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GCSE

4370/03

A15-4370-03

MATHEMATICS – LINEAR
PAPER 1
FOUNDATION TIER

A.M. WEDNESDAY, 4 November 2015

1 hour 45 minutes

Suitable for Modified Language Candidates

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1.	11	
2.	9	
3.	6	
4.	4	
5.	8	
6.	3	
7.	6	
8.	7	
9.	9	
10.	6	
11.	5	
12.	3	
13.	5	
14.	2	
15.	4	
16.	3	
17.	9	
Total	**100**	

**CALCULATORS ARE
NOT TO BE USED
FOR THIS PAPER**

ADDITIONAL MATERIALS

A ruler, a protractor and a pair of compasses may be required.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen.

Write your name, centre number and candidate number in the spaces at the top of this page.

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

Take π as 3·14.

INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.

Unless stated, diagrams are not drawn to scale.

Scale drawing solutions will not be acceptable where you are asked to calculate.

The number of marks is given in brackets at the end of each question or part-question.
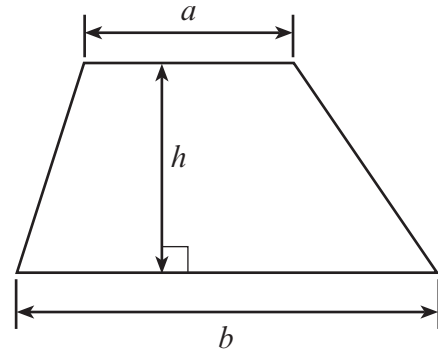
You are reminded that assessment will take into account the quality of written communication (including mathematical communication) used in your answer to question **3**.

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Formula List

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

Volume of prism = area of cross-section × length
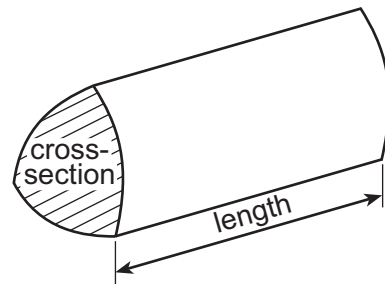
1. *(a)* (i) Write down, in figures, the number two million, thirty-one thousand and four. [1]

....

(ii) Write down, in words, the number 81 305. [1]

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(b) Use only the numbers in the following list.

> 24   41   63   36   46   18

Write down

(i) two numbers that add up to 60, [1]

....

(ii) two numbers which differ by 28, [1]

....

(iii) a multiple of 7. [1]

....

(c) Write 4523

(i) correct to the nearest 10, [1]

....

(ii) correct to the nearest 1000. [1]

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(d) Write down all the factors of 15. [2]

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(e) Theo uses each of the digits 5, 7, 2 and 6, once and once only, to make four-digit numbers.

(i) What is the smallest number that he can make? [1]

....

(ii) What is the largest odd number that he can make? [1]

....

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2. *(a)* Write down the next term in each of the following sequences. [2]

    (i) 15,   23,   31,   39, ...

    (ii) 81,   27,   9,   3, ...

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(b) Write down a number greater than five thousand in which the hundreds digit is 4. [2]

....

(c) Write $\frac{3}{25}$ as a decimal   ....

Write 13% as a decimal   ....

Write 13%, 0·2 and $\frac{3}{25}$ in ascending order. [3]

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(d) Find an estimate for the value of 303 ÷ 4·8.
Show all your working. [2]

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3. *You will be assessed on the quality of your written communication in this question.*

A computer technician takes 45 minutes to service a computer.

She uses the following formula to charge for her work.

Charge = £30 x number of hours worked + total cost of parts

Calculate the charge for servicing 8 computers when the total cost of parts was £65. [6]

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4. Choose the best expression from those given below to complete the following sentences. [4]

impossible   unlikely   an even chance   likely   certain

(a) It is .... that the sun will set tonight.

(b) It is .... that I get a tail when a fair coin is tossed.

(c) It is .... that I score a total of 1 when two dice are thrown.

(d) I buy one ticket in a raffle in which a total of 1000 tickets are sold.

It is .... that I will win the top prize.

5. *(a)* Simplify $6x - 4x + x$. [1]

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(b) Use the formula $P = 5A - 6B$ to find the value of P when $A = 7$ and $B = 4$. [2]

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(c) The x and y values of the coordinates of the points (4, 7), (5, 8), (6, 9), ..., (x, y) all follow the same rule.
Write down a rule connecting x and y. [2]

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(d) Solve

    (i) $3y = 24$ [1]

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    (ii) $x - 4 = 11$ [1]

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(e) If n represents any whole number, what is the special name of the numbers represented by $2n$? [1]

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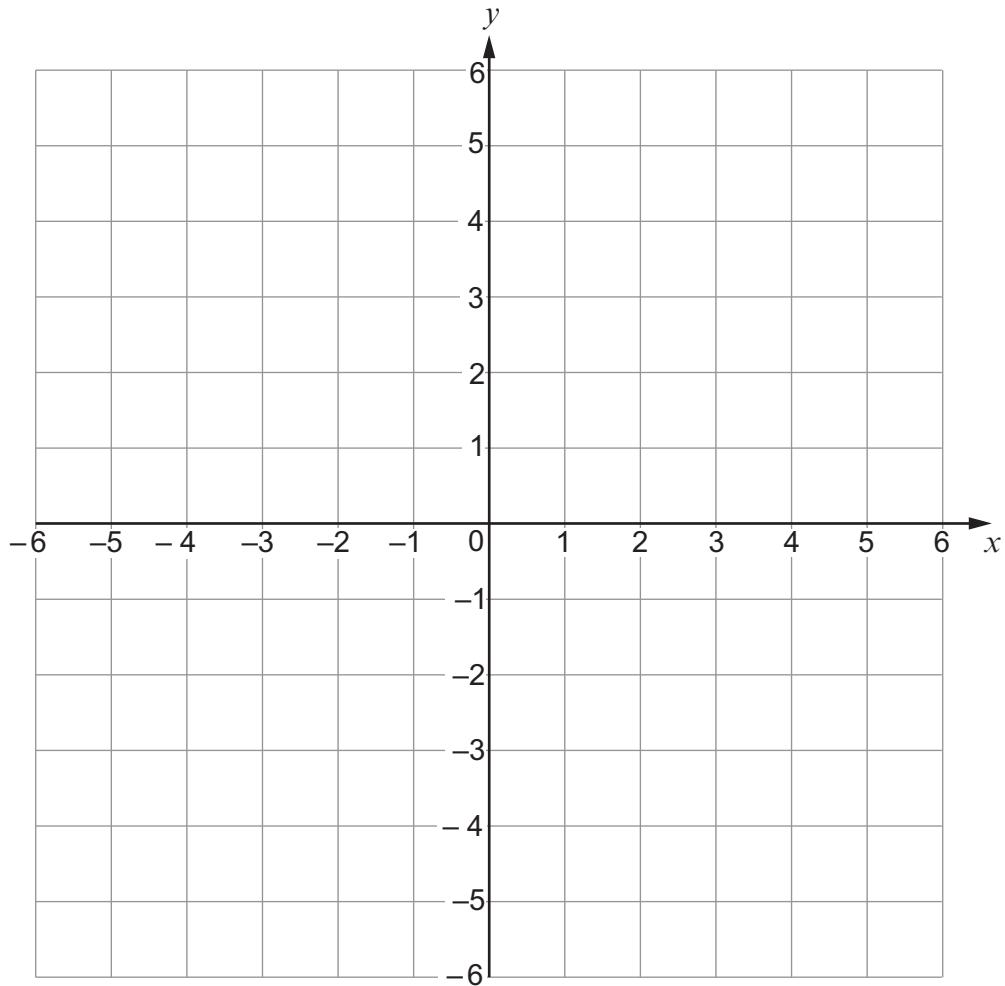
6. On the squared paper below, plot the points A(2, 1), B(–3, –5) and C(4, –3). [3]
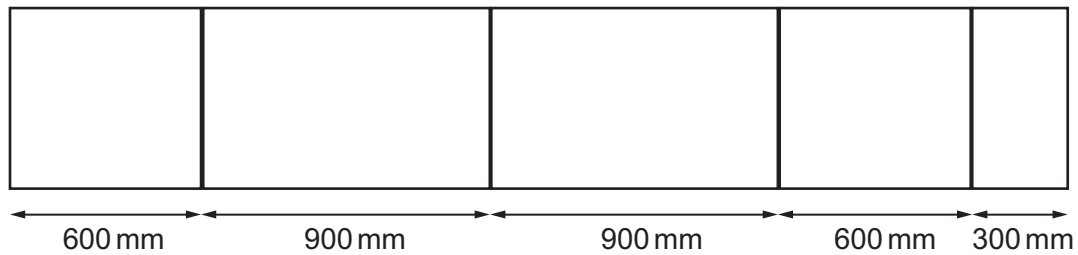
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7. Kitchen cupboards of the same height can be bought in different widths.
The possible widths of the cupboards are shown in the table.

Width of cupboard (millimetres)	300	400	600	900	1000	1200

(a) Five of these cupboards can fit exactly along a wall, as shown below.

600 mm   900 mm   900 mm   600 mm   300 mm

Diagram not drawn to scale

Work out the total length of this wall.
Give your answer in metres. [2]

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Total length is .... metres

(b) Here is a wall of Susan's kitchen.

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└────────────────────────────────────────────┘
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3930 mm
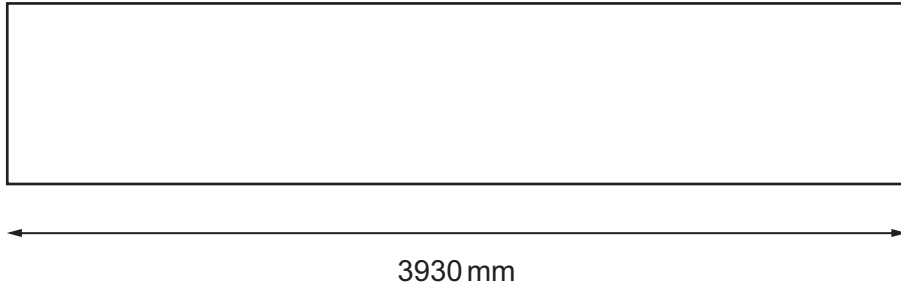
She wants to put cupboards along this wall.
Susan wants to fill as much of the space as possible.

Describe **two ways** that Susan could do this. The selection of cupboards must be different.
You must state
  •   which cupboards you select, and
  •   why you cannot fill the whole wall with cupboards. [4]

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8. *(a)* Sam keeps turkeys in a rectangular garden measuring 35 metres by 41 metres.

(i) Calculate the area of this garden. [2]

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Area = ... m^2

(ii) Sam would like to allow $10\,m^2$ for each turkey.
What is the maximum number of turkeys Sam should have in his garden? [1]

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(b) Sam also has this field.

64 m

20 m

45 m

30 m
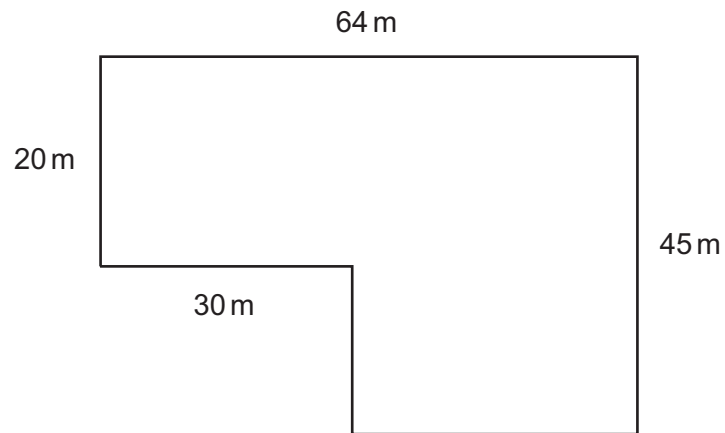
Diagram not drawn to scale

He wants to put a fence all the way around the field.
He has 250 metres of fencing.
Does Sam have enough fencing?
If he has, how much will Sam have left over?
If not, how much more fencing does Sam need? [4]

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9. Brian makes bracelets and necklaces.
He threads (puts) small and large beads onto a chain.

(a) The table below shows some information about the number of beads he uses.
Brian uses the same ratio of small and large beads for each bracelet and each necklace.
Complete the table. [3]

	Small beads	Large beads	Total number of beads
One bracelet	18	12	30
One necklace			150

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(b) The table below shows the cost of the materials.

Materials	Cost
Small bead	5p
Large bead	10p
Bracelet chain	80p
Necklace chain	£2.95

A shop buys 100 bracelets from Brian.
Brian makes 70% profit on the cost of the materials.
Work out the total amount that the shop pays Brian for the bracelets. [6]

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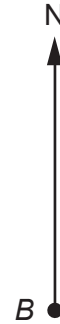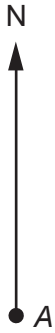
10. *(a)* *A* and *B* are two rescue centres shown on a map with scale 1 cm = 5 km.

Measure the straight line distance from *A* to *B*.
What is the distance in km? [3]

N

B •

N

• *A*

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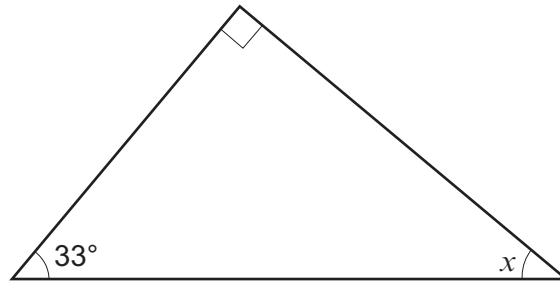
(b) A monument is on a bearing of 136° from *A* and on a bearing of 219° from *B*.
Plot the position of the monument and mark it *M*. [3]
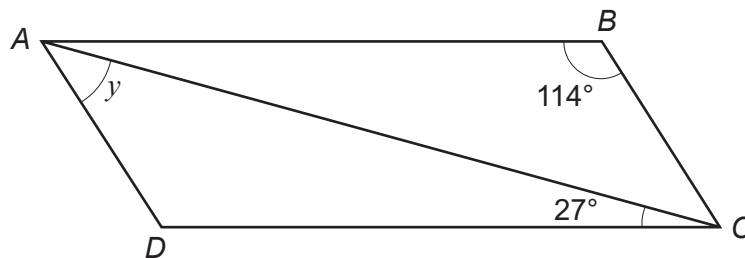
11. *(a)* Calculate the size of angle x. [2]

Diagram not drawn to scale

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$x = $ .... °

(b) *ABCD* is a parallelogram. Calculate the size of angle y. [3]

Diagram not drawn to scale

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$y = $ .... °

Turn over.

12. Solve $8x - 9 = 21 + 5x$. [3]

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13. Idris comes from a very large family.

He has many relatives, who live in Canada, Japan or Wales.

$\frac{1}{5}$ of his relatives live in Canada, $\frac{3}{8}$ of his relatives live in Japan.

All 34 of his other relatives live in Wales.

How many relatives does Idris have altogether? [5]

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14. Sanej throws two fair dice.
He scores a double one.

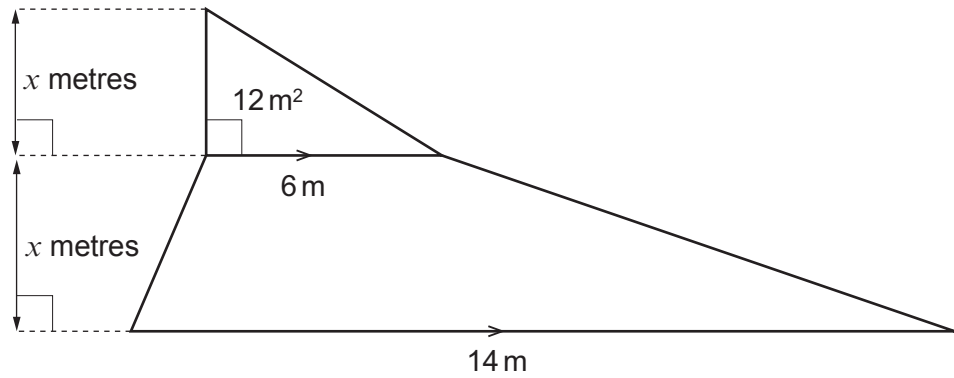Calculate the probability of **not** scoring a double one when two fair dice are thrown. [2]

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15. The diagram shows a sail.
The top part of the sail is a triangle with perpendicular height x metres.
The bottom part of the sail is a trapezium with perpendicular height x metres.

The area of the triangle is $12\,\text{m}^2$.

Diagram not drawn to scale

Calculate the area of the trapezium. [4]

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16. *(a)* The nth term of a sequence is $5n^2 - 3n$.
Write down the first three terms of the sequence. [2]

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(b) Find the 20th term of the sequence with nth term $4n - n^2$. [1]

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17. In a survey, a total of 392 pupils were chosen from years 7, 8 and 9 and asked the following question.

> What is your favourite sport in this list?
>
> football   rugby   swimming   cycling

The results are summarised in the table below.

	Favourite sports				
Year	Football	Rugby	Swimming	Cycling	**Total**
7	45	38	23	15	121
8	32	64	14	28	138
9	26	46	34	27	133
Total	103	148	71	70	392

In each of the following questions, a pupil is selected at random.

(a) Calculate the probability of selecting a pupil whose favourite sport is swimming. [1]

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(b) Calculate the probability of selecting a Year 8 pupil. [1]

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(c) The pupil selected is in Year 8.
Calculate the probability that this pupil's favourite sport is cycling. [2]

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(d)　The favourite sport of the selected pupil is football.
　　　What is the probability that this pupil is in Year 7?　　　　　　　　　　[2]

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(e)　The pupil selected is **not** in Year 7.
　　　What is the probability that this pupil's favourite sport is **not** football?　　[3]

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END OF PAPER

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