

# E9.2 Histograms, Bar Charts, Pictograms, Scatter Diagrams & Frequency Distributions

## Question Paper

Level	IGCSE
Subject	Maths (0580)
Exam Board	Cambridge International Examinations (CIE)
Level	Core
Topic	E9. Statistics
Sub-Topic	E9.2 Histograms, Bar Charts, Pictograms, Scatter Diagrams & Frequency Distributions
Booklet	Question Paper

**Time Allowed:** 68 minutes

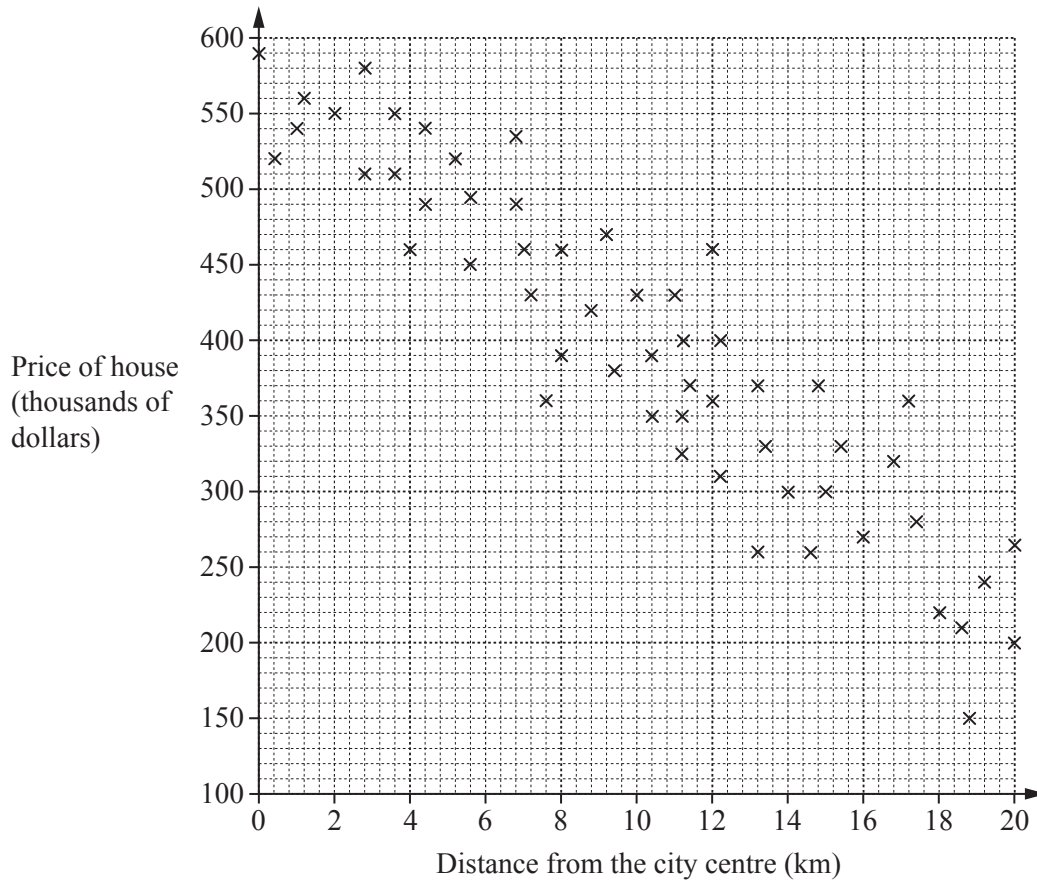
**Score:** /57

**Percentage:** /100

**Grade Boundaries:**

A*	A	B	C	D	E	U
>85%	75%	60%	45%	35%	25%	<25%

1 The scatter diagram shows the prices of houses for sale and their distances from the city centre.



(a) What type of correlation is shown in this scatter diagram?

..... [1]

(b) Brad wants to live as close to the city centre as possible.  
He has a maximum of \$500 000 to spend on one of these houses.

How close to the city centre can he live?

..... km [1]

(c) (i) Draw a line of best fit on the scatter diagram.

[1]

(ii) Estimate the price of a house that is 14 km from the city centre.

\$..... [1]

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- 2 (a) A group of 20 children were asked to choose their favourite type of fruit juice. The results are listed below.

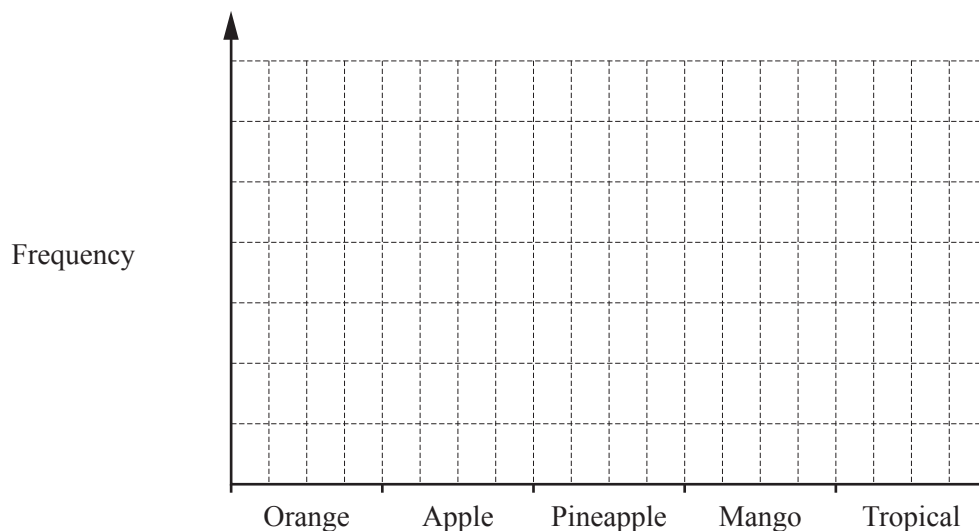
Orange	Apple	Apple	Pineapple	Mango
Tropical	Orange	Mango	Apple	Mango
Pineapple	Apple	Apple	Mango	Orange
Apple	Mango	Pineapple	Orange	Apple

- (i) Complete the frequency table for the results. You may use the tally column to help you.

Type of juice	Tally	Frequency
Orange		
Apple		
Pineapple		
Mango		
Tropical		

[2]

- (ii) Draw a bar chart to show these results. Remember to mark the scale on the frequency axis.



[3]

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- (iii) Sarah has a pack of 20 cartons of juice.  
5 are orange, 5 are apple, 5 are pineapple and 5 are mango.  
She would like to give each child their favourite type of juice.

How many children will **not** get their favourite type of juice?

..... [1]

- (b) One litre of a mixed fruit drink contains 550 millilitres of apple juice.

Write down the fraction of the drink that is apple juice.  
Give your answer in its simplest form.

..... [2]

- (c) Amir wants to buy a bottle of fruit juice.  
There are three sizes of bottle.

0.9 litres \$2.40
----------------------

1.25 litres \$3.15
-----------------------

1.35 litres \$3.50
-----------------------

Work out which size of bottle gives the best value.  
Show how you decide.

..... [3]

- (d) The amount of juice in a glass,  $j$  millilitres, is 150 millilitres correct to the nearest 10 millilitres.

Complete this statement about the value of  $j$ .

.....  $\leq j <$  ..... [2]

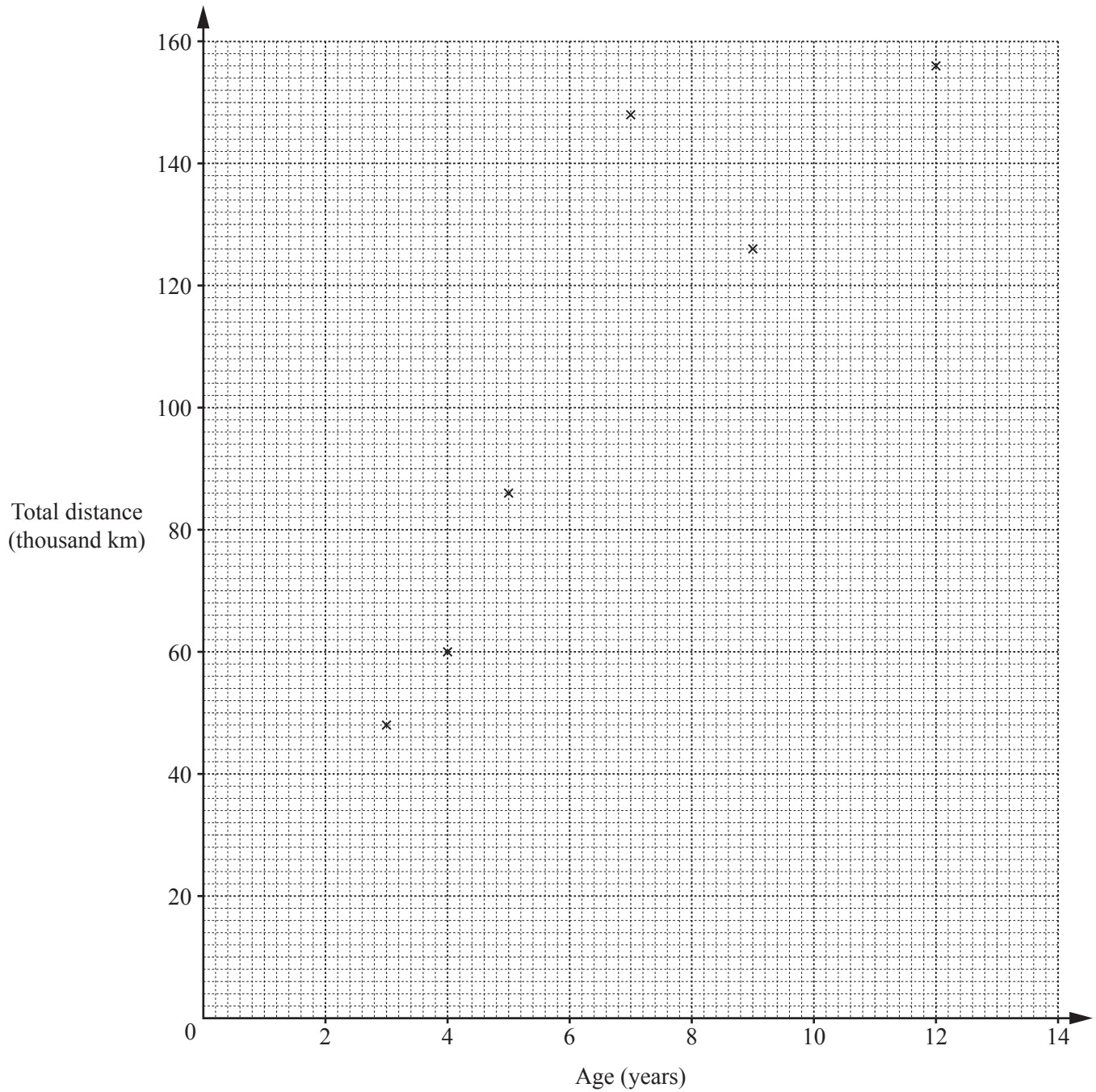
- 3 (a) The table shows the age and the total distance travelled for 10 cars.

Car	A	B	C	D	E	F	G	H	I	J
Age (years)	5	9	12	3	7	4	10	11	5	9
Total distance (thousand km)	86	126	156	48	148	60	70	150	105	138

- (i) Find the mean age of the cars.

..... years [2]

- (ii) Complete the scatter diagram.  
The first six points have been plotted for you.



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(iii) What type of correlation does the scatter diagram show?  
..... [1]

(iv) Draw the line of best fit on the scatter diagram. [1]

(v) Use your line of best fit to estimate the total distance travelled by a car that is 6 years old.  
..... thousand km [1]

(vi) Car G travelled less than the average number of kilometres per year.  
Explain how you know this from your scatter diagram.  
..... [1]

(b) Juan is a car salesman.

(i) Last year, Juan sold 75 small cars, 45 medium cars and 30 large cars.  
Find the ratio small cars : medium cars : large cars in its simplest form.  
..... : ..... : ..... [2]

(ii) Ana wants to buy a car with a price of \$2550.  
Juan reduces the price by 12%.  
Calculate the amount Ana pays for this car.  
\$..... [2]

(iii) Juan advertises a car for sale.

Plan A	Cash price \$4500
OR	
Plan B	15% of the cash price plus 36 monthly payments of \$120

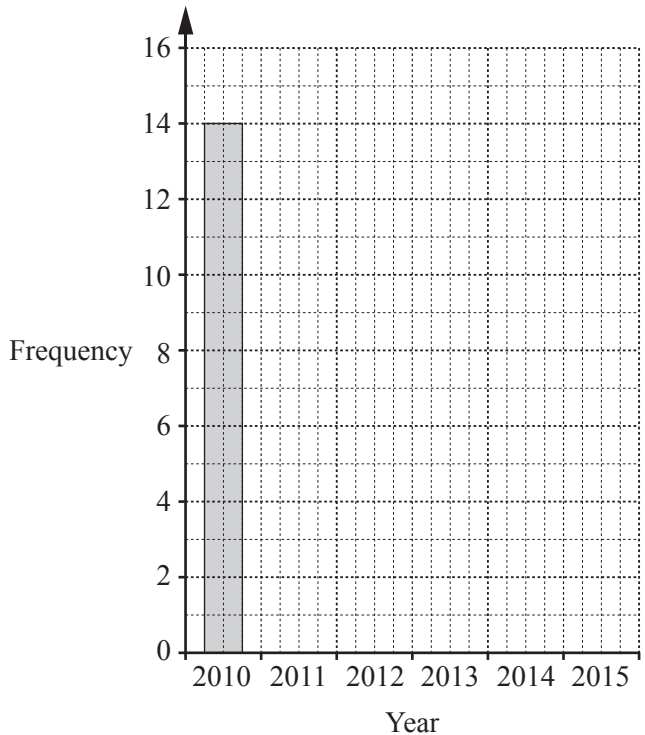
Work out how much more it costs to buy the car using Plan B than using Plan A.

\$..... [3]

4 A garage sells second-hand cars.  
The table shows the number of cars sold and the year they were made.

Year	2010	2011	2012	2013	2014	2015
Frequency	14	13	4	8	0	11

(a) Complete the bar chart to show this information.





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(b) For these cars, write down the modal year.

..... [1]

(c) The garage sold 6 cars last week.  
The selling prices, in dollars, are listed below.

920      1070      3100      2240      2650      1840

(i) Work out the range.

\$..... [1]

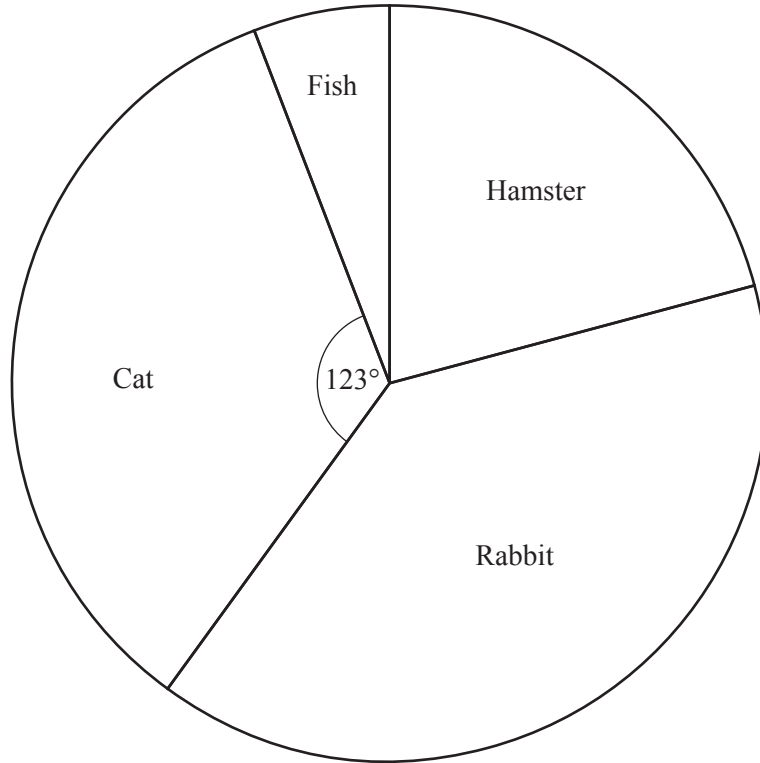
(ii) Work out the median.

\$..... [2]

(iii) Calculate the mean.

\$..... [2]

- 5 Some children were asked to choose their favourite type of pet.  
The pie chart shows the results.



- (a) 41 children chose Cat.

Work out how many children were asked altogether.

..... [2]

- (b) Work out how many children chose Hamster.

..... [2]

- 6 Ten students each take two French tests.  
Their marks are recorded in the table below.

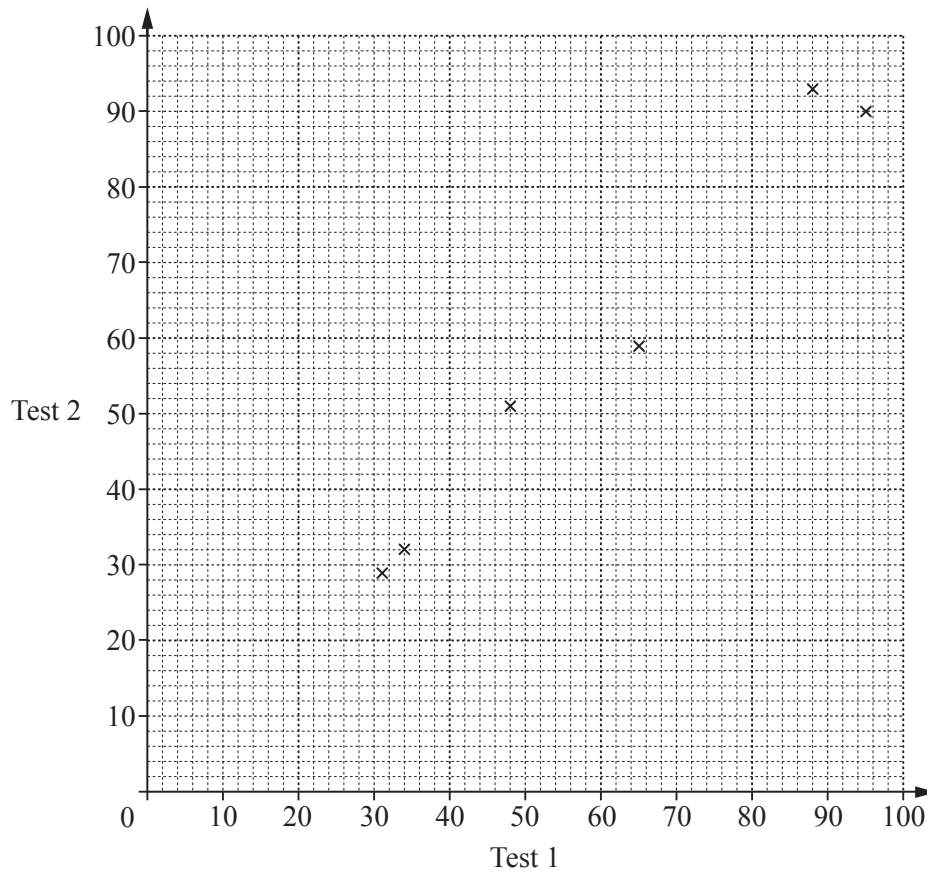
Student	A	B	C	D	E	F	G	H	I	J
Test 1	65	34	95	31	88	48	38	80	100	57
Test 2	59	32	90	29	93	51	37	72	92	54

- (a) One of the ten students is chosen at random.

Find the probability that their mark on Test 2 is higher than their mark on Test 1.

..... [1]

- (b) (i) Complete the scatter diagram.  
The first six points have been plotted for you.



[2]

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(ii) What type of correlation is shown on the scatter diagram?

..... [1]

(iii) On the grid, draw the line of best fit.

[1]

(iv) Another student scored 45 marks on Test 2.

Use your line of best fit to estimate the mark for this student on Test 1.

..... [1]

(v) A different student scored 10 marks on Test 1.

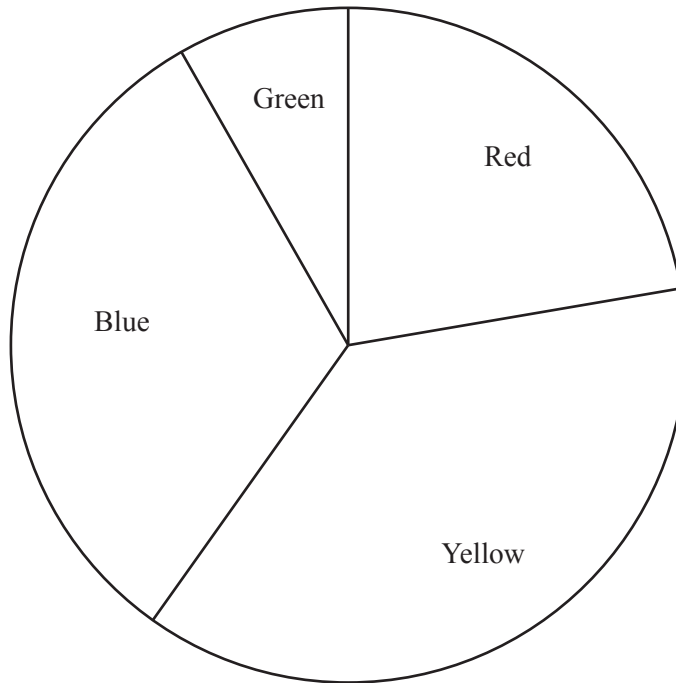
Explain why you should not use your scatter diagram to estimate their mark on Test 2.

..... [1]

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- 7 All the children in a school are asked to choose their favourite colour.  
The pie chart shows the results.



- (a) Write down the least favourite colour chosen.

Answer(a) ..... [1]

- (b) 27 children choose yellow as their favourite colour.

Work out the total number of children in the school.

Answer(b) ..... [3]

- (c) Work out the percentage of the children in the school who choose red.

Answer(c) ..... % [2]