3.14

_____ metres

Birds usually avoid the blades so they are not harmed. What is the area of the circle that they need to avoid? (The area of a circle is pi x the radius squared.) Use π =3.14
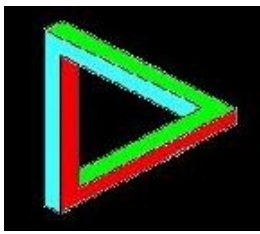
_____m^2

When I visited the wind speed was 7.0 metres per second.
How many metres is this per hour?

_____ metres per hour.

How many kilometres is this per hour?

_____ kilometres per hour.

The blades were turning at 15.1 revolutions per minute. If the wind speed stayed the same all day, how many revolutions would this be?

_____ revolutions

When you were doing the Level 1 questions you worked out that the turbine has been working for 166 months. Sometimes when the wind is very strong the turbine has to be turned off for safety reasons. It also has to be turned off occasionally for maintenance. The control panel shows that it has been operational for 109,691 hours.

How many days is this? (round your answer to the nearest day)

_____ days.

There are 365 days in a year. How many years is 109,691 hours? (Round your answer to one decimal place)

_____

How many years is 166 months? (round your answer to 1 decimal place)

How many years has the turbine not been operational?

_____

What percentage of the time is the turbine operational? (round your answer to the nearest whole number)

_____%

To download this worksheet or to check your answers visit www.mathswithgraham.org.uk