Name .... Class .... Date ....

INEOS TEAM UK is planning to install solar panels on their base to generate electricity. Using renewable energy will help make the team's base more sustainable.

James Stagg: Head of Operations at INEOS TEAM UK

James raced in the 2003 America's Cup with GBR Challenge.
He is responsible for the base and the team's operations.
Help James plan a solar array for the INEOS TEAM UK base.

1

Your job is to design the solar array, fitting as many solar panels on the roof as possible. What is the total area you can fill with solar panels?

a Draw squares or rectangles on the base plan to cover as much available space as possible with solar panels. Keep the paved terraces, service ducts, and skylight clear.

b Calculate the total area you will cover in solar panels. Work in cm and cm^2.

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Total area: .... cm^2

c Use the scale at the bottom of the diagram to calculate the ratio. You will need this to convert your lengths and areas of solar panels on the scale drawing to real life values.

.... cm: 10m

.... cm^2: $100m^2$ (both values are squared)

d Convert your total area into m^2 using the ratio you just calculated.

.... cm^2 on paper = ... m^2 in real life

2 How much electricity can your solar array produce?

a At maximum output, 1m^2 of solar panel can produce 115W of electrical power (115W/m^2). How much total power can your array produce?

.... m^2 x 115W/m^2 = ... W.

....

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b Do you think that your solar array will produce this much power all the time?

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3 Solar panels cost £300 per square metre. What is the total cost of your array?

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