Can Fish Oil Make You Smarter?

NAME: .....

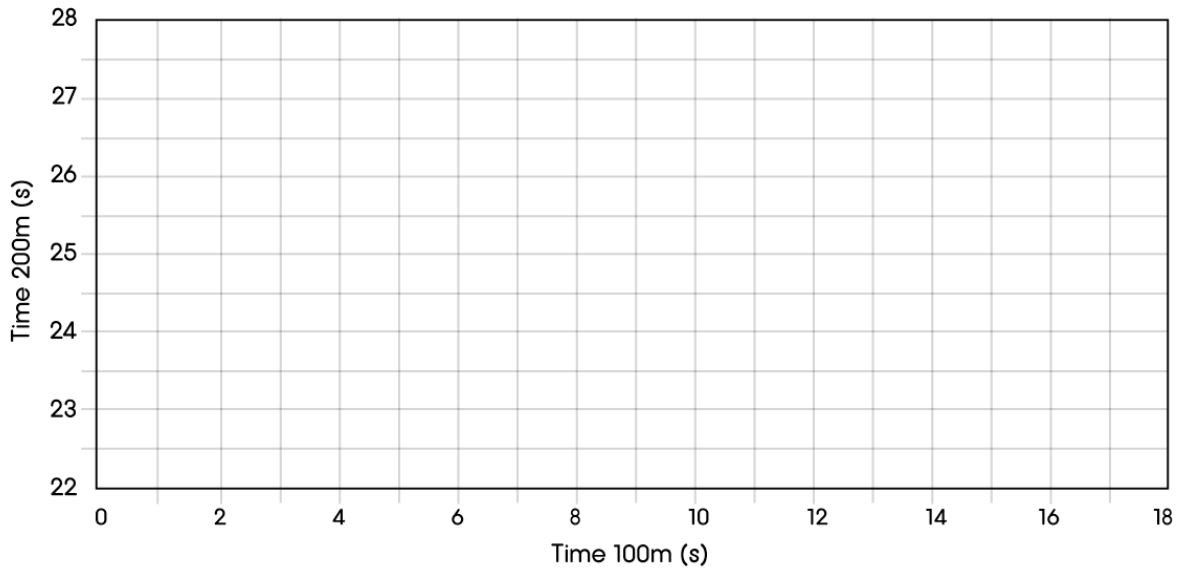
CLASS: .....

DATE: .....

Basic

1) Seven children take part in 100m and 200m races. They record their times as shown in the table below. Draw a scatter graph for the following data.

Name	Brian	Zoe	Kyle	Lucy	Ruth	Oliver	Ben
Time 100m (s)	13.5	15.6	13.7	14.9	13.1	14.1	15.9
Time 200m (s)	23.6	26.3	24.4	25.5	23.1	24.1	27.2



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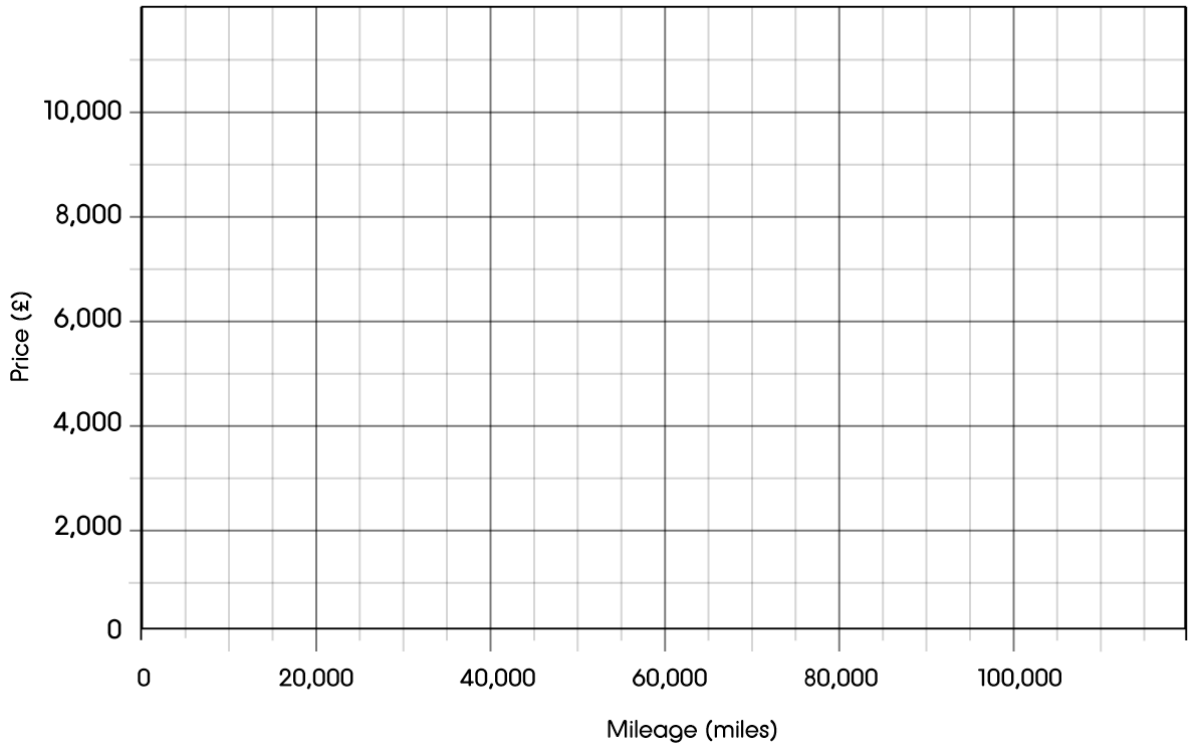
Basic

2) A garage owner notes the prices of a number of cars and also the mileage on the cars. Draw a scatter graph to represent the data that he collected below.

Mileage (miles)	25,000	95,000	46,000	75,000	22,000	38,000
Price (£)	8500	3800	5300	5100	8900	6600



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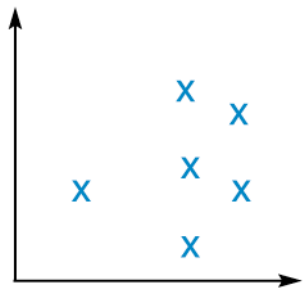
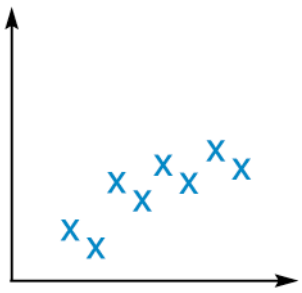
Core

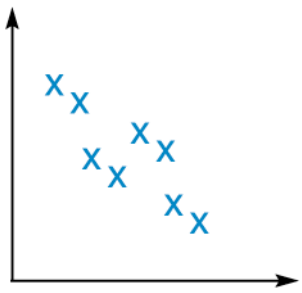
1) List three types of observational bias.

2) How can the risk of observational bias be reduced?

3) Look at the scatter graphs below and state the type of correlation for each:







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Core

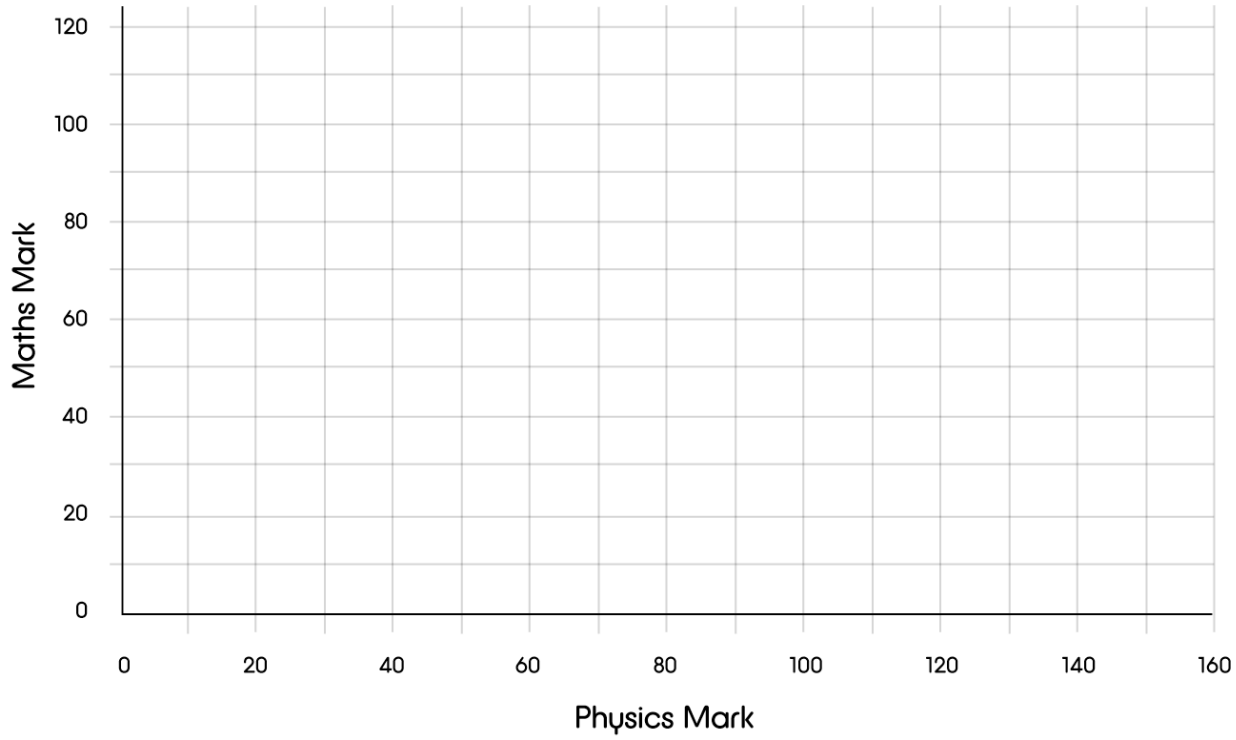
4) The following table shows the marks obtained by students in a maths and a physics exam:

Physics Mark	125	113	98	82	118	138	120	131	92	100
Maths Mark	83	75	43	34	67	98	77	89	39	56

Use the information in the table to:

a) draw a scatter graph.

b) draw the line of best fit.



c) state the type of correlation (if any) between the results.

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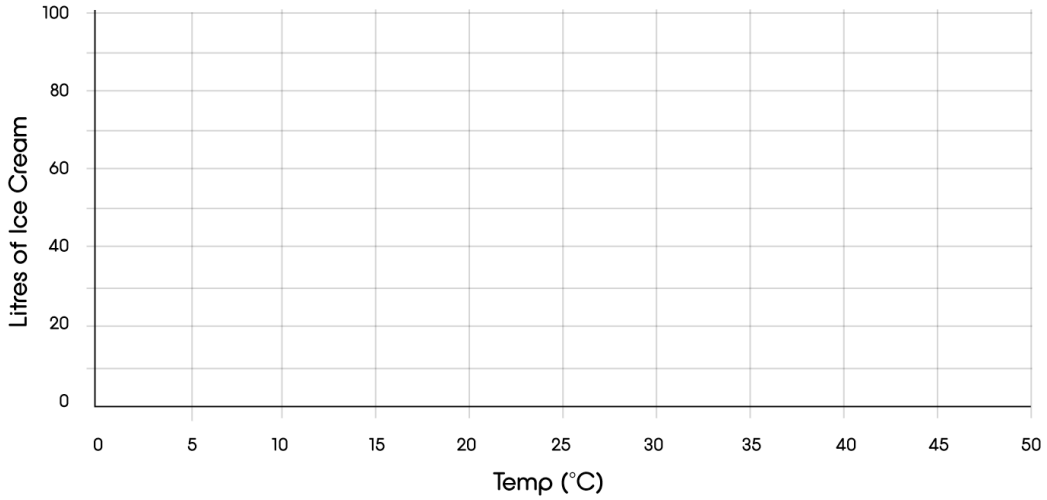
Advanced

1) During one week in July, the owner of an ice cream shop recorded the number of litres of ice cream sold each day. He also recorded the temperature at 2pm each day. The information is given in the table below:

Day	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Temperature (°C)	49	22	17	13	21	15	20
Litres of ice cream	65	80	58	44	72	48	71

a) Plot this information on a scatter graph.



b) Draw the line of best fit through the data and determine its equation.

c) Use your equation to estimate how many litres of ice cream the shop might expect to sell on a day when the temperature at 2pm is 18°C.

2) The heights (in metres) of a group of men were measured: 1.63 1.65 1.68 1.73 1.76

a) Find the mean height of the men. b) Calculate the sample standard deviation for this data.

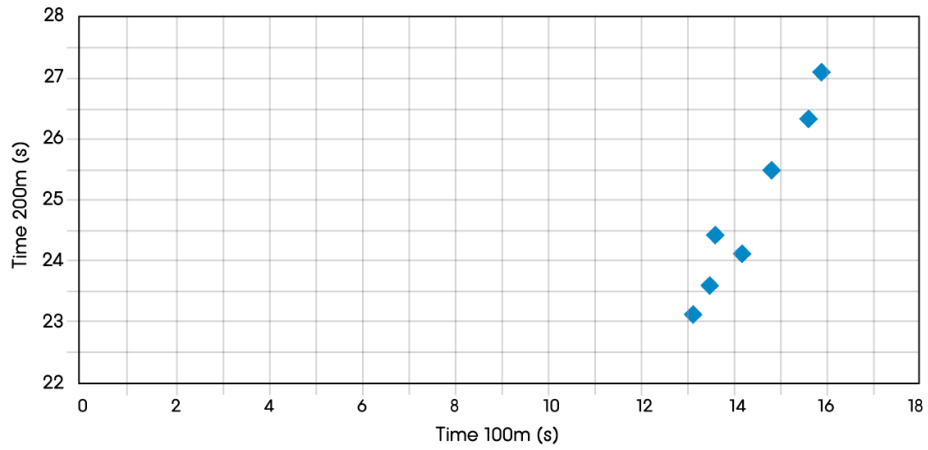
3) The number of rain showers in each day during the first week in May was as follows: 1, 5, 7, 3, 6, 8, 5. Calculate the standard deviation for this data.

Can Fish Oil Make You Smarter?

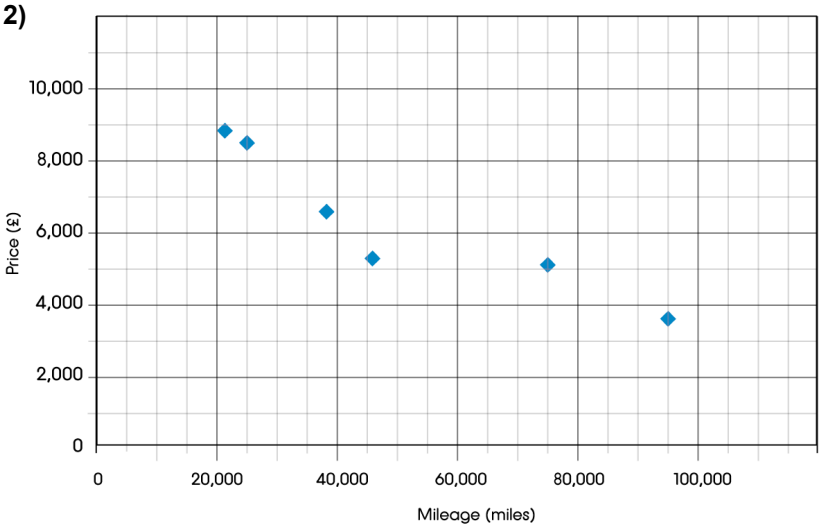
ANSWERS

Basic

1)



2)



Core

1) Recall and information – healthy people may be more likely to under report their alcohol intake. Interviewer – different interviewer styles might provoke different responses to the same question. Misclassification – this tends to dilute an effect.

2) Multiple control groups, standardised observations, corroboration of multiple information sources.

3) No correlation; positive correlation; negative correlation

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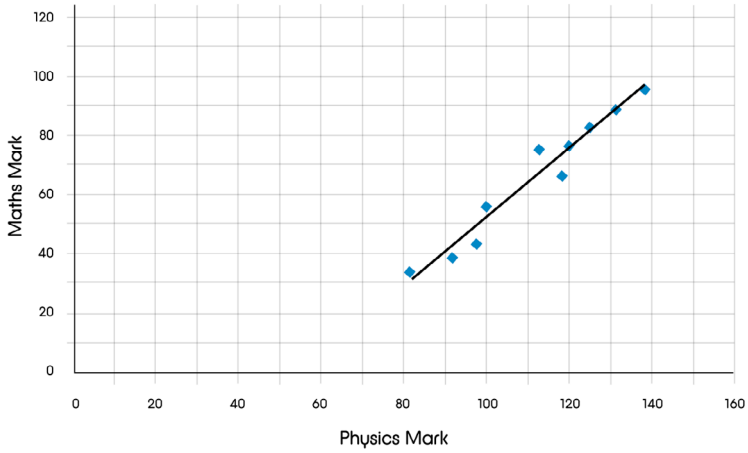
ANSWERS

Core

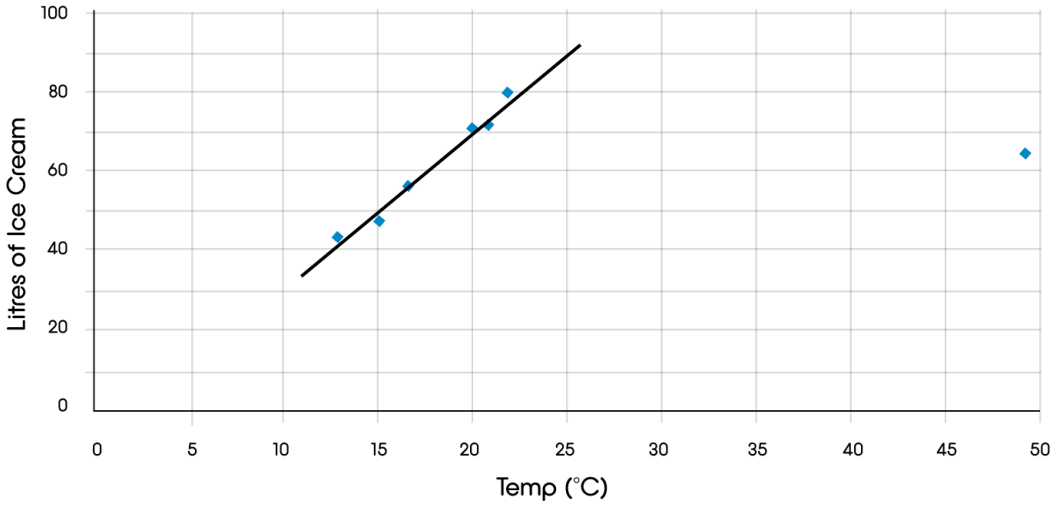
4)



c) Positive correlation

Advanced

1) a)



b) y = 4x -10 using the points (17, 58) and (22, 78) **c) 62 litres**

2) a) 1.69 **b) 0.0543**

3) 2.38