Correlation

Gold

A sample of 10 days is taken from the large data set. The data collected is the daily mean windspeed, w knots, and the daily maximum gust, g knots, from Leeming in 2015. The results are shown in the table below.

Daily mean windspeed	Daily maximum gust
9	23
10	22
6	16
5	18
6	17
6	17
4	14
7	23
3	10
8	18

The equation of the regression line of g on w is $g = 7.42 + 1.62w$.

a Interpret the value of the constant 1.62 in the equation.
b Use your knowledge of the large data set to explain whether there is likely to be a causal relationship between maximum gust and windspeed.

Silver

A sample of 10 days is taken from the large data set. The data collected is the daily mean windspeed, w knots, and the daily maximum gust, g knots, from Camborne in 2015. The results are shown in the table below.

Daily mean windspeed	Daily maximum gust
14	33
9	23
18	43
5	12
4	10
12	28
10	24
12	26
13	30
6	16

The equation of the regression line of g on w is $g = 1.22 + 2.26w$.

a Give an interpretation of the value of the gradient of this regression line.
b Give a reason why it would not be reliable to use this regression equation to predict the maximum gust on a day with mean windspeed of 30 knots.

Correlation

Bronze

A sample of 10 days is taken from the large data set. The data collected is the daily mean windspeed, w knots, and daily maximum gust, g knots, from Camborne in 2015. The results are shown in the table below.

Daily mean windspeed	Daily maximum gust
14	33
9	23
18	43
5	12
4	10
12	28
10	24
12	26
13	30
6	16

a Draw a scatter diagram to represent these data.

b Explain why a linear regression model may be appropriate to describe the relationship between w and g.

Correlation