**General Certificate of Secondary Education
2019**

Mathematics

Unit M6 Paper 1
(Non-Calculator)
Foundation Tier

[GMC61] *GMC61*

THURSDAY 6 JUNE, 9.15am–10.15am

TIME

1 hour.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of
this page.
You must answer the questions in the spaces provided.
Do not write outside the boxed area on each page, on blank pages or tracing paper.
Complete in black ink only. **Do not write with a gel pen.**
Answer **all sixteen** questions.
All working should be clearly shown in the spaces provided. Marks may be awarded for
partially correct solutions.
You **must not** use a calculator for this paper.

INFORMATION FOR CANDIDATES

The total mark for this paper is 50.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded
to each question or part question.
You should have a ruler, compasses and a protractor.
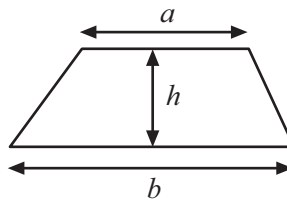The Formula Sheet is on page 2.

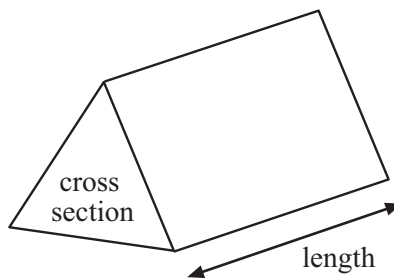# Formula Sheet

Area of trapezium $= \frac{1}{2}(a + b)h$

Volume of prism = area of cross section × length

1 Anna buys these items for lunch.

    Chicken Sandwich   £2.95

    Banana   £0.89

    Cup of coffee   £1.75

    Bottle of water   £1.20

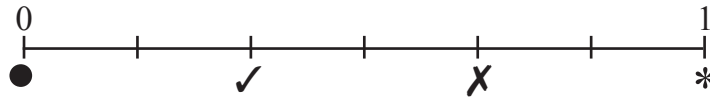She pays with a £10 note.

She gets £2.21 change.

Is this change correct?

Show your working out.

Answer _____ because _____ [3]

[Turn over

2

One letter is taken at random from the word COMMON.

Which of ●, ✓, ✗, ∗ shows the probability that the letter is

(a) M,   Answer _____ [1]

(b) T,   Answer _____ [1]

(c) a letter that appears twice in COMMON,   Answer _____ [1]

(d) a letter in the word MONOCLE?   Answer _____ [1]

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3 **(a)** Fill in the next two terms of this sequence.
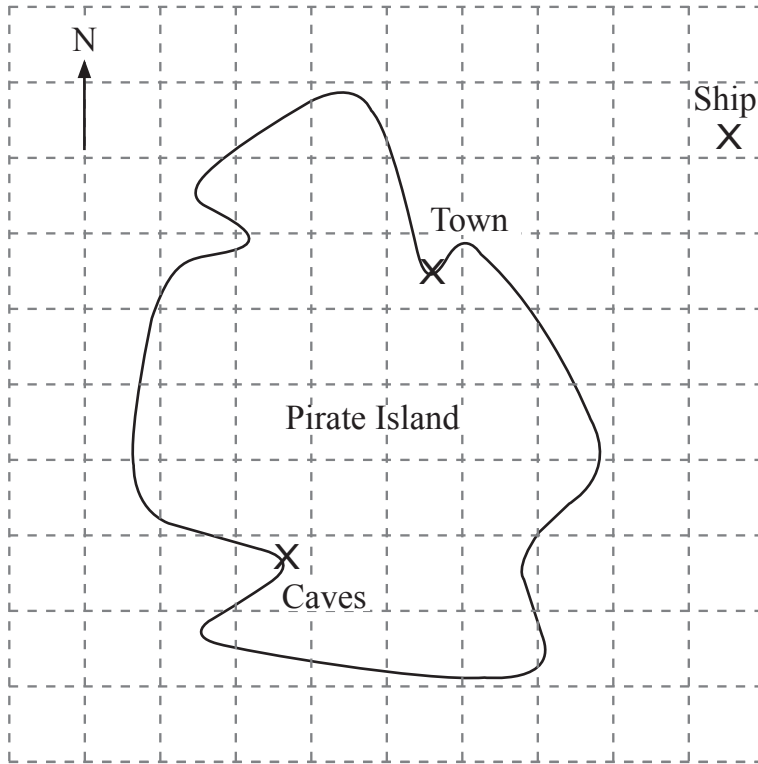
      14,   13,   11,   8,   ☐,   ☐   [2]

(b) Write down the name of the numbers in the sequence below.

      1,   8,   27,   64,   ...

                                   Answer _____ [1]

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4

(a) Use the scale to find the distance from the town to the caves.

Answer _____ km [2]

(b) Mark, with an X, the position of the buried treasure which is 6 km due South of the town. [1]

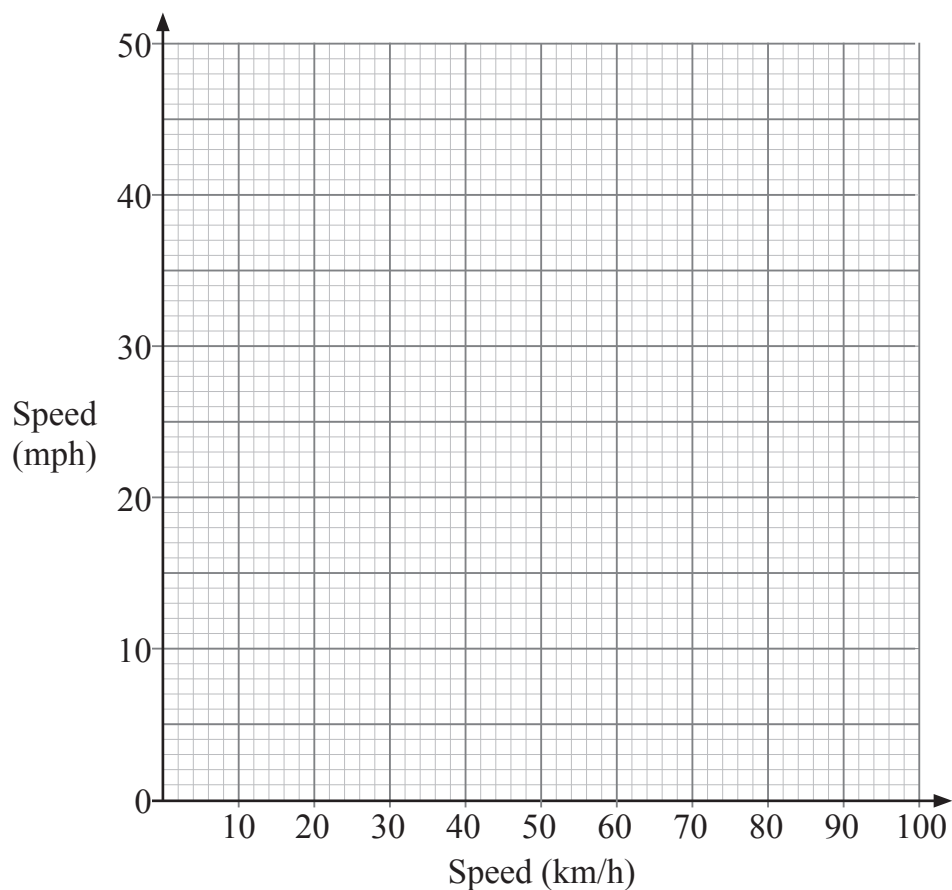**(c)** Measure and write down the bearing of the ship from the town.

Answer _____ ° [2]

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5   Speed can be measured in kilometres per hour (km/h) or miles per hour (mph).

(a) Use the values in the table to draw a conversion graph.

Speed (km/h)	0	40	80
Speed (mph)	0	25	50

Speed (km/h)   [2]

(b) Jonah is travelling at 50 km/h.

Is he breaking the 30 mph speed limit?

You **must use** your graph to help explain your answer clearly.

Answer _____ because _____

_____ [1]

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6 Tom bought a full bag of coal.
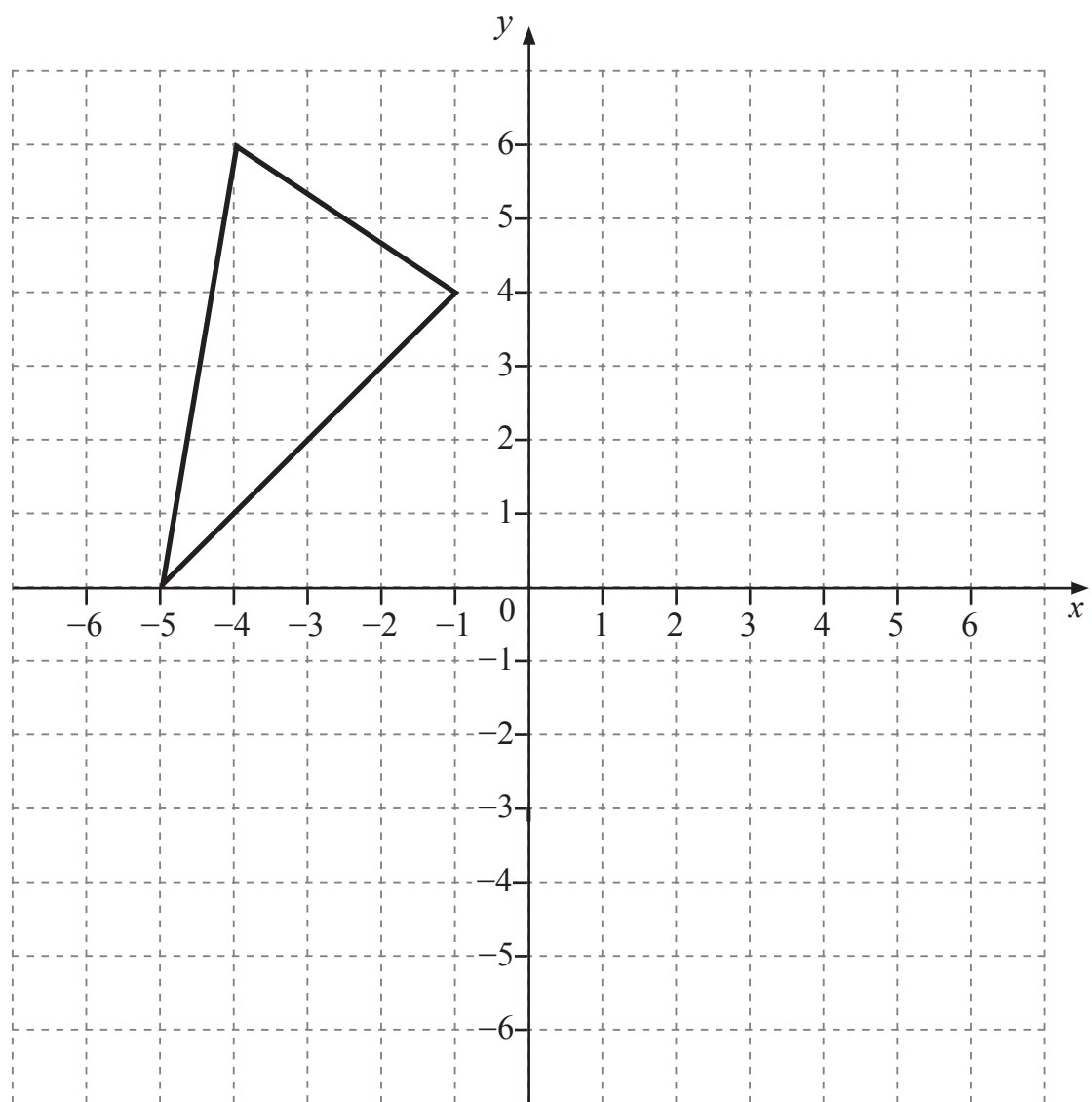
After one week the bag was $\frac{2}{3}$ full.

During the next week he used $\frac{1}{4}$ of the remaining coal.

What fraction was left in the bag?

Answer _____ [2]

[Turn over

7 Reflect the triangle shown in the **y-axis**.

[1]

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8 **(a)** Calculate the size of angle *x*.

A

42°

B

x

C
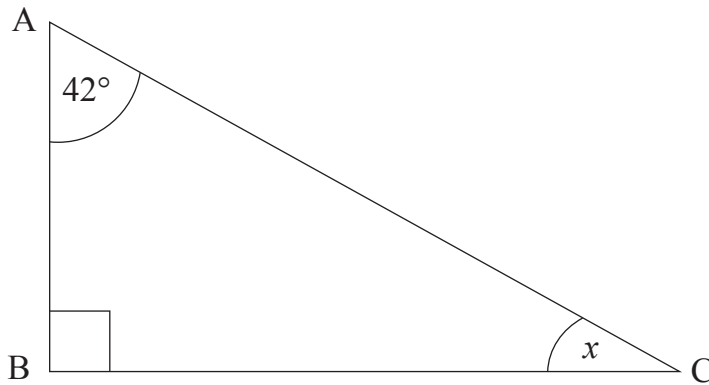
diagram not
drawn accurately

Answer _____ ° [2]

(b) Make an accurate drawing of the triangle sketched below.
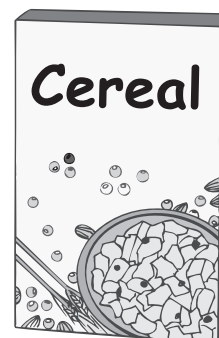
P

65°

65°

Q

7 cm

R
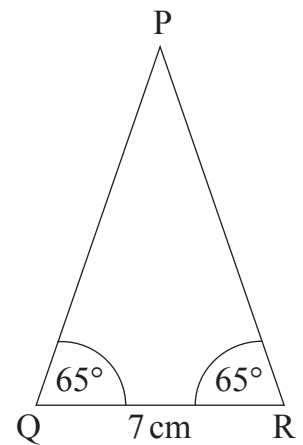
Q ×

[3]

[Turn over

9 A machine fills boxes of breakfast cereal.

Each box should weigh 375 g.

Jason takes 100 boxes and tests the accuracy
of the machine by weighing them.

Weight (g)	Less than 375	Exactly 375	More than 375
Number of boxes	9	58	33

(a) What is the probability that one of the boxes taken by Jason weighs less
than 375 g?

Answer _____ [1]

(b) The machine fills 5000 boxes.

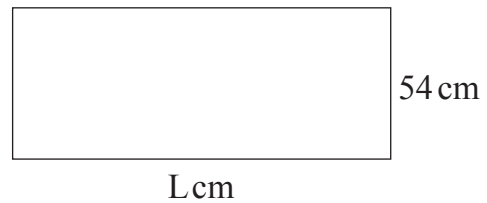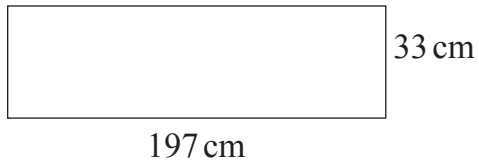Calculate the number of boxes you would expect to weigh less than 375 g.

Answer _____ [2]

10 Rewrite $\quad 4 + x = 9 - y \quad$ to make y the subject.

Give your answer in its simplest form.

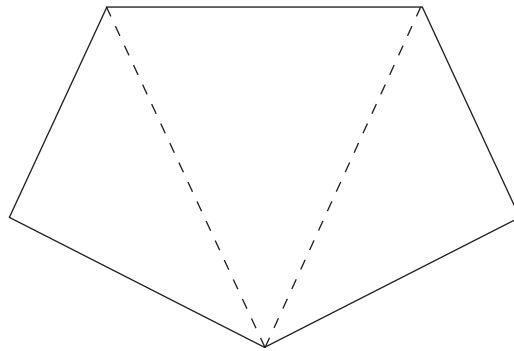Answer $\quad y = $ _____ [2]

11

33 cm

197 cm

54 cm

L cm

The two rectangles above have the same area.

Using estimation, work out an estimate for the length, L, of the second rectangle.

Answer L= _____ cm [2]

12

(a) (i) What is the total of all the angles in the three triangles shown?

Answer _____ ° [1]

(ii) What is the sum of the interior angles of a five-sided polygon?

Answer _____ ° [1]

(b) What is the sum of the interior angles of a seven-sided polygon?

Answer _____ ° [2]
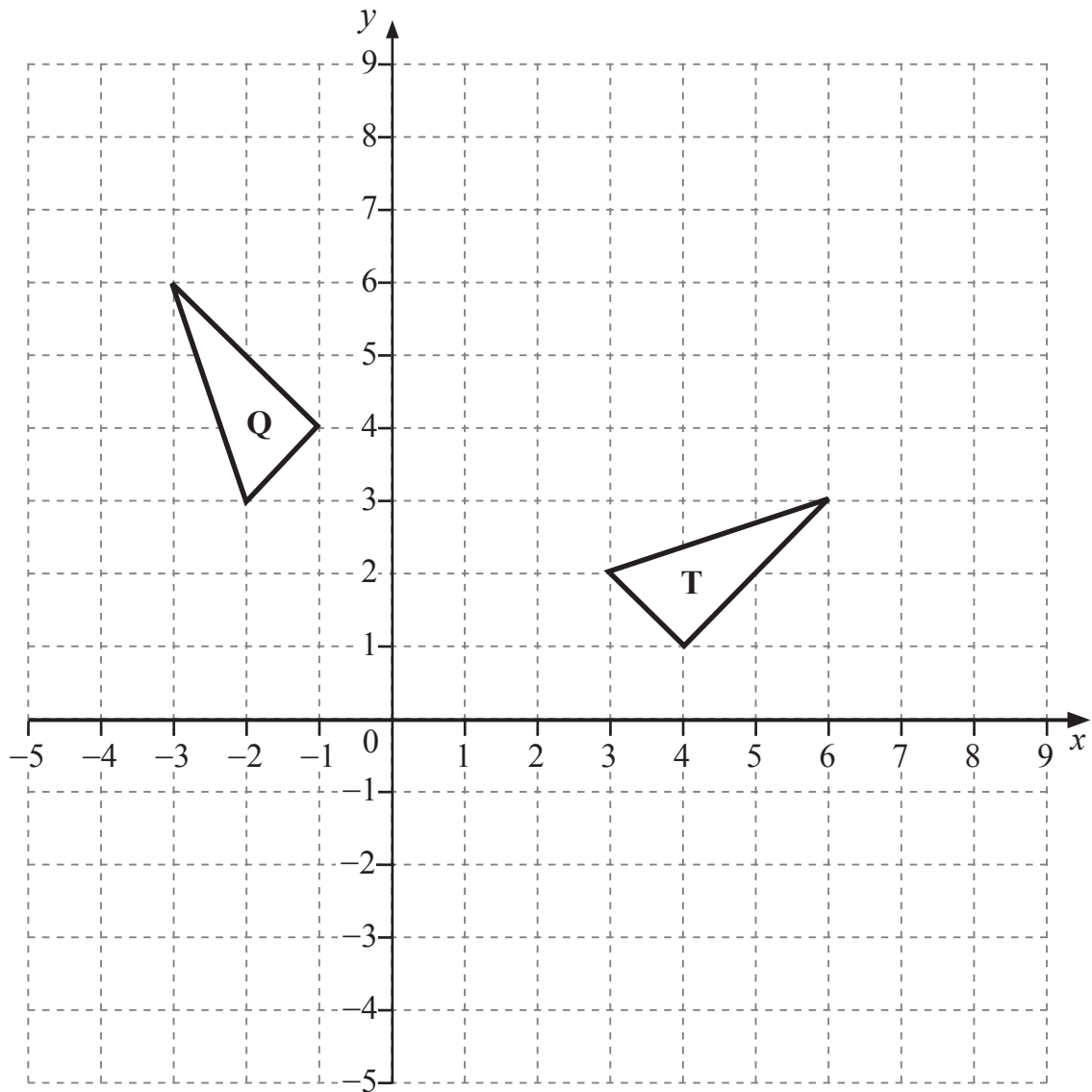
13 Solve

$$8x < 6x + 7$$

Answer _____ [2]

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14 (a) Write the binary number 10101 as a decimal number.

Answer _____ [1]

(b) Write the decimal number 26 as a binary number.

Answer _____ [1]

15

(a) Describe fully the **single** transformation which maps triangle **T** onto triangle **Q**.

Answer _____ [3]

(b) On the grid, draw the image of triangle **T** after a translation $\begin{pmatrix} 2 \\ -5 \end{pmatrix}$. [2]

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16 A six-sided dice is rolled 800 times.

The table below shows the relative frequency of scoring a six after different numbers of rolls.

Number of rolls	Relative frequency of a six
100	0.3
200	0.26
300	0.27
500	0.23
800	0.25

(a) How many times was a six scored after 300 rolls?

Show how you obtained your answer.

Answer _____ [2]

(b) How many sixes would you expect to get if a **fair** six-sided dice was rolled 300 times?

Answer _____ [2]

THIS IS THE END OF THE QUESTION PAPER

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