Surname

Other Names

Candidate Signature

**AQA**

General Certificate of Secondary Education
Foundation Tier
November 2010

# Mathematics  43601F

## Unit 1

**F**

**Tuesday 9 November 2010     9.00 am to 10.00 am**

**For this paper you must have:**

- a calculator
- mathematical instruments.

**Time allowed**

- 1 hour

**Instructions**

- Use black ink or black ball-point pen.  Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- 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 2, 4 and 7.  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 booklet.

**Advice**

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

**43601F**

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

**1**     The table shows the weather in London each day for 40 days.

| Weather | Tally | Frequency |
|---|---|---|
| Sun | ⵍⵍ ⵍⵍ | |
| Rain | ⵍⵍ ⵍⵍ ⵍⵍ III | |
| Snow | IIII | |
| Fog | ⵍⵍ III | |
| | | **Total = 40** |

**1 (a)**     Complete the table.

*(2 marks)*

**1 (b)**     What fraction of the 40 days are sunny?
Give your answer in its simplest form.

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Answer ........................................................     *(2 marks)*

**1 (c)** In Manchester for the 40 days

- 16 days are sunny
- 50% of the days have rain
- there is no snow.

**1 (c) (i)** Complete the table for Manchester.

| Weather | Frequency |
|---------|-----------|
| Sun | |
| Rain | |
| Snow | |
| Fog | |
| **Total = 40** | |

*(3 marks)*

**1 (c) (ii)** One of the 40 days in Manchester is chosen at random.
Use a suitable probability **word** to complete the sentences.

The chance of choosing a day with snow is.......................................................................

The chance of choosing a day with rain is .......................................................................

*(2 marks)*

**Turn over for the next question**

**9**

**Turn over ▶**

**2** *   Nick takes four tests.
The pictogram shows his scores.

| English | ◯ ◯ ◯ |
| Geography | ◯ ◯ ◗ |
| Mathematics | ◯ ◯ ◯ ◯ ◗ |
| Science | ◯ ◯ |

**2 (a)**   Nick scores 60% in English.

Complete the key.   Key: ◯   represents ……………………%

*(1 mark)*

**2 (b)**   In which subject is his highest score?

Answer ........................................................   *(1 mark)*

**2 (c)**   Jen takes the same four tests.
The bar chart shows her scores.
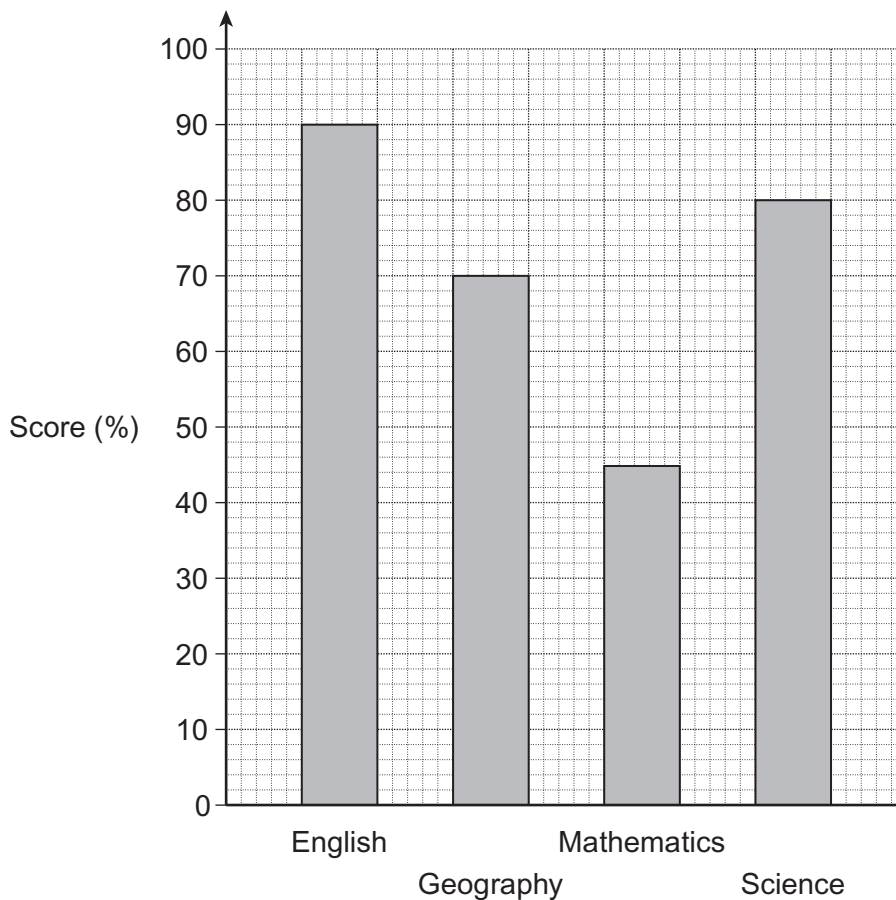
**2 (c) (i)** Nick wants to compare his scores with Jen's scores.

Draw a suitable diagram that he can use.
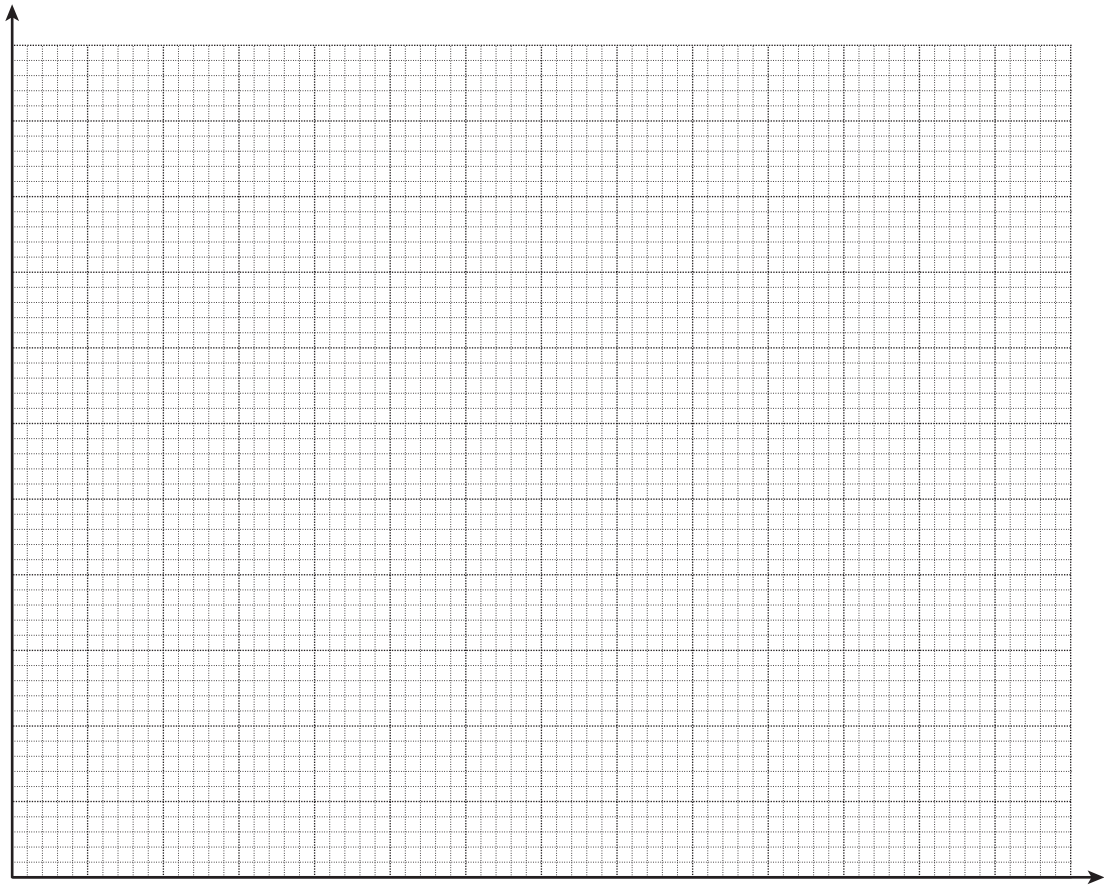
*(4 marks)*

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

Fact 1 ...................................................................................................................

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Fact 2 ...................................................................................................................

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Fact 3 ...................................................................................................................

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*(3 marks)*

9

**Turn over ▶**

**3**     A company makes bags of toffees.

Contents: 50 toffees

The company checks that the bags contain 50 toffees.
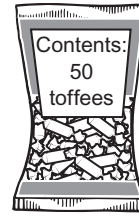
**3 (a)**     The number of toffees in a sample of 11 bags is

51     50     51     51     52     43     50     50     51     51     50

**3 (a) (i)**     Write down the mode.

Answer ................................................................     *(1 mark)*

**3 (a) (ii)**     Work out the median.
You **must** show your working.

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Answer ................................................................     *(2 marks)*

**3 (a) (iii)**     Work out the mean.

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Answer ................................................................     *(3 marks)*

**3 (b)**     The company claims there are 50 toffees in a bag.

**3 (b) (i)**     Give a reason why this claim seems fair.

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*(1 mark)*

**3 (b) (ii)**     Give a reason why this claim seems unfair.

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*(1 mark)*

**3 (c)**   The company uses the first 11 bags produced each Monday to check the contents.

State **two** ways this method of sampling can be improved.

1 ................................................................................................................................

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2 ................................................................................................................................

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*(2 marks)*

**4 (a)\***   Work out 70% of £986.

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Answer £ ...................................................................   *(2 marks)*

**4 (b)**   Circle the calculations that have the same answer as 57% of 372.

A          58% of 371

B          5.7% of 37.20
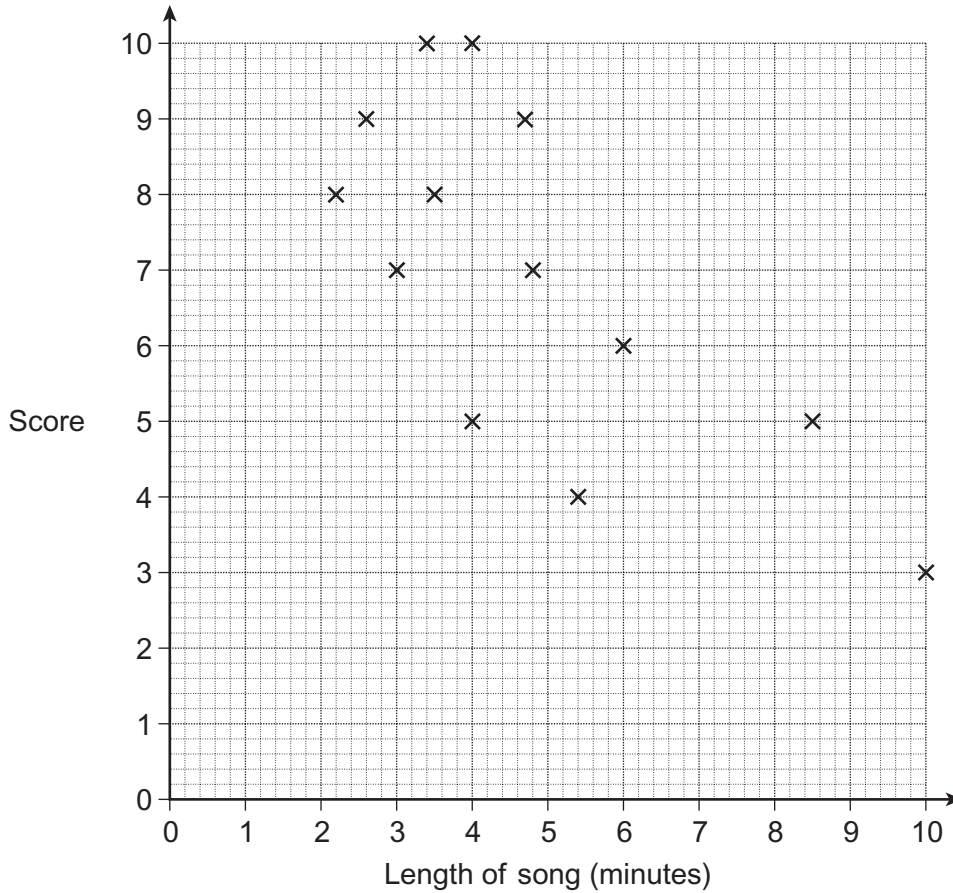
C          $\frac{57}{100}$ x 372

D          0.57 x 0.372

E          5.7% of 3720

*(2 marks)*

14

**Turn over ▶**

**5** Freddie and Priya both like music.
Freddie gives some songs a score out of 10.
The scatter diagram shows his results.



**5 (a)** What fraction of the songs is given full marks?

Answer ........................................................ *(1 mark)*

**5 (b)** How long is the song that is given a score of 4?
Give your answer in minutes and seconds.

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Answer ................. minutes ....................seconds *(2 marks)*

**5 (c)** Freddie has this hypothesis.
He says, "The shorter the song the more I like it."

Comment on his hypothesis.

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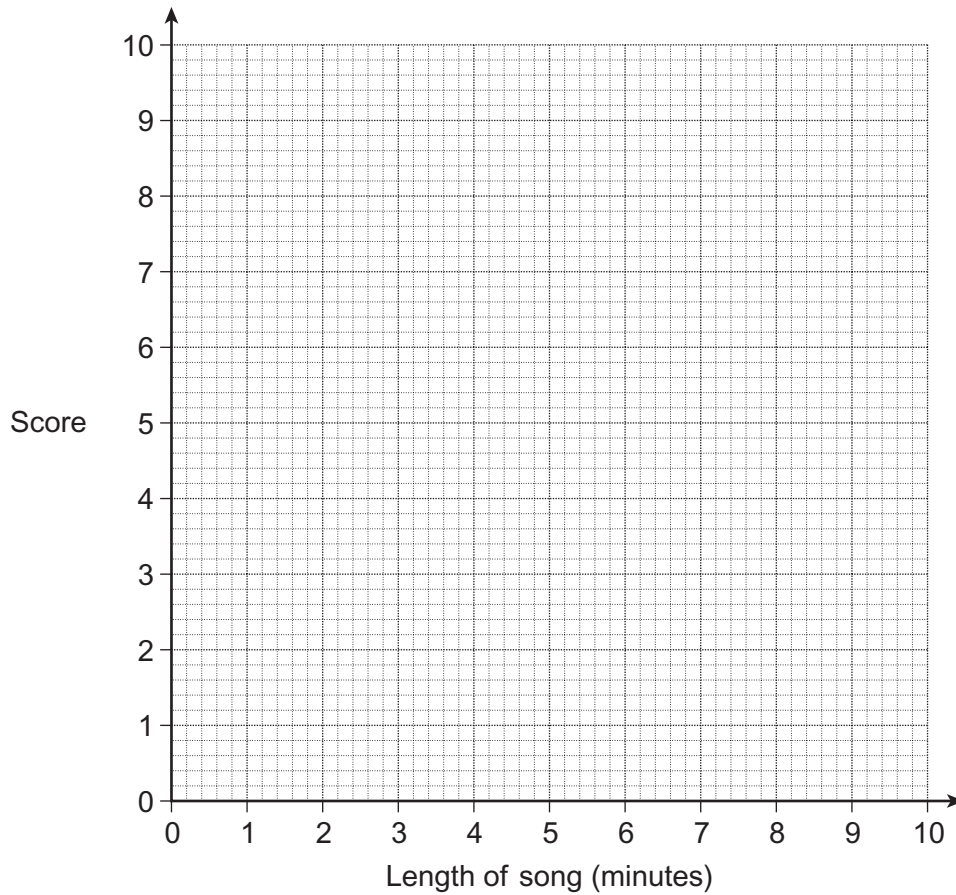*(1 mark)*

**5 (d)** Priya also gives some songs a score out of 10.
She has a different hypothesis.
She says, "The longer the song the more I like it."
Her hypothesis is strongly supported by the data she collects.

Plot points on the grid to show how her scatter diagram may look.

Score

Length of song (minutes)

*(1 mark)*

**Turn over ▶**

**6 (a)** A bag contains 3 red, 5 white and 8 blue counters.
One counter is chosen at random.

What is the probability of choosing a blue counter?

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Answer .................................................................. *(2 marks)*

**6 (b)** A different bag contains only black counters, pink counters and white counters.
When one counter is chosen at random, each colour is equally likely.

Write down **two** possible values for the total number of counters in this bag.

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Answer ...........................…...... and ...…….................... *(2 marks)*

**6 (c)** Another bag contains only green counters and yellow counters.
There are more than 10 counters in the bag.
When one counter is chosen at random, the probability of choosing a
green counter is $\frac{3}{4}$

Write down **two** possible values for the total number of counters in this bag.

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Answer ...........................…...... and ...…….................... *(2 marks)*

**7\***     This poster is put up in a school dinner hall.

*Coming soon*

**New** *Healthy Eating menu*
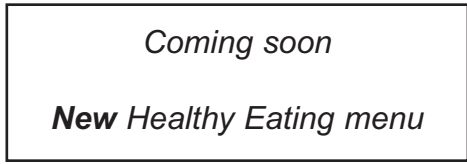
The headteacher thinks the number of students who eat school dinners will increase by 25%.

**7 (a)**     Design an observation sheet the headteacher can use to see if she is right.

*(2 marks)*

**7 (b)**     The number of students who eat school dinners increases from 78 to 91.

Is the headteacher correct?
Show clearly how you decide.

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*(3 marks)*

**Turn over for the next question**

**Turn over ▶**

**8**   Peter and Alice buy a set of golf clubs for their mother.
They pay in the ratio  4 : 3
Peter pays £224.

How much does Alice pay?

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Answer £ ...................................................................   *(3 marks)*

**9**   At the school fayre, I play a game 20 times.
Each go costs 50p.
Each time I win I receive £1.50
The probability of winning is $\frac{1}{5}$

How much money do I expect to lose?

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Answer £ ...................................................................   *(3 marks)*

**END  OF  QUESTIONS**

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