

Name \_\_\_\_\_

Date \_\_\_\_\_

## IB Math Studies Quiz 2.1

1.

The following table shows the average number of hours per day spent watching television by seven mothers and each mother's youngest child.

Hours per day that a mother watches television ( $x$ )	2.5	3.0	3.2	3.3	4.0	4.5	5.8
Hours per day that her child watches television ( $y$ )	1.8	2.2	2.6	2.5	3.0	3.2	3.5

The relationship can be modelled by the regression line with equation  $y = ax + b$ .

(a) (i) Find the correlation coefficient.

(ii) Write down the value of  $a$  and of  $b$ .

[4]

Elizabeth watches television for an average of 3.7 hours per day.

(b) Use your regression line to predict the average number of hours of television watched per day by Elizabeth's youngest child. Give your answer correct to one decimal place.

[3]

2.

The following table shows the sales,  $y$  millions of dollars, of a company,  $x$  years after it opened.

Time after opening ( $x$ years)	2	4	6	8	10
Sales ( $y$ millions of dollars)	12	20	30	36	52

The relationship between the variables is modelled by the regression line with equation  $y = ax + b$ .

(a) (i) Find the value of  $a$  and of  $b$ .

(ii) Write down the value of  $r$ .

[4]

(b) Hence estimate the sales in millions of dollars after seven years.

[2]

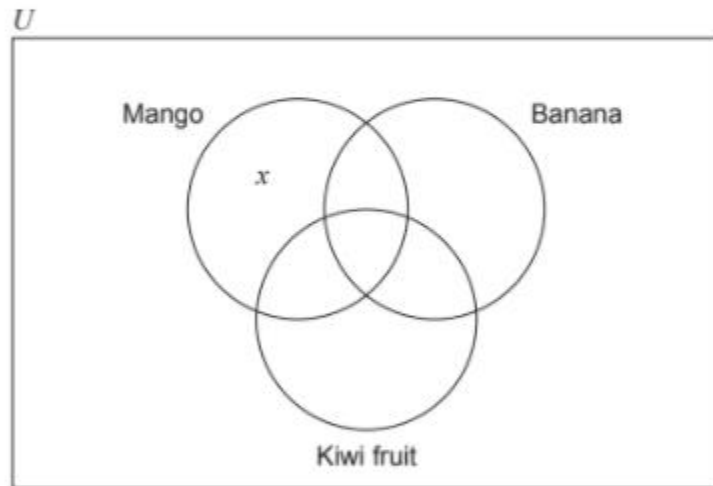
3.

A group of 100 customers in a restaurant are asked which fruits they like from a choice of mangoes, bananas and kiwi fruits. The results are as follows.

- 15 like all three fruits
- 22 like mangoes and bananas
- 33 like mangoes and kiwi fruits
- 27 like bananas and kiwi fruits
- 8 like none of these three fruits
- $x$  like **only** mangoes

- (a) **Copy** the following Venn diagram and correctly insert all values from the above information.

[3]



The number of customers that like **only** mangoes is equal to the number of customers that like **only** kiwi fruits. This number is half of the number of customers that like **only** bananas.

- (b) Complete your Venn diagram from part (a) with this additional information **in terms of  $x$** .

[2]

- (c) Find the value of  $x$ .

[2]