



ANSWERS

1		1st Oct	1st Nov	1st Dec
	Mean hourly output including times where zero output recorded	8.68	6.17	2.86
	Mean hourly output excluding times where zero output recorded	18.95	16.44	8.59

Students should think about whether including hours where no energy is produced – that is, hours of darkness – is a fair representation of the performance of the solar panels. If these hours are included, the divisor in the mean calculation will remain constant, and the mean is an average hourly output over the course of a day. If these hours are excluded, the divisor will be smaller during winter months, which creates a proportionally larger mean, and the mean is an average hourly output during daylight hours.

2 **a** The three days' outputs are quite evenly distributed. Output is logged first in the morning and peaks around midday.

b The mean, median and range are greater in October and decreasing thereafter.

3 Factors affecting the output of the panels include time of day, time of year, weather, position and orientation of panels, type of panels (they have varying efficiency, but higher efficiency = higher cost), cleanliness of panels (there are lots of seagulls in Portsmouth!), nearby objects causing obstructions/shadows and so on.