



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

INEOS TEAM UK is the British Challenger for the 36th America's Cup – the oldest international sporting competition in the world. There are only eleven crew on the boat, but a hundred experts back at the team's base; working hard to help INEOS TEAM UK design the most technically advanced and innovative foiling boat to win the America's Cup.

The team use lots of different data to get the best out of the boat and crew in order to give them the best chance of winning. Have a go at the questions below on averages and range.



**Jono Macbeth – Sailing team manager and grinder**

Began professional sailing in 1997!

**1** Look at the list of the sailors' weights below.

Crew	Weight (kg)
Ben Ainslie	81.6 kg
Giles Scott	82.4 kg
Freddie Carr	95.4 kg
Graeme Spence	84.7 kg
Nick Hutton	88.3 kg
Leigh McMillan	82.4 kg
Neil Hunter	100.1 kg
Iain Jenson	78.3 kg

- a** What is the modal weight? .....
- b** What is the range of their weights, in kg? .....
- c** What is the median weight? .....



Did you know each sailor expends up to 35,000kcal in physical training and sailing per week.



Jono manages the sailing team and determines which crew members will participate in each race. In the 35th AC the race rules stated that for a crew of six the mean weight of each sailor should be no more than 87.5 kg. Jono has chosen the first five crew members: Ben Ainslie, Giles Scott, Freddie Carr, Graeme Spence and Nick Hutton.

**d** What is the maximum weight that the sixth member can be? .....

**e** Out of the remaining available sailors, who could Jono select as the sixth man?  
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**2** Mark Rogers is the Facilities Manager at INEOS TEAM UK. He keeps a close eye on how much waste is disposed of at the base. Below you can see how much waste was disposed of each day during the final seven days of August.

Date	Waste value (tonnes)
August 25th	0.180
August 26th	0.229
August 27th	0.238
August 28th	0.228
August 29th	0.060
August 30th	0.210
August 31st	5.354

**a** What is the range of this data? .....

**b** What is the mean daily value of waste disposed at the base, in tonnes? .....

**c** What is the median value of waste disposed at the base, in tonnes? .....

**d** Which average would you use to best represent the data? Which average might you avoid? Why? .....

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**e** What questions do you think Mark should ask next?  
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**3** Walter Zwiefelhofer, the INEOS TEAM UK's Meteorologist, has been gathering data about the weather in Auckland, New Zealand. Below is some information on the average weekly wind speed in June for the past three years.

March 2013

Week	Speed
1	18.2 knots
2	8.4 knots
3	3.2 knots
4	4.1 knots

March 2014

Week	Speed
1	12.4 knots
2	2.2 knots
3	6.5 knots
4	11.4 knots

March 2015

Week	Speed
1	13.1 knots
2	26.6 knots
3	16.3 knots
4	14.7 knots

- a What is the range of this data? .....
- b What is the modal group for this data? Use this tally chart to group the data and determine which group has the highest number of values.

Speed range in knots (kn)	Tally	Frequency (f)	Midpoint (m)	$m \times f$
$x < 5$ kn				
$5 \text{ kn} \leq x < 10$ kn				
$10 \text{ kn} \leq x < 15$ kn				
$15 \text{ kn} \leq x < 20$ kn				
$20 \text{ kn} \leq x < 25$ kn				
$25 \text{ kn} \leq x < 30$ kn				

Show your working out here:

Answer: .....

- c Find the class interval that contains the median.  
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- d Calculate an estimate for the mean wind speed off Auckland.  
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