



GCSE Foundation 23

Handling data



228 minutes

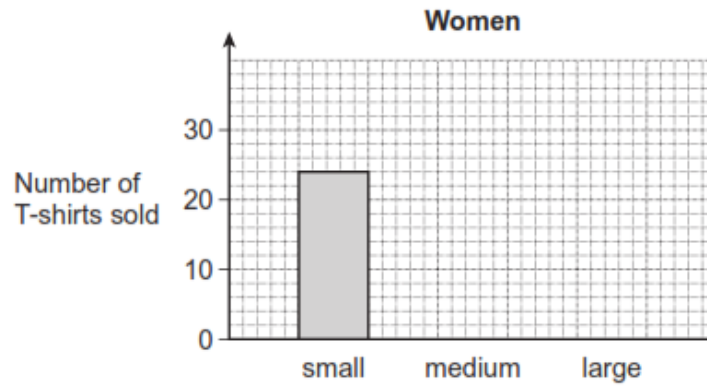


221 marks

Representing data

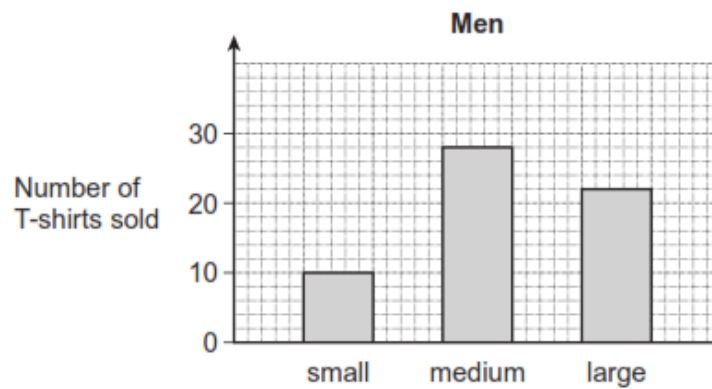
Q1. A shop sells 20 medium and 6 large T-shirts to women.

(a) Complete the bar chart.



(2)

(b) Here is the bar chart for men.



Each **small** T-shirt makes £2 profit.

Work out the total profit on **small** T-shirts for men and women.

.....

.....

.....

Answer £


(4)






(Total 6 marks)

Q2. Beth collects this information about Year 7 sports clubs for the school newspaper.

Sports club	Number of members
Football	40
Table tennis	5
Basketball	10
Netball	15

- (a) Use the information to complete the pictogram.
The first two rows have been done for you.
Remember to complete the key.

Key:  represents members

Football	   
Table tennis	
Basketball	
Netball	

(3)

- (b) Use the information to write a headline about the sports clubs.

.....
.....

(1)

- (c) The 40 members of the football club are put into teams of five.
Each team plays a match against one of the other teams.

How many matches are played?

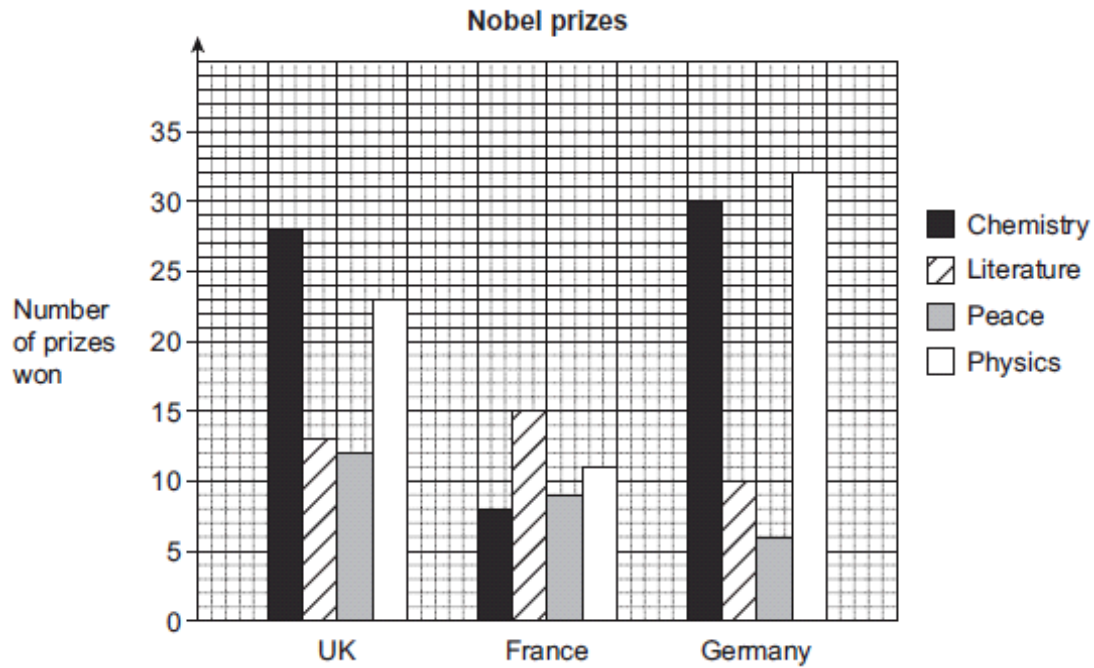
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Answer

(2)

(Total 6 marks)

Q3. Nobel prizes are won for Chemistry, Literature, Peace and Physics.



- (a) List these countries in order of the number of Chemistry prizes won. Start with the country that has won the most.

1

2

3

(2)

- (b) How many Peace prizes has France won?

Answer

(1)

- (c) Which of these countries has won the most prizes in total? You **must** show your working.

.....

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
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Answer

(3)

(Total 6 marks)

Q4. The pictogram shows how some people travel.

Key:  represents 10 people

Car	    
Bus	   
Bicycle	 
Tram	  

(a) How many of these people travel by car?

.....

Answer

(1)

(b) Which is used by the fewest?
Circle your answer.

Car

Bus

Bicycle

Tram

(1)

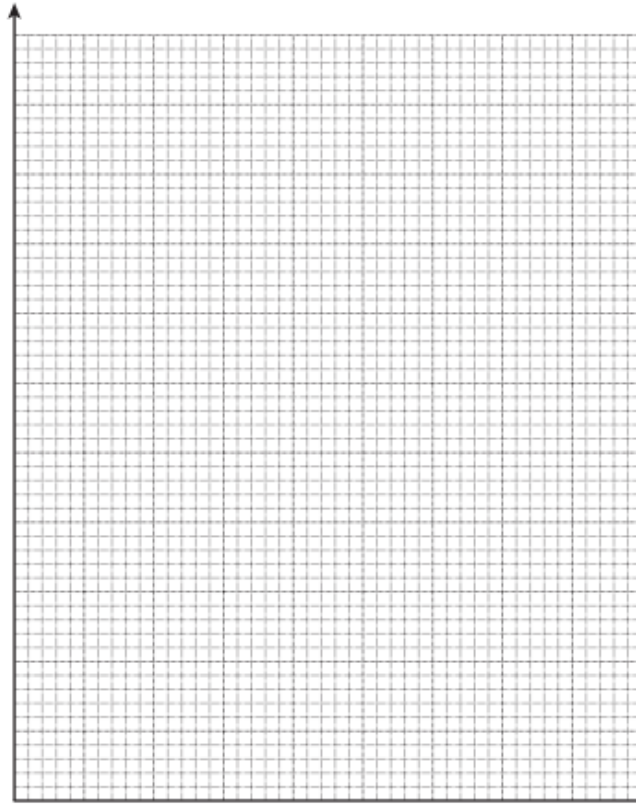
(c) How many more people travel by bus than by tram?

.....

Answer

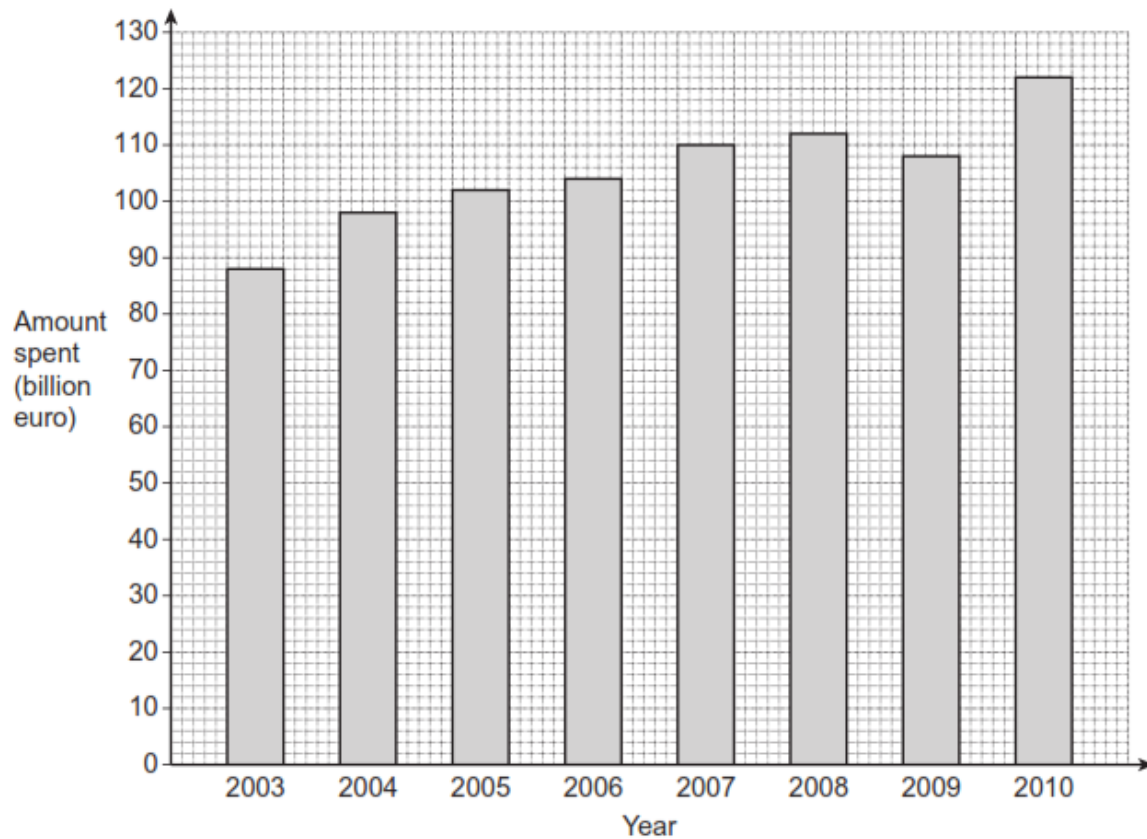
(2)

(d) Show the data in a fully labelled bar chart.



(5)
(Total 9 marks)

Q5. The graph shows the amount spent by the European Union.



(a) Which of these years was the first that over 100 billion euro was spent?

Answer

(1)

(b) In which year did the amount spent fall?

Answer

(1)

(c) $\frac{9}{20}$ of the amount spent in 2007 was on farming.

How much was spent in 2007 on farming?

.....

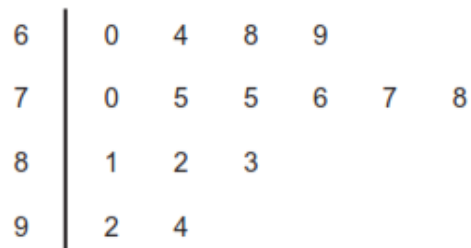
Answer billion euro

(3)

(Total 5 marks)

Q6. The stem-and-leaf diagram shows the number of visitors to a castle over 15 days.

Key: 7 | 0 represents 70 visitors



(a) How many days had more than 80 visitors?

.....

Answer

(1)

(b) Work out the range.

.....

Answer

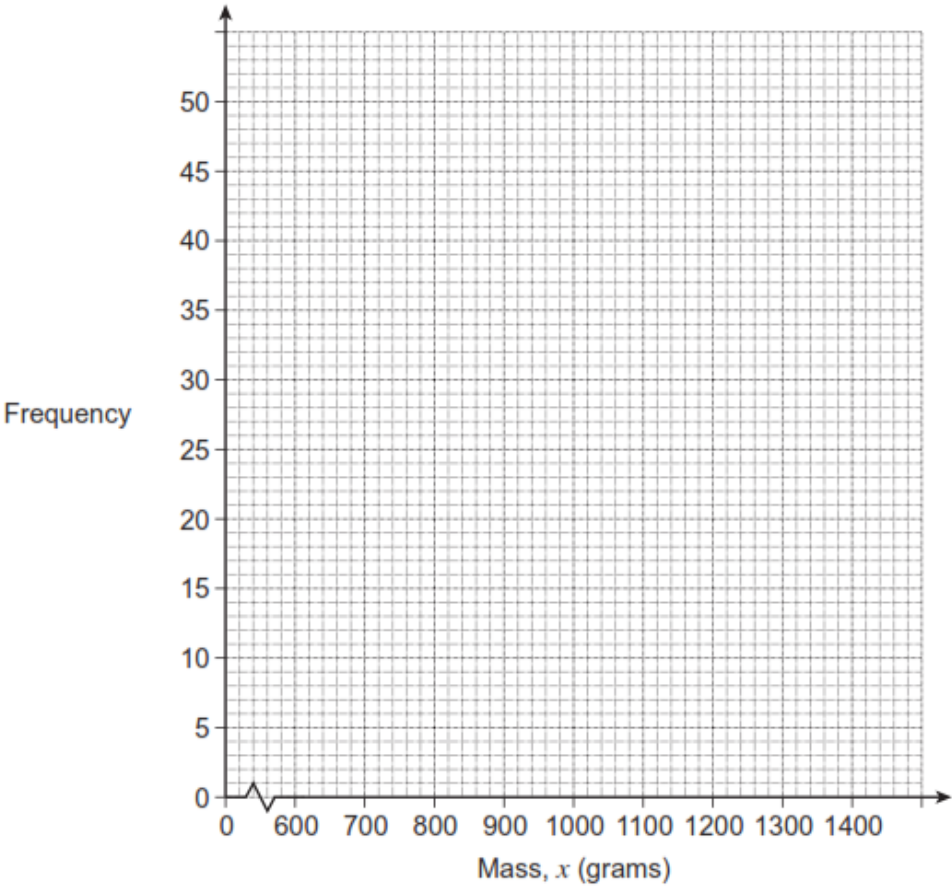
(2)

(Total 3 marks)

Q7. The masses of 100 bags of sprouts are summarised in the table.

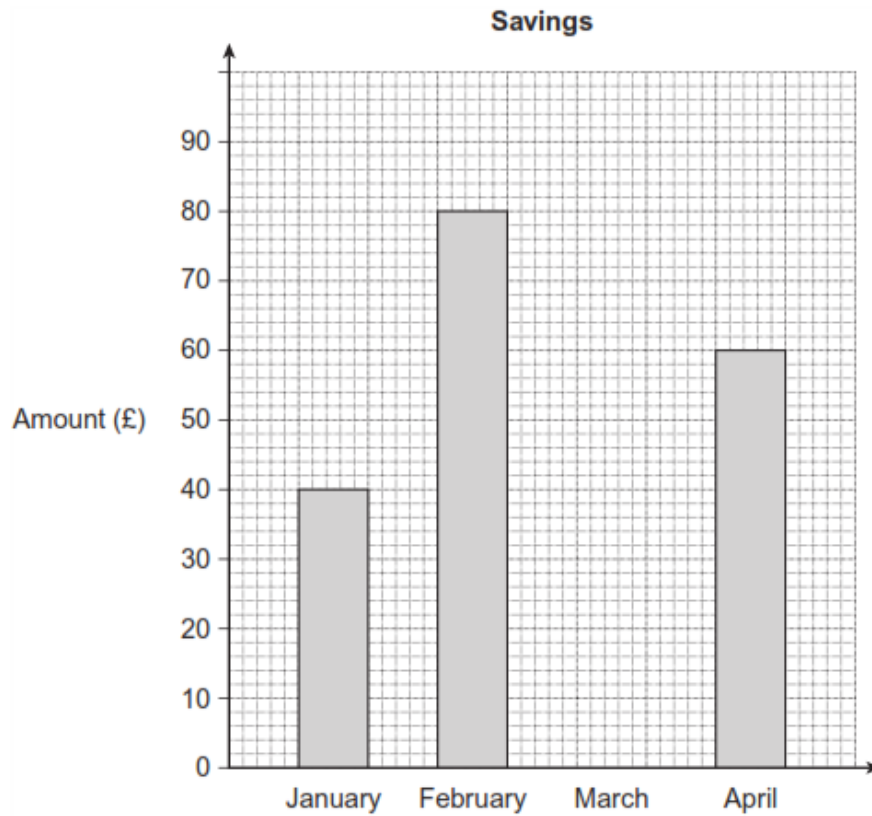
Mass, x (grams)	Frequency
$600 \leq x < 1800$	10
$800 \leq x < 1000$	46
$1000 \leq x < 1200$	32
$1200 \leq x < 1400$	12

Show the data on a frequency polygon.



(Total 2 marks)

- Q8.** (a) The bar chart shows the amounts Callum saves in January, February and April 2010.



- (i) How much does he save in January 2010?

Answer £

(1)

- (ii) From January to April he saves £250 in total.

Complete the bar chart by drawing the bar for March.

.....

.....

.....

.....

(3)

- (b) The pictogram shows the amounts Callum saves in the next four months.

Key:

--	--

 represents £20

May	<div></div> <div></div>	<div></div> <div></div>	<div></div> <div></div>	<div></div> <div></div>
June	<div></div> <div></div>	<div></div> <div></div>	<div></div>	
July	<div></div> <div></div>	<div></div>		
August	<div></div> <div></div>	<div></div> <div></div>	<div></div> <div></div>	<div></div>

Work out the range of the amount he saves in these four months.
You **must** show your working.

.....
.....

Answer £

(2)

- (c) (i) For the rest of 2010 Callum saves £50 each month.

How much does he save in 2010 in total?

.....
.....
.....
.....

Answer £

(3)

- (ii) Callum spends 50% of these total savings to pay for a holiday.

How much does he pay for the holiday?

.....
.....

Answer £

(2)

(Total 11 marks)

Q9. A car park is open from 9 am to 6 pm.

- (a) (i) 80 cars enter between 9 am and 10 am.
One-quarter of these cars are silver.

How many silver cars enter between 9 am and 10 am?

.....

Answer

(1)

- (ii) 115 cars enter between 10 am and 11 am.
Kim says, "Exactly one-quarter of these cars are silver."

Show that she is wrong.

.....

.....

(1)

- (b) A data logging machine counts cars entering and leaving the car park.

Hour ending at	Cars entering	Cars leaving
10 am	80	5
11 am	115	25
12 noon	75	40
1 pm	35	35
2 pm	50	50
3 pm	40	45
4 pm	20	65
5 pm	10	115
6 pm	5	30

- (i) The car park is empty at 9 am.

How many cars are in the car park at 10 am?

.....

Answer

(1)

- (ii) Barriers stop cars entering when the car park is full.
The car park is full at 12 noon.

How many cars are in the car park when it is full?

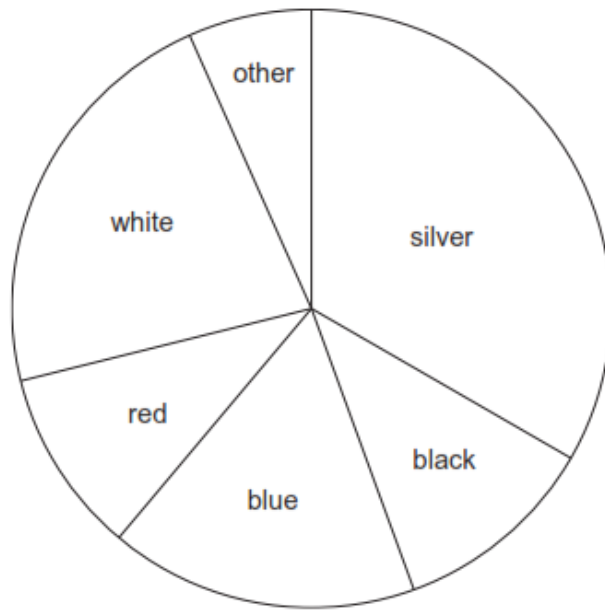
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.....

Answer

(3)

- (c) The pie chart shows information about the colours of the cars in the car park one day.



Complete the sentences.

- (i) There are twice as many cars as black cars.

(1)

- (ii) $\frac{1}{3}$ of the cars are

(1)

- (d) Are there any purple cars in the car park on that day?

Tick a box.

☐

Yes

☐

No

☐

Cannot tell

Give a reason for your answer.

.....

.....

(1)

(Total 9 marks)

Q10. (a) Matthew records the types of birds that visit his garden one morning.

(i) Complete the table.

Type of bird	Tally	Frequency
robin		
blackbird		
starling	### ##	
sparrow	###	
	Total	

(3)

(ii) What fraction of the birds are robins?
Give your answer in its simplest form.

.....

Answer

(2)



(b) This table shows the types of birds that Leah records in her garden one morning.

Type of bird	robin	blackbird	starling	sparrow
Frequency	4	6	5	3

She has finished the first row of a pictogram to show the results.

Complete the key and pictogram.

Key:  represents birds

robin	 
blackbird	
starling	
sparrow	

(4)

- (c) 500 000 people record the types of birds in their gardens.
In total, they record eight million birds.

On average, how many birds does each person record?

.....

.....

.....

Answer

(3)

- (d) Here is a list of the birds at a bird table.

robin	robin	sparrow	blackbird	starling
blackbird	starling	blackbird	robin	blackbird

One bird flies away.
Another bird arrives at the bird table.

The new mode is robin.

What type of bird flies away and what type of bird arrives?
Complete the table.

.....

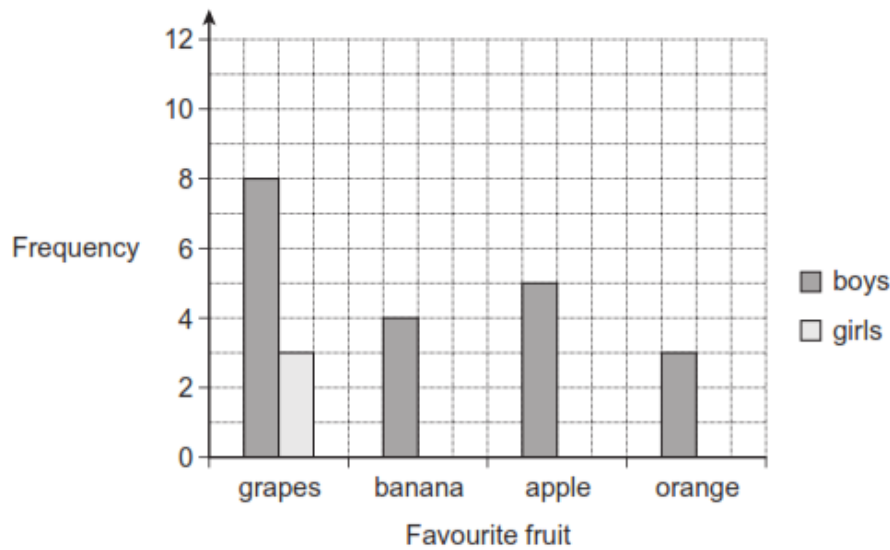
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	Type of bird
Flies away	
Arrives	

(2)

(Total 14 marks)

- Q11.** Callum asks some boys and girls to choose their favourite fruit. He is drawing a dual bar chart of the results. Callum has only drawn the first bar of the results for the girls.



- (a) How many more boys than girls choose grapes?

.....

Answer

(2)

- (b) How many boys does Callum ask altogether?

.....

Answer

(2)

- (c) Callum asks the same number of boys and girls.
Two girls choose apple.
Twice as many girls choose banana as choose orange.

Complete the bar chart.

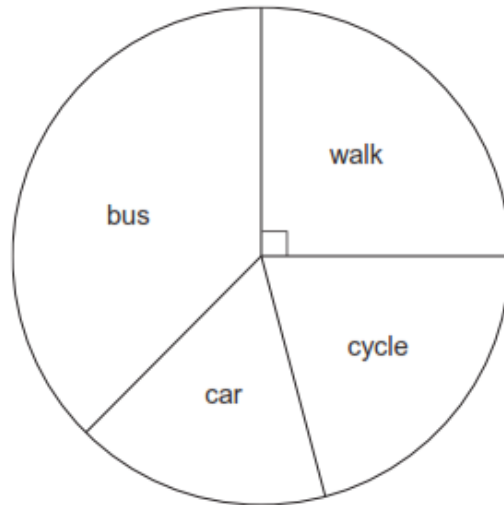
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(3)

(Total 7 marks)

Q12. The pie chart shows information about how year 10 students travel to a school.



- (a) A student from year 10 is chosen at random.

Mark, with the letter, the probabilities of each of the following on the scale below. The first one has been done for you.

A: The student walks to school.

B: The student does **not** walk to school.

C: The student travels to school by train.



(2)

- (b) 40 students travel to school by car.

How many year 10 students are there?

.....

Answer

(3)

- (c) There are 252 students in year 11.
The same proportion of students walk to school as in year 10.

Work out the number of year 11 students that walk to school.

.....

.....

.....

Answer

(2)
(Total 7 marks)

- Q13.** The table shows information about the main holiday of 200 students in 2011.

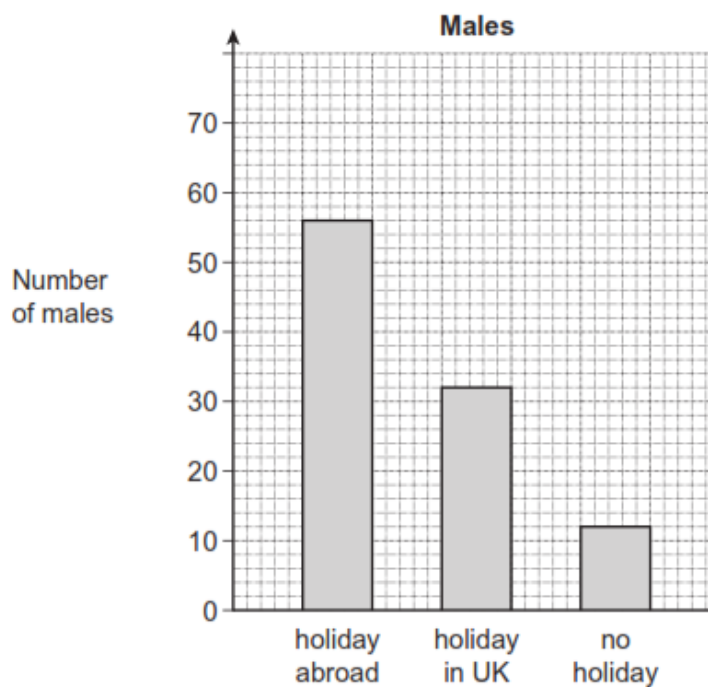
	Holiday abroad	Holiday in UK	No holiday	Total
Male	56	32	12	100
Female	70	24		100

- (a) Complete the table.

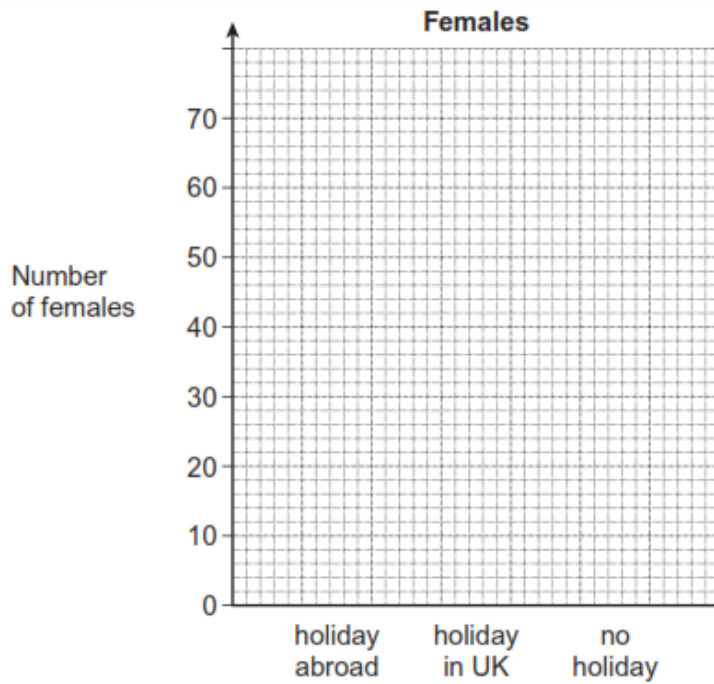
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(2)

- (b) The bar chart shows the information for males.



Draw the bar chart for females.



(3)

- (c) A travel firm sells holidays to students for 2012.

Do you think they will sell more holidays abroad or holidays in the UK?

Tick a box.

Holidays
abroad

☐

Holidays
in UK

☐

Cannot
tell

☐

Give a reason for your answer

.....

.....

(1)

- (d) The information for males and females could be shown on a dual bar chart.

Why might this be a good idea?

.....

.....

(1)

(Total 7 marks)

Q14. Ian sells cans of drinks.

- (a) The table shows the percentages of drinks sold on Monday morning.

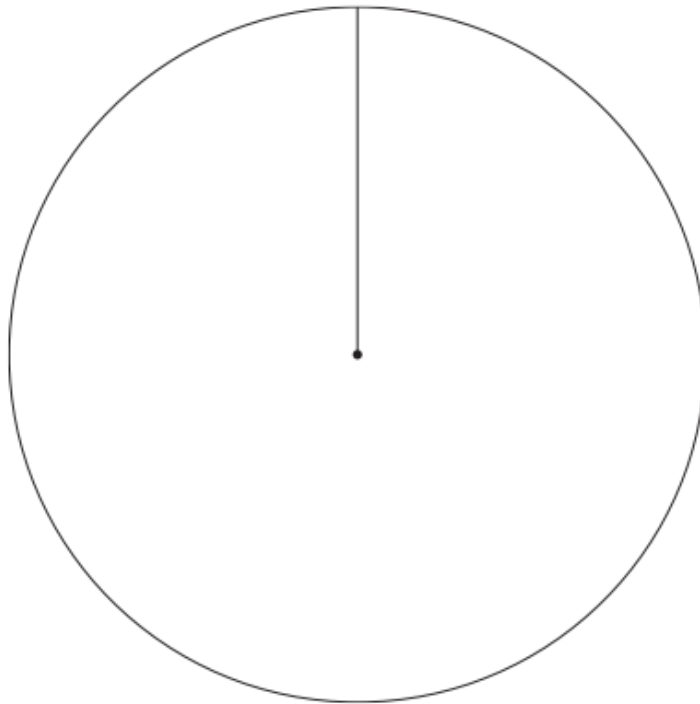
Drink	Percentage Sold
Cola	30%
Lemonade	20%
Orange	50%

Draw a pie chart for the data.

.....











.....

.....



(4)

- (b) The pictogram shows information about the drinks sold on Monday afternoon.
The key is missing.

Cola	    
Lemonade	 
Orange	  

80 cans were sold that afternoon.

How many cans of cola were sold?

.....

.....

.....

Answer

(3)

- (c) 80 cans were also sold in the morning.

- (i) Write down **one** difference between the cans sold in the morning and in the afternoon.

.....

.....

(1)

- (ii) Ian orders more cans.

Which flavour should he order least of, based on Monday's sales?
Circle your answer.

Cola

Lemonade

Orange

(1)
(Total 9 marks)

Q15. Nick takes four tests.

The pictogram shows his scores.

English	○ ○ ○
Geography	○ ○ ◐
Mathematics	○ ○ ○ ○ ◐
Science	○ ○

(a) Nick scores 60% in English.

Complete the key. Key: ○ represents%

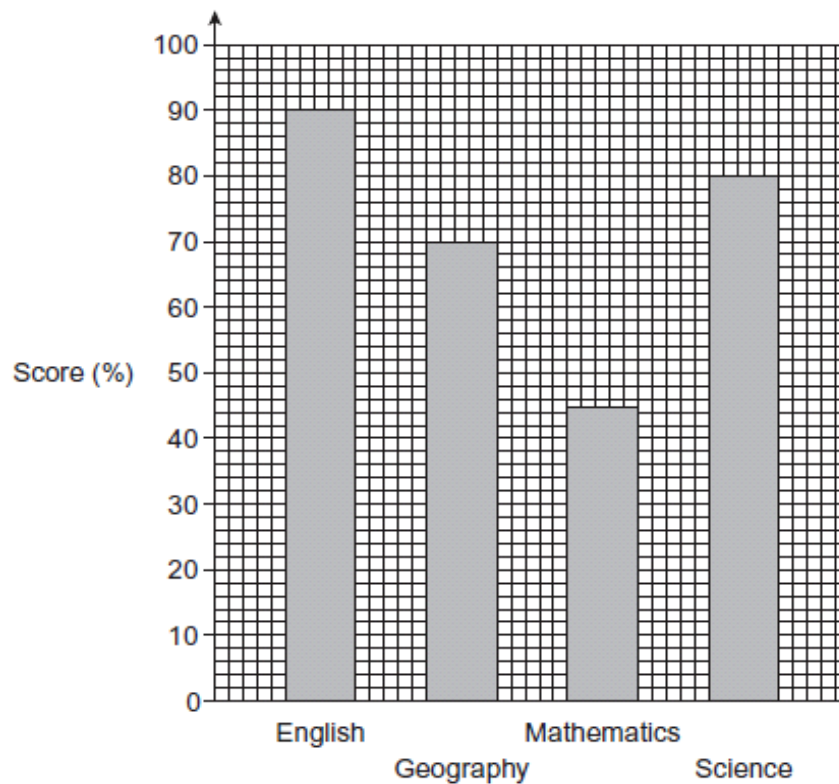
(1)

(b) In which subject is his highest score?

Answer

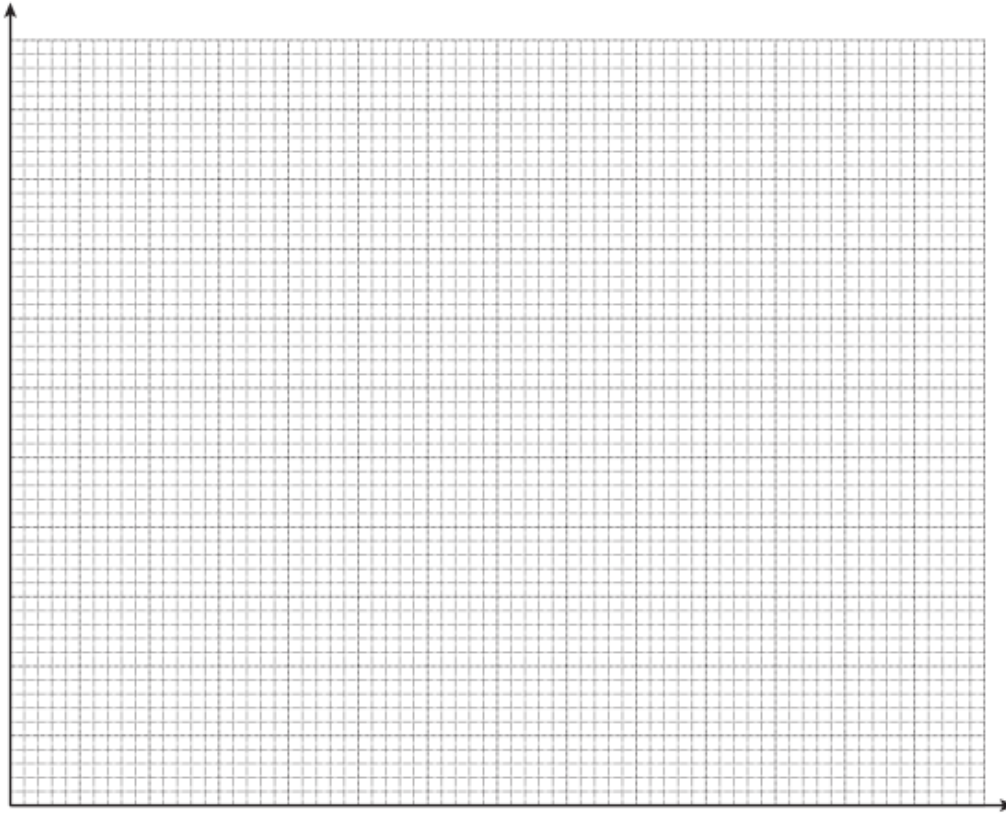
(1)

(c) Jen takes the same four tests.
The bar chart shows her scores.



- (i) Nick wants to compare his scores with Jen's scores.

Draw a suitable diagram that he can use.



(4)

- (ii) Write down **three** facts comparing their scores.

Fact 1

.....

Fact 2

.....

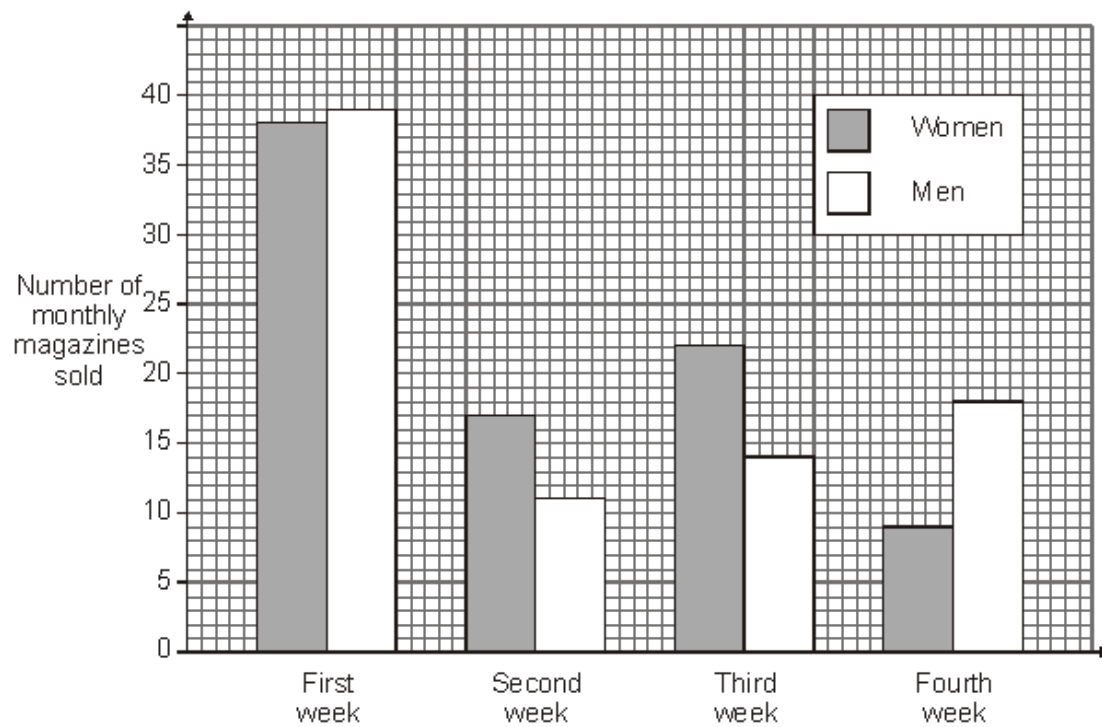
Fact 3

.....

(3)

(Total 9 marks)

- Q16.** The dual bar chart shows the sales of monthly magazines in a newsagents.
The data is collected over one month.



- (a) Give a reason why the sales of monthly magazines are greatest in the first week of the month.

.....
.....

(1)

- (b) The shopkeeper thinks that more women than men buy monthly magazines.

Does the data support this?

Show working to justify your answer.

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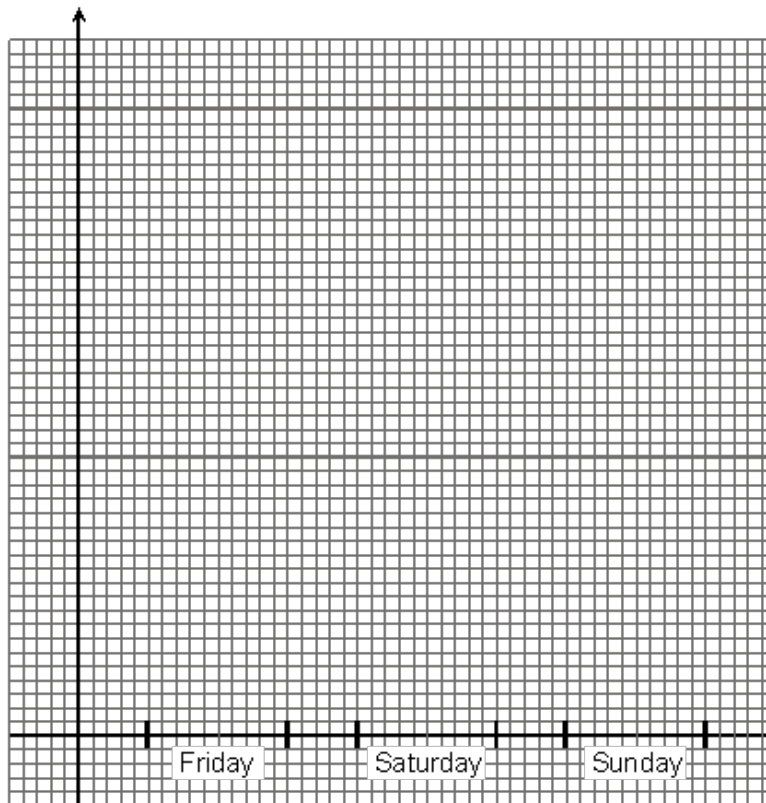
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(3)
(Total 4 marks)

- Q17.** The table shows the number of taxis waiting at a railway station at 7 pm on six evenings.

	Week 1	Week 2
Friday	14	11
Saturday	16	4
Sunday	8	7

- (a) Draw a suitable type of bar chart to compare the data for week 1 and week 2.



(4)

- (b) On average, which evening has the fewest taxis waiting at 7pm?

.....

Answer

(1)

(Total 5 marks)

- Q18.** (a) Circle the **two** fractions in the list that have the same value as $\frac{1}{4}$.

$$\frac{2}{8}$$

$$\frac{3}{10}$$

$$\frac{4}{12}$$

$$\frac{5}{25}$$

$$\frac{6}{24}$$

(2)

- (b) Write $\frac{1}{4}$ as a percentage.

Answer %

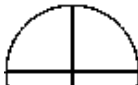
(1)

- (c) Which of these words best describes an event with a probability of $\frac{3}{4}$?

Circle the correct answer.

impossible unlikely likely certain

(1)

- (d) In a pictogram the symbol  represents 20 people.

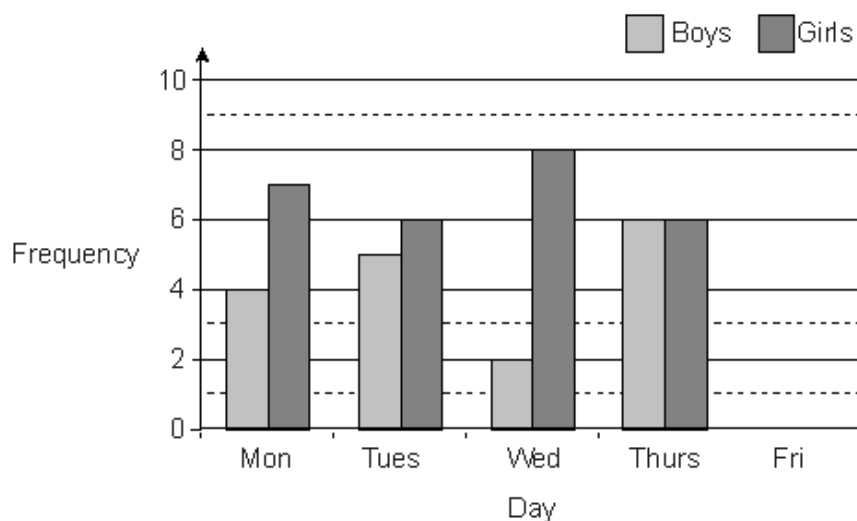
Draw a symbol that would represent 5 people.

(1)

(Total 5 marks)

- Q19.** A school nurse keeps records on pupils coming to see her.
The dual bar chart shows the number of visits made over the first four days of one week.

Dual bar chart showing the number of visits to the school nurse



- (a) Which day, from Monday to Thursday, has the biggest difference between the numbers of boys and girls visiting the school nurse?

.....

Answer

(1)

- (b) How many visits altogether were made by boys from Monday to Thursday?

.....

Answer

(2)

- (c) By the end of Friday 18 boys in total had visited the nurse.
Twice as many girls as boys had visited her during the whole week.

Complete the chart for Friday.

.....

(3)

- (d) One pupil who visited the school nurse on Wednesday is chosen at random.
Write down the probability that this pupil is a girl.

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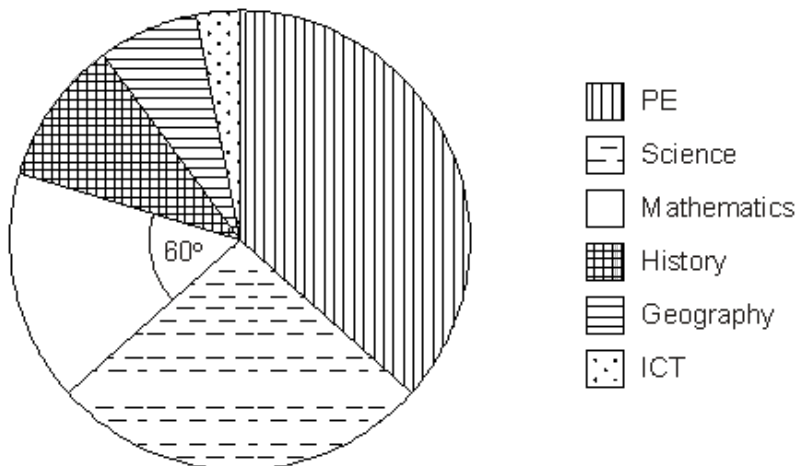
Answer

(2)

(Total 8 marks)

Q20. The pie chart shows the favourite lesson of 30 students.

Favourite lesson



How many of the students choose Mathematics as their favourite lesson?

.....

Answer

(Total 2 marks)

Q21.

- (a) 30 students from Year 7 are asked how they travel to school. Their replies, walk (W), bus (B) or car (C), are shown below.

C C B W B W C B W C
B B W W W C W C B B
W W B W B W B W W C

- (i) Complete the tally column and the frequency column in the table.

	Tally	Frequency
Walk (W)		
Bus (B)		
Car (C)		
		Total 30

(3)

- (ii) Which reply is the most common?

Answer

(1)

- (iii) What fraction of the students travel by bus?

.....

Answer

(1)

- (b) 30 students from Year 11 are also asked how they travel to school. Their results are shown in the table.

	Frequency
Walk (W)	13
Bus (B)	14
Car (C)	3
Total 30	

Compare how Year 7 and Year 11 travel to school.

- (i) Write down **one** difference.

.....

.....

(1)

(ii) Write down **one** similarity.

.....

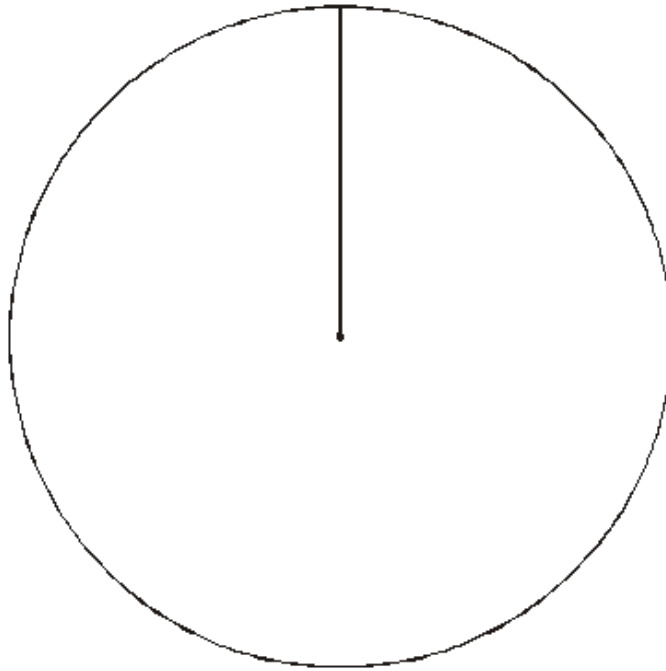
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(1)

(c) Draw a fully labelled pie chart for the Year 11 data.


.....


.....



(4)
(Total 11 marks)

- Q22.** There are four roads on a housing estate.
The pictogram shows the number of houses on three of the roads.

Key  represents 4 houses

Rose Road 

Tulip Terrace 

Daffodil Drive

Poppy Place 

- (a) How many houses are on Poppy Place?

.....

Answer

(2)

- (b) How many more houses are on Tulip Terrace than on Rose Road?

.....

.....

Answer

(2)

- (c) There are 64 houses on the estate.
Daffodil Drive has 50% of these houses.

Use this information to complete the pictogram for Daffodil Drive.

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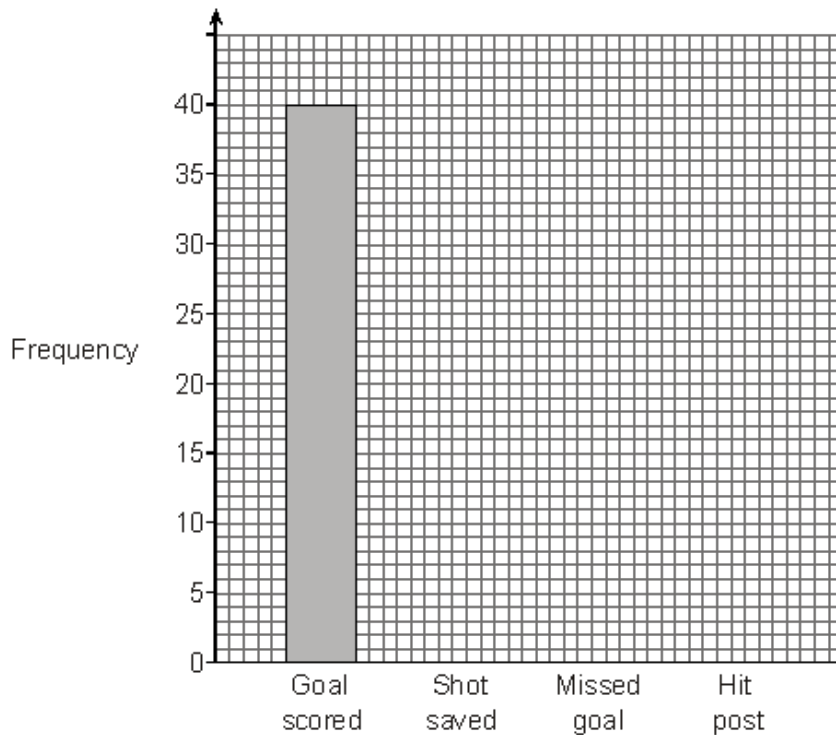
(3)

(Total 7 marks)

Q23. The table shows the results of 60 penalty kicks taken in the Premier League in one season.

Outcome	Frequency
Goal scored	40
Shot saved	8
Missed goal	10
Hit post	2

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



(3)

(b) One of these 60 penalty kicks is chosen at random.

Write down the probability that a goal is scored.
Give your answer as a fraction in its simplest form.

.....

Answer

(2)

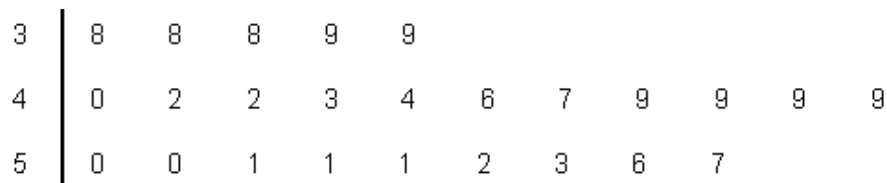
- (c) Andy says that 20% of the penalty kicks either missed the goal or hit the post.

Is Andy correct?

You **must** show your working.

(3)
(Total 8 marks)

Q24. The stem-and-leaf diagram shows the number of sweets in each of 25 bags.



Key 3 | 8 represents 38 sweets

- (a) Calculate the range of the number of sweets in the bags.

.....

Answer

(2)

- (b) Write down the mode of the number of sweets in the bags.

Answer

(1)

- (c) Two extra bags each contain 51 sweets.
This information is added to the stem-and-leaf diagram.

- (i) State, with a reason, whether the range has changed.

.....

.....

(1)

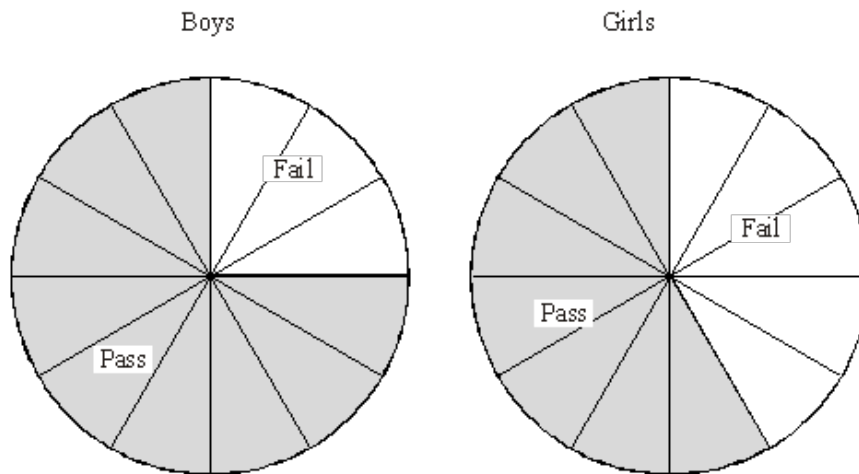
- (ii) State, with a reason, whether the mode has changed.

.....

.....

(1)
(Total 5 marks)

Q25. The pie charts show the results of a cycling test.



- (a) The number of boys who fail the test is 15.

How many boys pass the test?

.....

Answer

(2)

- (b) The number of girls who take the test is the same as the number of boys who take the test.

This two-way table shows that 15 boys fail the test.

	Boys	Girls
Pass		
Fail	15	

Complete the two-way table.

.....

(2)

(Total 4 marks)

- Q26.** A rounders coach records the number of rounders the players in her squad scored in a season.
All the players scored at least once.
She shows the data in a stem and leaf diagram.

Key | 2 | 7 represents 27 rounders scored

0	1	1	2	7
1	2	5	5	
2	3	7		
3	6			
4	0			
5	0	9		

- (a) What is the range of the data?

.....

Answer

(1)

- (b) How many players are there in the squad?

.....

.....

Answer

(1)

- (c) What is the median number of rounders scored?

.....

.....

Answer

(1)

- (d) Calculate the mean number of rounders scored.

.....

.....

.....

Answer

(3)
(Total 6 marks)

- Q27.** The table shows the races that 60 primary school pupils entered on their Sports Day.
They each entered one race.

Race entered	Number of pupils
Egg and spoon	18
3-legged	20
Sack	12
Obstacle	10

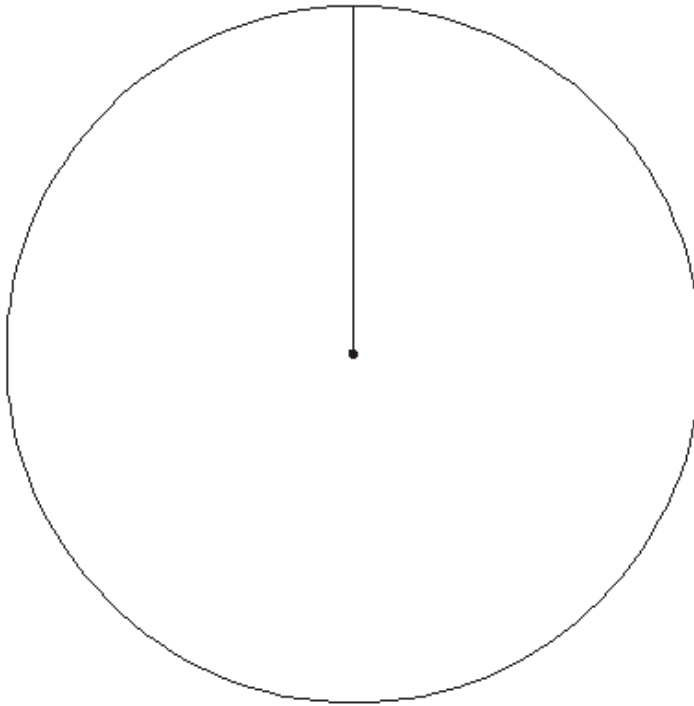
- (a) Draw and label a pie chart to represent the information in the table.

.....

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.....

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(4)

- (b) Work out the percentage of pupils who entered the egg and spoon race.

.....

.....

Answer%

(2)

(c) The pupils in the obstacle race took these times in seconds.

23 36 18 29 44 39 36 54 43 41

Draw an ordered stem and leaf diagram to show this information.

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Key: | 2 | 3 represents 23 seconds

(3)
(Total 9 marks)

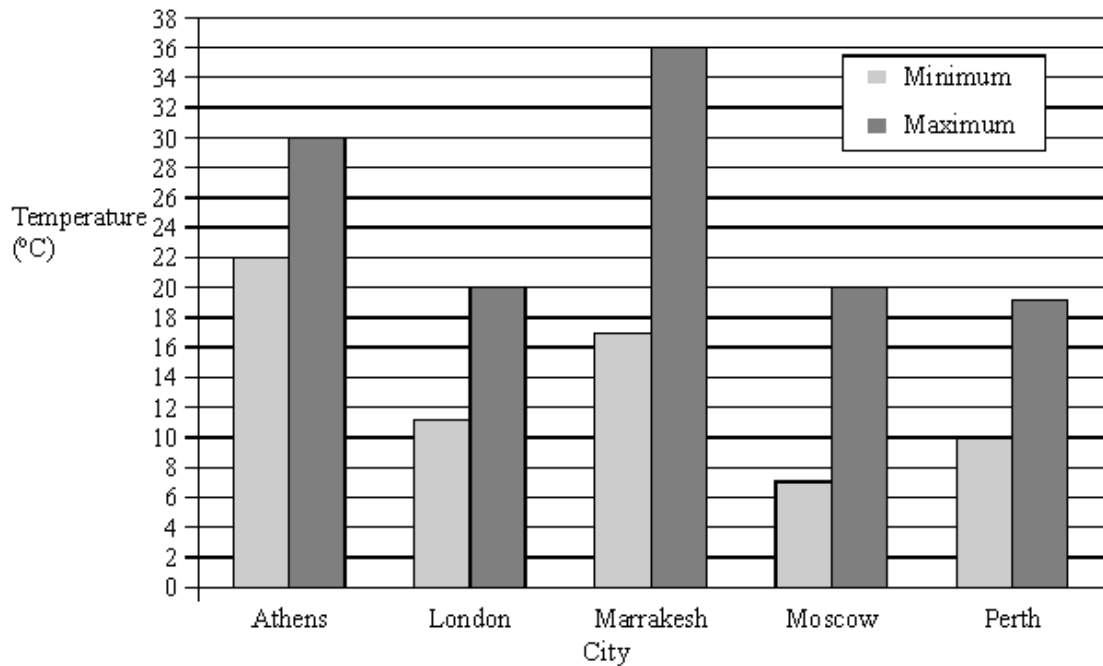
Q28. Jane conducts a survey of the favourite colours of the students in her class.
She records the results.

Male	Red	Female	Yellow
Male	Yellow	Female	Red
Male	Red	Female	Green
Female	Green	Female	Green
Female	Red	Male	Red
Male	Green	Male	Yellow
Male	Green		

Record the results in a two-way table.

(Total 3 marks)

Q29. The diagram shows the minimum and maximum temperature, in °C, for one day in June in five cities.



(a) Which two cities have the same **maximum** temperature?

Answer

(1)

(b) Work out the difference between the minimum and maximum temperature in

(i) Athens,

.....

Answer °C

(ii) Perth.

.....

Answer °C

(2)

- (c) Mike says the minimum temperature is always about half the maximum temperature for each city.
Give an example to show that Mike is wrong.
Give a reason for your choice.

.....

.....

.....

.....

.....

(2)
(Total 5 marks)

- Q30.** The stem and leaf diagram shows the ages, in years, of 15 members of a badminton club.

Key: 2 7 means an age of 27 years

2	7	8					
3	0	2	4	8			
4	1	2	3	3	4	6	
5	3	6					
6	2						

- (a) What is the median age of the members?

.....

Answer years

(1)

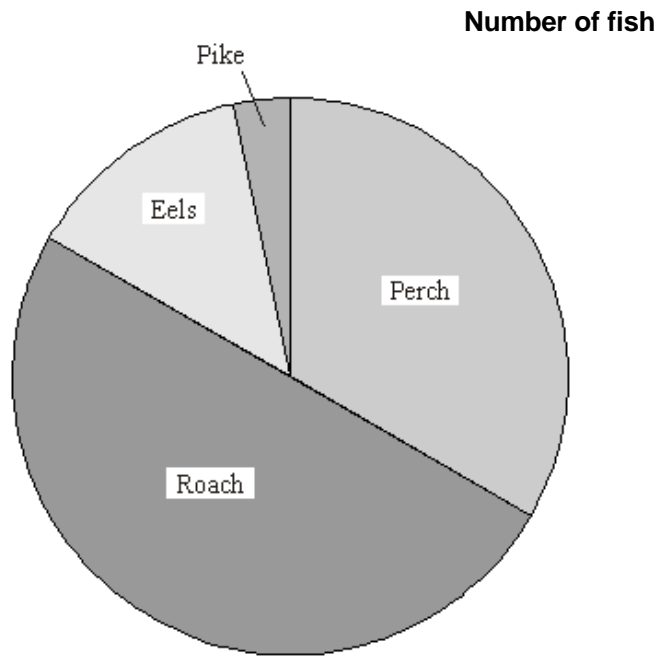
- (b) What is the range of the ages?

.....

Answer years

(1)
(Total 2 marks)

Q31. The pie chart shows the number of each type of fish that Frank caught in one day.



(a) Tick **one** box for each statement below.

	True	False	Cannot say
(i) Half the fish caught were roach.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(ii) There were more eels caught than pike.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(iii) The pike weighed more than all of the roach.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(3)

(b) Frank caught 30 fish altogether.
One-third of the fish caught were perch.

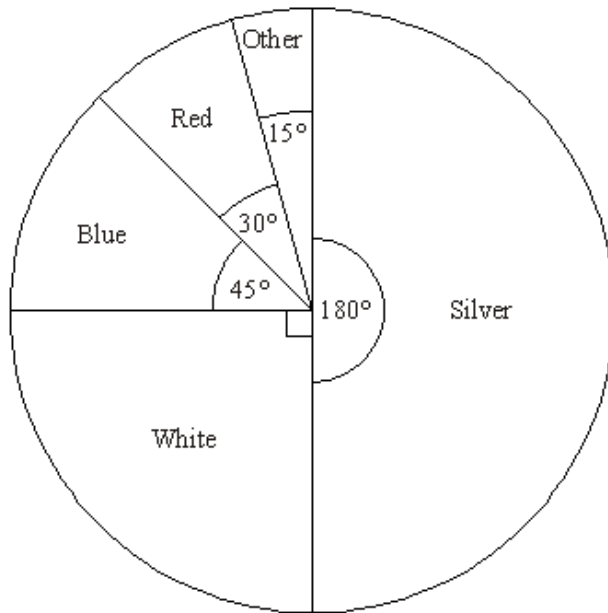
How many eels and pike were caught altogether?

.....

Answer

(3)
(Total 6 marks)

- Q32.** (a) 120 men were asked what colour car they own.
The pie chart shows the results.



Work out the number of men who own a blue car.

.....

.....

.....

.....

Answer

(3)

- (b) 120 women were also asked what colour car they own.
The results are shown in the table.

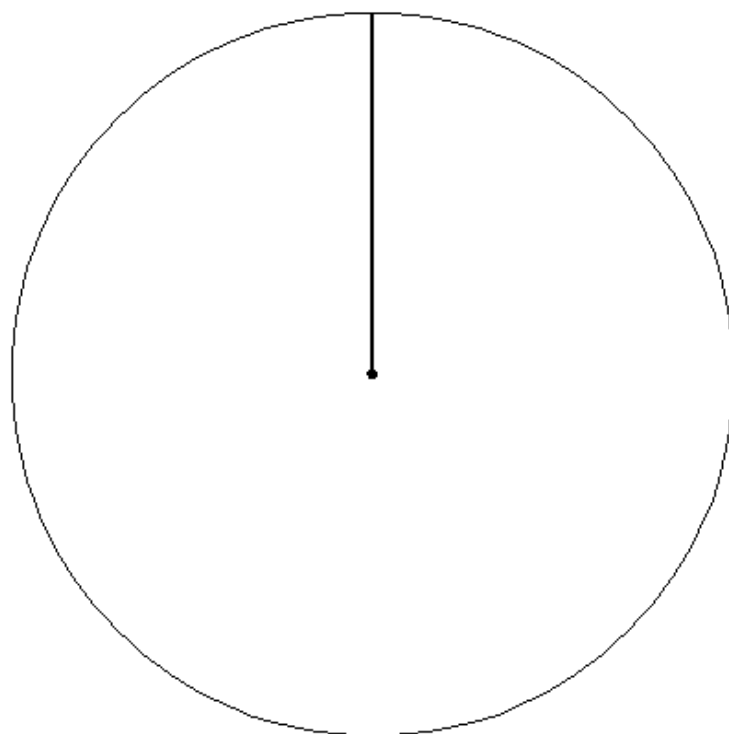
Colour	Number of women
White	42
Blue	35
Silver	25
Red	10
Other	8

Draw and label a pie chart to show this information.

.....

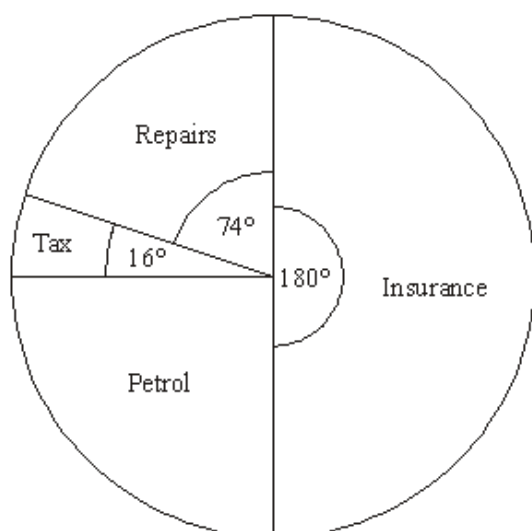
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(4)
(Total 7 marks)

- Q33.** A young driver has a small car.
The pie chart shows the annual costs for the car.



- (a) What fraction of the annual cost is insurance?

.....
.....

Answer

(1)

- (b) The annual cost of petrol was £600.

Calculate the total annual cost for this car.

.....
.....
.....
.....

Answer £.....

(3)

(Total 4 marks)

- Q34.** The Quickpass driving school records the number of lessons that each person had before passing their driving test.
The results for seven men are shown.

10 17 15 10 12 8 19

- (a) Work out the range of these numbers.

.....

Answer

(1)

- (b) Calculate the mean of these numbers.

.....
.....
.....

Answer

(3)

- (c) The number of driving lessons taken by a sample of women is summarised in the table.

Women

Range	14
Mean	9

Write down **two** comparisons between the number of driving lessons taken by the men and the women.

Comparison 1

.....

Comparison 2

.....

(2)
(Total 6 marks)

- Q35.** The number of complaints made about different parts of the Health Service last year is shown in the table.

Type	Number of complaints
Hospitals	400
Doctors	200
Dentists	80
Other	120

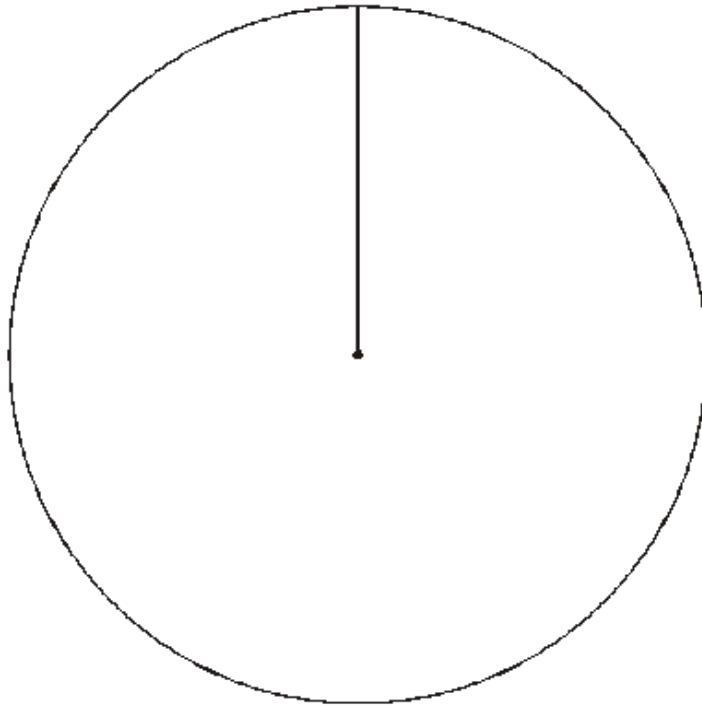
Draw and label a pie chart to represent these data.

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.....

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(Total 4 marks)

