AQA

Please write clearly in block capitals.

Centre number | | | | | | Candidate number | | | | |

Surname _____

Forename(s) _____

Candidate signature _____

GCSE MATHEMATICS

H

Higher Tier Unit 1 Statistics and Number

Thursday 26 May 2016 Morning Time allowed: 1 hour

Materials

For this paper you must have:
- a calculator
- mathematical instruments.

Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book.

Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 54.
- The quality of your written communication is specifically assessed in Questions 5 and 10. These questions are indicated with an asterisk (*).
- You may ask for more answer paper and graph paper. These must be tagged securely to this answer book.

Advice

- In all calculations, show clearly how you work out your answer.

Answer **all** questions in the spaces provided.

1 A travel company gives this survey to its customers.

How many hotels have you stayed in?

Tick a box.

☐ 0 to 3 ☐ 3 to 6 ☐ 7 to 10 ☐ 11 to 14

1 (a) Write down **two** things that are wrong with this survey.

[2 marks]

1 _____

_____

_____

2 _____

_____

_____

1 (b) Complete the response section for this question.

[1 mark]

How many nights did you stay in a hotel last week?

2 64% of an audience are female.

Work out the ratio females : males

Give your answer in its simplest form.

[2 marks]

Answer _____ : _____

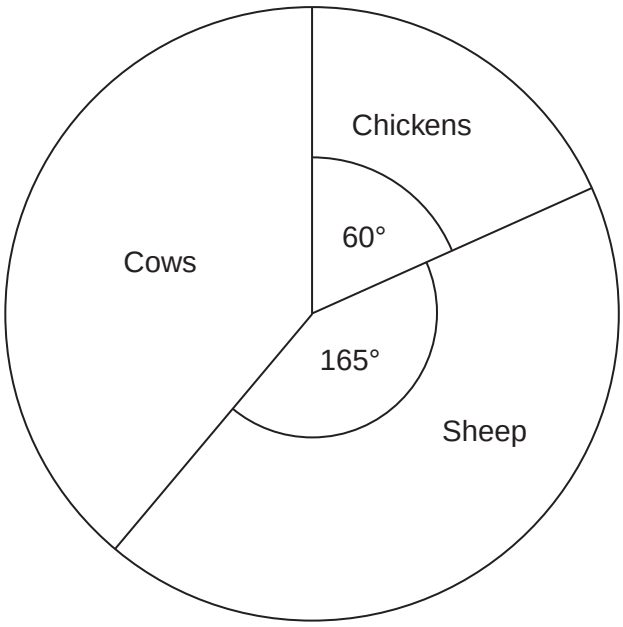
Turn over for the next question

5

3 The pie chart represents the numbers of animals on a farm.

Farm animals

Not drawn accurately

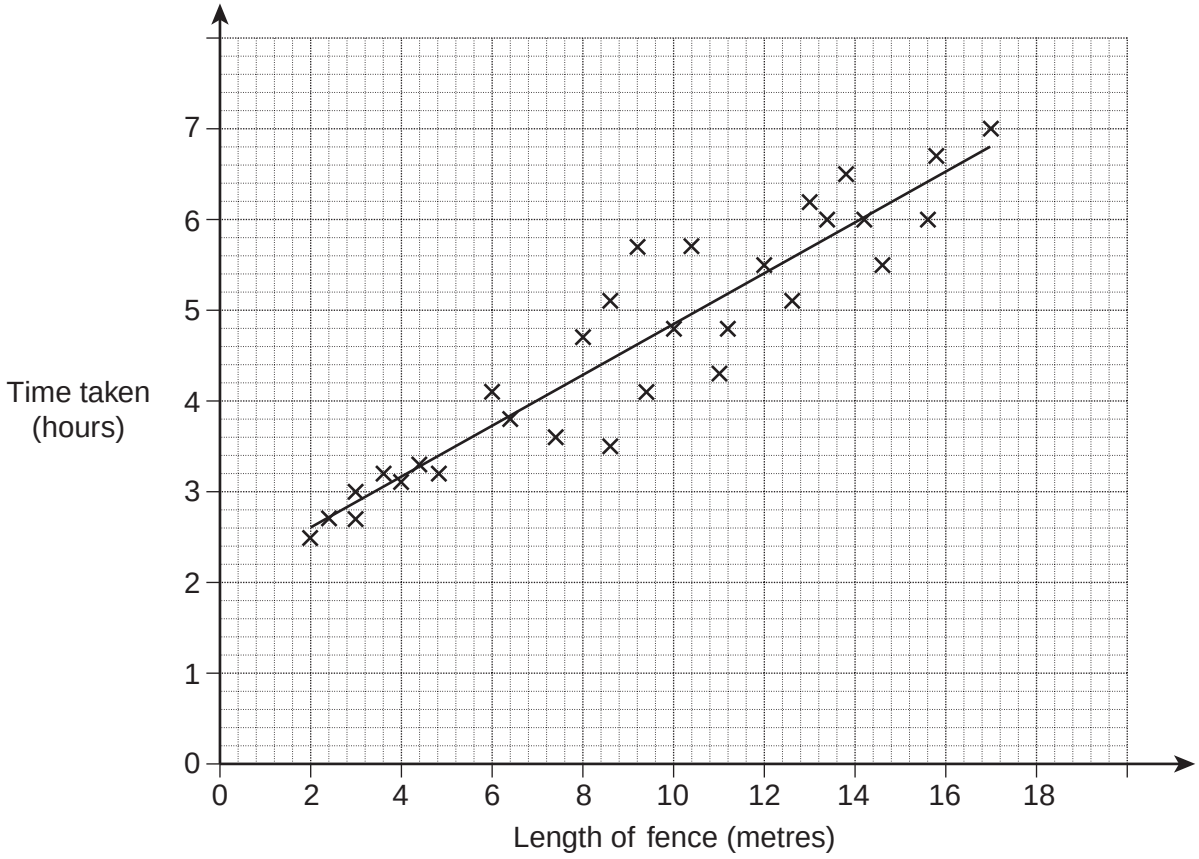


What percentage of the animals are cows?

[3 marks]

Answer _____ %

4 Joe puts up fences of different lengths.
The scatter graph shows the time taken for each fence.
A line of best fit has been drawn.



4 (a) Describe the correlation.

[1 mark]

Answer _____

4 (b) Estimate the length of fence that Joe can put up in 4 hours.

[1 mark]

Answer _____ metres

5

5 Tess shopped at a supermarket once a week for 15 weeks.
Here are the amounts she spent, in £, each week.

43	35	39	40	38
36	29	56	32	47
38	52	24	48	21

***5 (a)** Show the data on an ordered stem-and-leaf diagram.
Remember to complete the key.

[4 marks]

Key: _____ | _____ represents £ _____

_____	_____
_____	_____
_____	_____
_____	_____

5 (b) Tess collects reward points each week based on the amount spent.

Amount spent each week	Reward points
Less than £25	0
£25 – £50	10
More than £50	20

Each point is worth 4 pence.

Work out the value, in £, of the points she has collected.

[3 marks]

Answer £ _____

Turn over for the next question

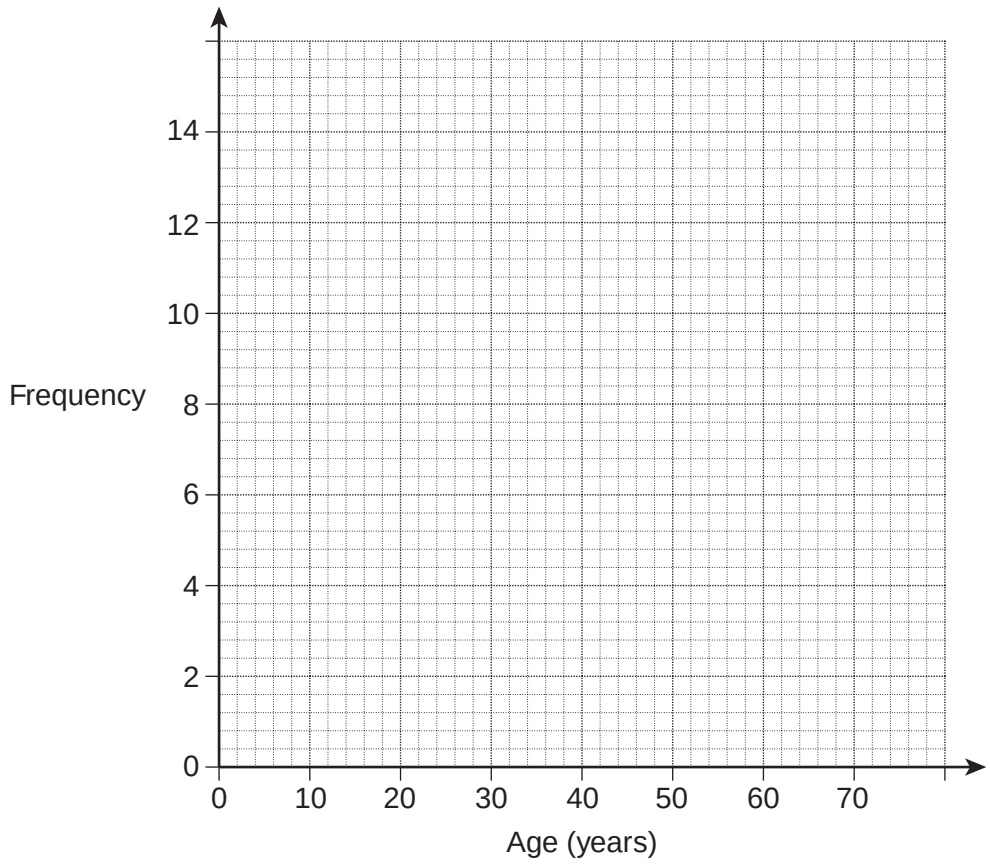
7

6 The table shows the ages of some teachers.

Age (years)	Frequency
$20 \leqslant \text{age} < 30$	5
$30 \leqslant \text{age} < 40$	13
$40 \leqslant \text{age} < 50$	9
$50 \leqslant \text{age} < 60$	6
$60 \leqslant \text{age} < 70$	2

Draw a frequency polygon to represent the data.

[2 marks]



7 A game had 100 lettered tiles.

The probability of choosing an A at random was $\frac{3}{25}$

20 tiles were then lost.

The probability of choosing an A at random is now $\frac{1}{10}$

How many A tiles were lost?

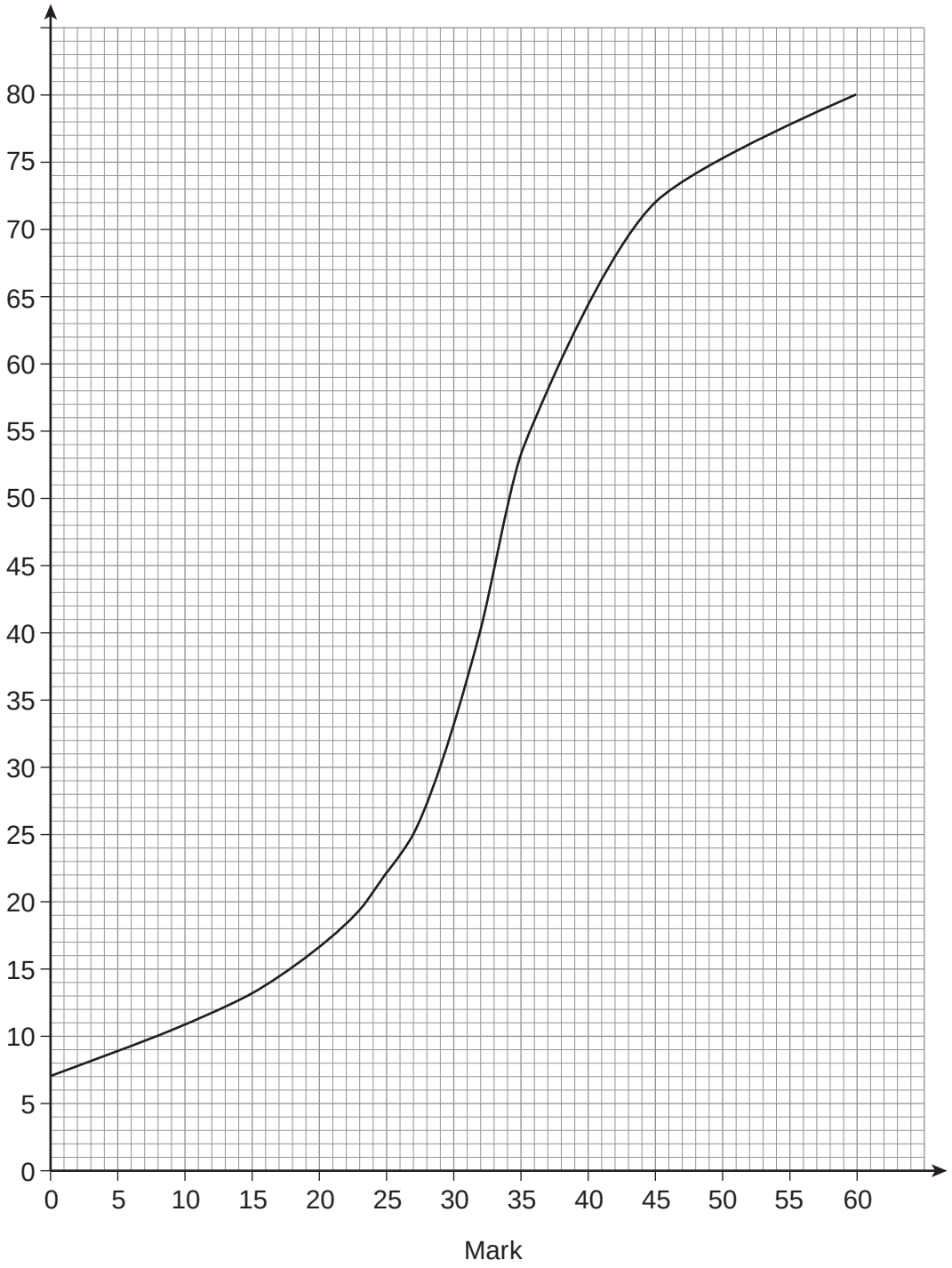
[3 marks]

Answer _____

Turn over for the next question

5

8 The diagram shows information about the marks of 80 students in a test.



8 (a) 25% of the students did **not** pass.

Circle the lowest mark needed to pass.

[1 mark]

13 22 24 27

8 (b) The table shows the lowest mark for grades A and B.

	A	**B**
Lowest mark	45	37

Estimate the number of students who got grade B.

[3 marks]

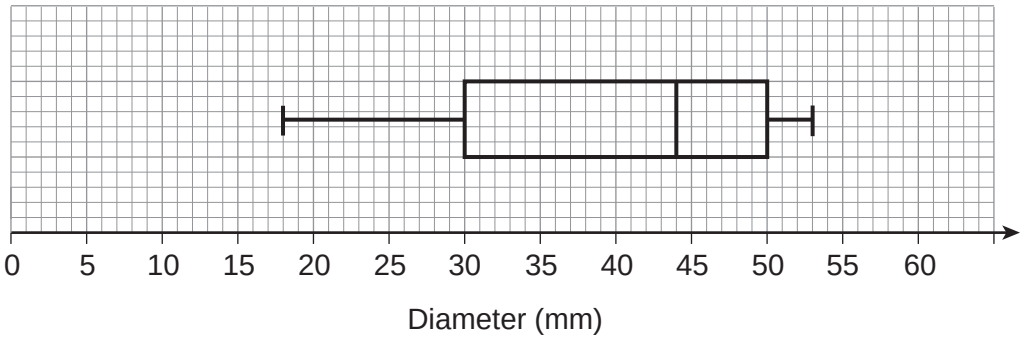
Answer _____

Turn over for the next question

4

9 Mia grew some tomatoes indoors and some outdoors.
The box plot shows information about the diameters of the **indoor** tomatoes.

Indoor tomatoes

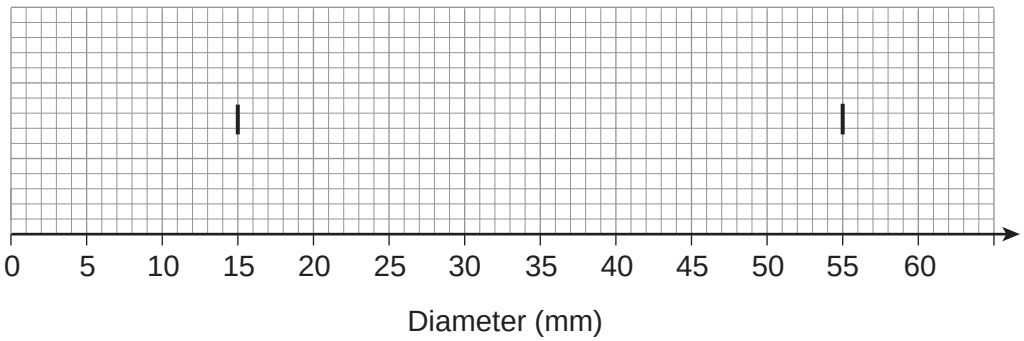


- The ratio of the median diameters is indoor : outdoor = 4 : 3
- The upper quartile of the outdoor tomatoes is 41 mm
- The interquartile range is the same for indoor and outdoor tomatoes.

Complete the box plot for the outdoor tomatoes on the grid below.
The minimum and maximum diameters have been plotted for you.

[4 marks]

Outdoor tomatoes



10 Here is a list of numbers

0.005 6.4×10^{-3} 0.000 07 4.2×10^{-4}

***10 (a)** Work out the median.
Give your answer in standard form.

[3 marks]

Answer _____

10 (b) Two more numbers are included in the list.

0.005 6.4×10^{-3} 0.000 07 4.2×10^{-4} 0 1

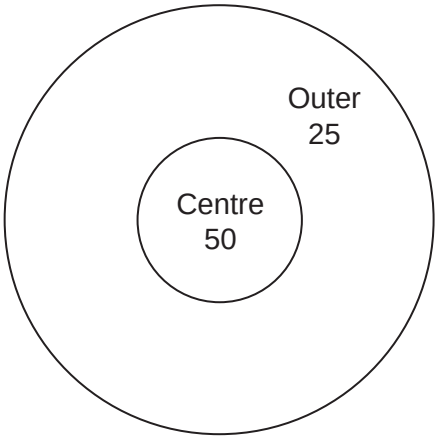
How does this affect the median?
Circle your answer.

[1 mark]

decreases stays the same increases

8

11



Sam throws darts at a target.
Here are his relative frequencies of hitting the centre, hitting the outer or missing.

	Centre	**Outer**	**Miss**
Score	50	25	0
Relative Frequency	0.2	0.5	0.3

Estimate the probability that Sam scores a total of 50 with **two** darts.

[4 marks]

Answer _____

12 A shop owner wants to survey 720 customers, stratified by customer type.

Complete the table.

[2 marks]

	Customer type			
	Shop	**Telephone**	**Online**	**Total**
Number of customers	2550	850	1400	**4800**
Number in sample				**720**

Turn over for the next question

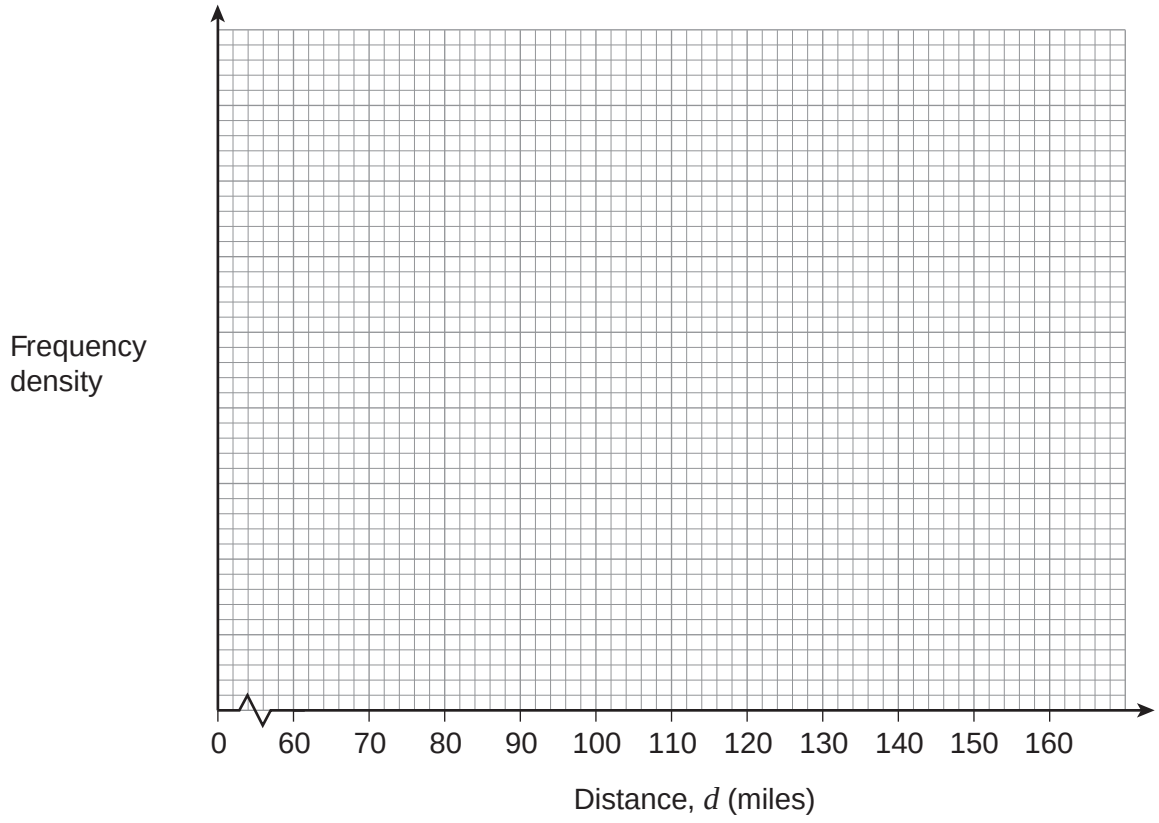
6

13 The grouped frequency table represents distances travelled on 840 journeys by a delivery driver.

Distance, d (miles)	Frequency
$60 \leqslant d < 90$	300
$90 \leqslant d < 100$	200
$100 \leqslant d < 120$	260
$120 \leqslant d < 160$	80

13 (a) Show the data on a histogram.

[4 marks]



13 (b) 75% of the journeys are less than x miles.

Estimate x.

[2 marks]

Answer _____

Turn over for the next question

6

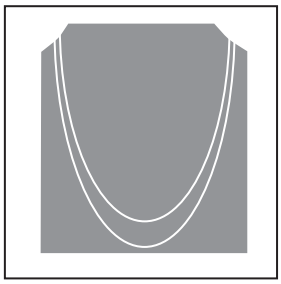
14 A bag has 9 red, 3 yellow and 3 green apples.
Two apples are taken from the bag at random and eaten.

Work out the probability that they are **different** colours.

[4 marks]

Answer _____

15 A roll of chain is 26 000 mm long.
To make one necklace, two pieces are cut from the roll.



One piece is 460 mm, to the nearest 10 mm
The other is 510 mm, to the nearest 10 mm

Work out the **greatest** number of these necklaces that **could possibly** be made from the roll.
You **must** show your working.

[4 marks]

Answer _____

END OF QUESTIONS

8

There are no questions printed on this page

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